



# Preservation and Long-term Access via NETWORKED Services

Keeping digital information alive for the future





## Planets consortium members

The British Library  
The National Library of The Netherlands  
Austrian National Library  
The Royal Library of Denmark  
State and University Library Denmark  
The National Archives of The Netherlands  
The National Archives of the United Kingdom  
Swiss Federal Archives  
University at Cologne  
University of Freiburg  
HATII at the University of Glasgow  
Vienna University of Technology  
Austrian Institute of Technology GmbH  
IBM Netherlands  
Microsoft Research Limited  
Tessella Technology & Consulting

## What is Planets?

Preservation and Long-term Access through NETworked Services project, Planets, is a European initiative for research and development in the field of digital preservation. The four year project is being delivered by 16 institutions in Europe and is coordinated by the British Library. It is co-funded by the European Commission under the Information Society Technologies (IST) priority of the 6th Framework Programme for research, technological development and demonstration.

## Who are we?

The Planets consortium brings together European national libraries, archives, research institutions and leading IT companies. Our 16 partners combine the expertise of major European libraries including the British Library, the State and University Library of Denmark and the National Libraries of The Netherlands, Austria and Denmark, as well as the National Archives of The Netherlands, the United Kingdom and Switzerland. We profit from the scientific minds at the universities of Freiburg, Glasgow, Vienna and at Cologne and we enjoy the support of some of the world's leading IT research institutes: IBM, Microsoft Research, Austrian Institute of Technology and Tessella Technology & Consulting.

## What can we do for you?

Planets provides an integrated approach to digital preservation. It helps you to define your digital preservation goals and policies and to understand the characteristics of your collection. Using Planets tools, you can build, evaluate and execute preservation plans, convert objects from formats that do not meet your needs to ones that do, and run software on legacy operating systems. The Planets framework extends the OAIS mode and integrates Planets and third-party tools. It offers a highly automated solution to control costs, to support informed decision-making and to evaluate and justify actions taken. The framework is scalable to meet the needs of large and small institutions. It can be integrated in your current IT environment and provides access to an EC-wide community of best practice.

Images from top, left to right:  
Plato Preservation planning tool, DROID identification tool  
GRATE emulation tool, SIARD suite,  
Testbed, Interoperability Framework



«The scale of the task is beyond the capability of one institution or sector. It requires the coming together of ideas, technology and practice across disciplines, organisations and boundaries.»

**Horst Forster**, Director, Media Directorate General,  
European Commission

## Foreword



«Planets addresses a central irony of our age – the rapid advance of information technology puts our information at risk.»

It has been forty years since the first moon landing and thirty years since the first consumer computers and word processors. Over this time, we have come to rely absolutely on information in digital form. The human generations give us perspective. We can recognise the enduring value of digital information, but also how brittle and short-lived it can be.

Many organisations, such as national archives and libraries, now have a legal obligation to provide enduring access to our digital cultural and scientific heritage. This shared concern gave rise to shared action. In 2006, the Planets Project brought together a consortium of major European content holders with research institutions and leading technology companies. Co-funded through the Information Society Technologies (IST) Programme, Planets aims to develop methods and technology to keep digital information alive across generations and meet these obligations with confidence.

Within the intervening years, Planets has made substantial progress towards its goals. It has advanced our understanding and capability to safeguard access to digital information. It has developed solutions to provide the high levels of automation that content holders need to match their rapidly growing collections. Planets has worked to provide a carefully engineered foundation to support current needs as well as the ability to support and deploy future innovations, including those provided by third parties. We have begun to see projects in early adopter institutions to start to integrate and deploy the Planets technology.

Planets addresses a central irony of our age – the rapid advance of information technology puts our information at risk. We produce information in digital form at an increasing rate; we can store data in an ever smaller space; but the span of time that we can confidently keep hold of it is brief. In the next ten years, memory institutions such as archives and libraries expect a fifty-fold increase in the volume of digital content they hold. Yet the lifespan of that information may be just a few years.

As will become clear from the pages that follow, Planets has assembled a truly outstanding team of experts in digital preservation and its associated technologies. Equally important, the project has provided an environment for professionals to develop a deep understanding of the challenge of ensuring long-term access to digital information.

While the project began with a focus on the interests of libraries and archives, the techniques and tools are applicable for government, healthcare, media, business, industry and manufacturing and even the individual consumer.

It has been my pleasure as Project Coordinator and Chair of the Scientific Board to see the progress that we have made towards our goals. I look forward to the final project results and a sustained organisation to further develop the Planets approach. I also look forward to the growing prospect of digital information that does indeed remain available for decades or even centuries to come.

**Dr Adam Farquhar**, Planets Project Coordinator

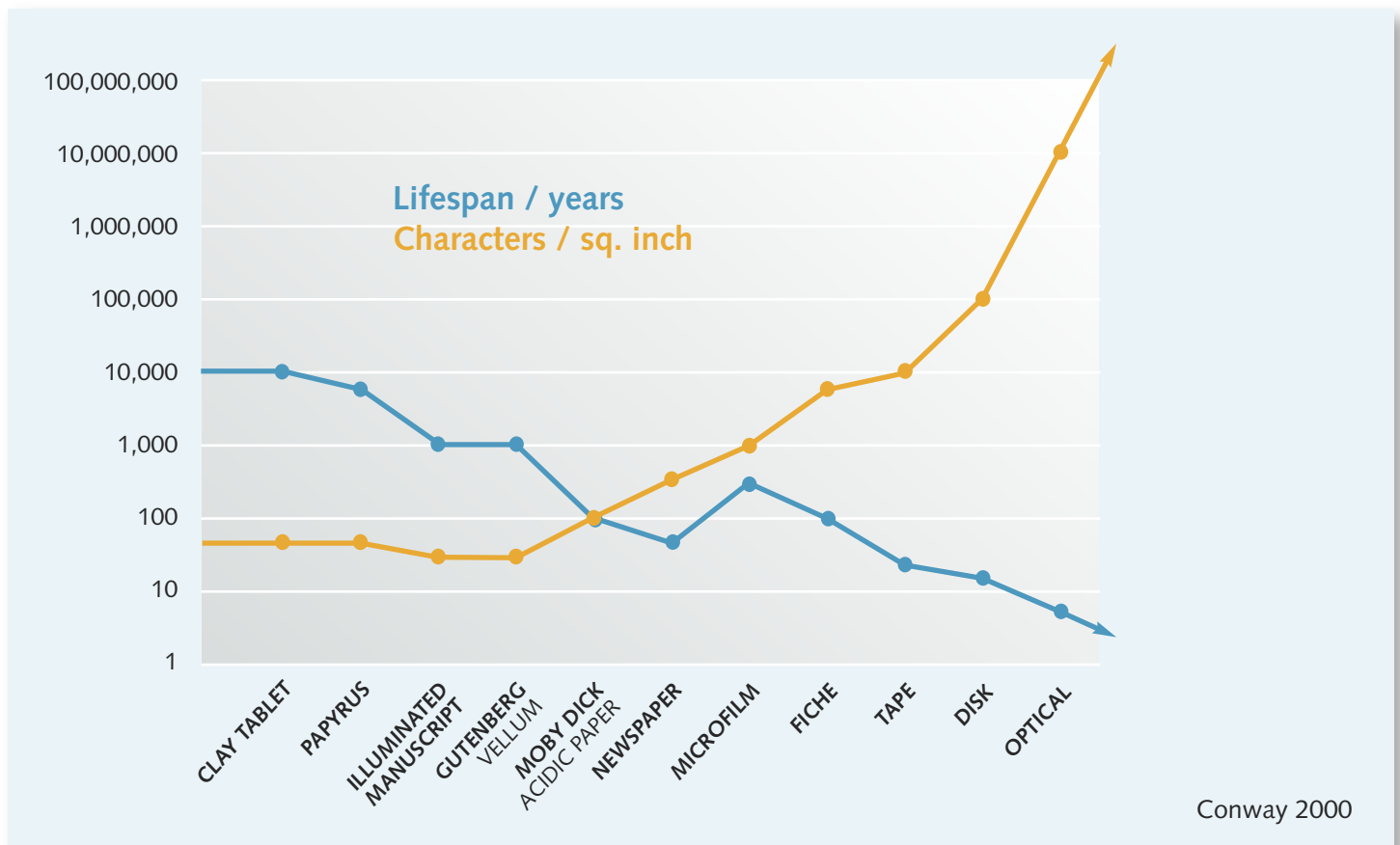
# The Digital Dilemma

Since the first programmable computer was introduced in 1936, there has been a gradual but accelerating transition from information held on and transmitted by physical (analogue) media to electronic (digital) media. This explosion in digital content is driven by the speed and ease by which it is possible to disseminate information freely and widely over public and private networks. Digital transmission has made it possible to create, search, retrieve, copy and reformat content automatically. The growth in content is also fuelled by a migration from analogue to digital in messaging, photography, film, radio and television, financial transactions, engineering design, surveillance and sensor-based applications.

In its first annual Digital Universe report in 2007, the International Data Corporation (IDC) estimated that the size of the Digital Universe – the number of bits (1s and 0s) that exist – was  $1,288 \times 10^{18}$ , or 161 billion gigabytes (161 exabytes), and that this would increase six-fold by 2010. By 2008, the IDC calculated that the Digital Universe had expanded to 281 exabytes and revised its estimated four-year rise in digital data upwards to ten-fold and 1,800 exabytes by 2011. One year later, the IDC calculated that the Digital Universe contains 486 exabytes of content and it is now projected to double in size every 18 months.

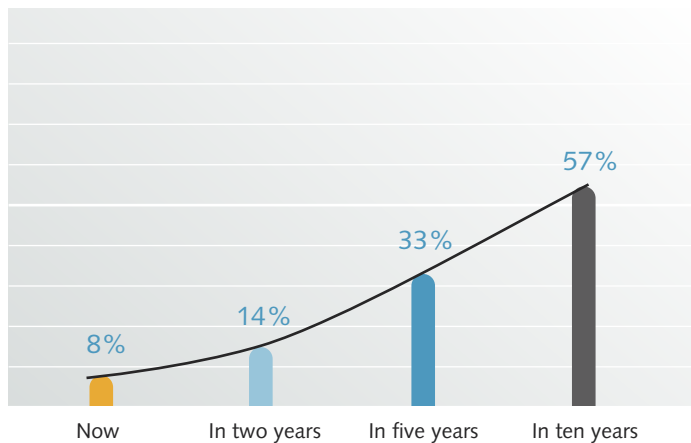
Bit	(b)	1 or 0
Byte	(B)	8 bits
Kilobyte	(KB)	1,000 bytes
Megabyte	(MB)	1,000 KB
Gigabyte	(GB)	1,000 MB
Terabyte	(TB)	1,000 GB
Petabyte	(PB)	1,000 TB
Exabyte	(EB)	1,000 PB
Zettabyte	(ZB)	1,000 EB

This presents us with a dilemma. We are acquiring ever-growing amounts of digital heritage, that is just as important and real as physical heritage such as archaeological remains, historic buildings, printed records and natural habitats. And yet, we are storing data in formats and on storage media that last a matter of years. In addition, there is mounting pressure from the market, regulators and auditors to secure and protect more content for the longer-term. According to the IDC, around one-third of content by volume needs high standards of protection to ensure it is secure. One-fifth is subject to compliance rules and standards. Regulation is expected to become more complex and there will be a growing requirement to preserve data for longer than 10 years. The proportion of such preservation-intensive content will rise from 22 per cent in 2008 to 38 per cent of the volume by 2012.

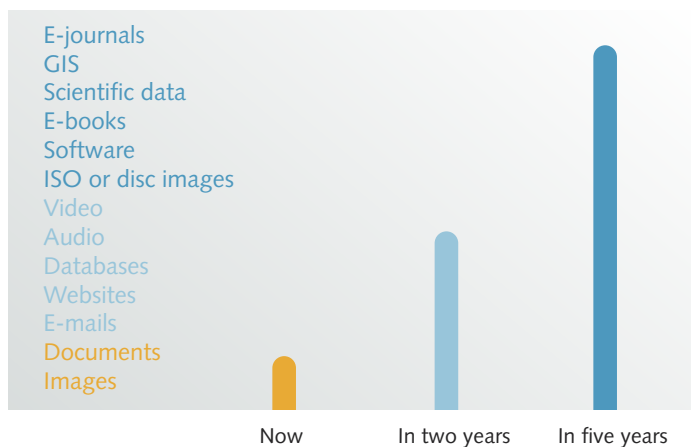


## The Irony of the Digital Information Age

### Planets Long-Term Management of Digital Information Survey, February 2009.



### Percentage of institutions holding over 500 Terabytes of content



Type of content preserved by over 70 per cent of institutions. Note that 70 per cent of libraries expect to hold e-journals in two years time.

It is ironic that the more information we produce and the more we can hold in a given space, the shorter the span of time over which we can keep hold of it. While we can squeeze 100 million characters into optical disc space the size of a postage stamp, we cannot expect to be able to retain it for longer than ten years. Digital media is vulnerable to loss by decay; technological change renders file formats out-of-date or inaccessible when the software needed to interpret them or the hardware on which the software runs becomes obsolete.

In the same way as action is taken to preserve physical collections against damage by light, temperature, humidity or the elements, digital content requires regular, ongoing and active preservation. Such preservation is concerned not only with ensuring that the bits are retained, but that the content continues to be as meaningful to users as it was when it was first created.

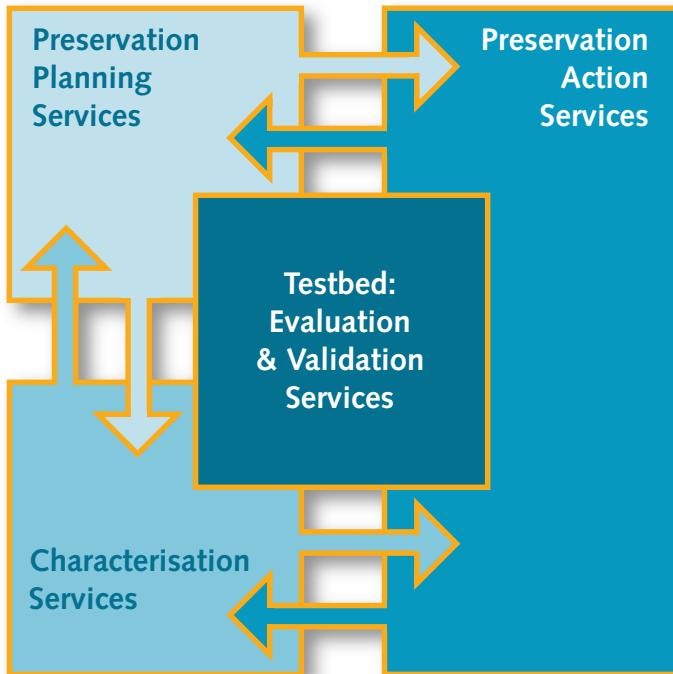
Information experts are aware of the problem. A survey carried out by Planets told us that in the next ten years they expect a fifty-fold rise in the volume of digital content they hold. Data is received from diverse systems that include: CDs and tape, document files, scanning programmes, the internet and electronic record-management systems. In future, these will include e-mail, e-books and journals, laboratory systems, geographical information systems and computer-aided design systems, and source code. These institutions already need to preserve data in over 100 different formats and this number will expand year-on-year.

Hardware evolves, software becomes obsolete and data carriers are prone to decay. The global society is at risk of losing large volumes of its digital heritage to these kinds of technical obsolescence. We are now facing a new archival challenge – manage more information and information that is lost more quickly – and we are in need of sustainable solutions.

«The volume of digital content organisations will hold will rise fifty-fold in the next decade.»

Planets Long-Term Management of Digital Information Survey, February 2009

## Responsible Stewardship



As a library, an archive, a government or research institution, a museum, a company or other content holder, you are entrusted to safeguard certain digital information over the long-term. Information generated now may be needed in the future to comply with the law, govern an enterprise, put together evidence, adhere to regulations, look back at company or individual records, revisit a technical specification or conduct research using large compilations of data. This means ensuring the safe deposit and continued accessibility of the digital material which you retain.

- Planets is developing a framework, methods, tools and services which empower you to construct, shape and execute a suitable preservation plan in accordance with your preservation needs
- The project is producing models that can help you understand the digital preservation needs of your organisation, the characteristics of your collection and decide what information you want to keep and in what format you want to store it. They also help you to understand the ways in which end-users work with these collections
- Planets allows you to build and compare preservation plans. It gives you access to Planets and third-party migration and emulation tools via a single application. It enables you to test these tools and services using real data in a secure environment, so you can make decisions based on scientific evidence
- Planets tools can compare objects before and after preservation actions have taken place to verify and document the outcome. Using Planets integrated services makes it easy to revise your preservation plans and actions as your policies and priorities change



«Data is the natural resource of the information age. Data is fragile and needs to be stewarded in the <cyberworld> in the same way we need to take care of rain forests and the environment in the physical world.»

**Francine Berman**, Rensselaer Polytechnic Institute, New York



Plato preservation planning tool

## Planning to preserve

Establishing a preservation policy is a vital step to the long-term management of digital information. Identifying an organisation's digital preservation needs and requirements makes it possible to define the activities it will engage in and the resources that will be assigned. According to a Planets survey, organisations with a policy are three times more likely to have allocated a budget for their preservation plans and three times as likely to have a strategy in place or to be about to embark on one.

Planets provides a suite of software tools that can help you define and develop a preservation policy and the actions suitable for your specific digital content and preservation needs.

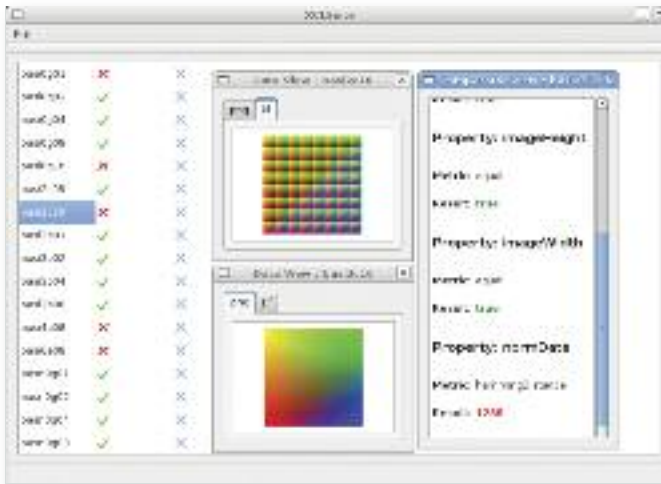
## The Planets preservation planning tool, Plato

### Plato will:

- Guide you through a systematic process to define and prioritise your organisation's preservation requirements
- Let you compare available preservation strategies and actions and identify what preservation strategies lead to the most suitable results for your organisation and digital content
- Help you generate and evaluate a preservation plan and define preservation actions
- Automatically compile a machine-interpretable digital preservation plan and workflow
- Validate the results of preservation actions and compare the properties of a treated object with those of the original, thus ascertaining to what extent the preservation action was successful and whether it has corrupted the content

«Governance, law, art, science and scholarship require concrete plans for the preservation of digital materials, so that today's actions, thoughts, achievements and creations will have a future and the future will have a memory.»





Comparator tool

## Understanding the collection

When treating content for long-term preservation, you must be sure that the information will not be corrupted during the process so you will be able to work with it in the future.

Planets helps you to assess and retain significant object features of your collections such as the colour and the depth of an image, the number of images within a text document and the font type of text or metadata included within a file. It allows you to compare digital objects before and after treatment, including after large-scale mass migration, and so verify that the treatment has been successful. The Planets characterisation service checks whether objects were altered or corrupted during the conversion process, and whether they are therefore accurate and authentic representations of the source file. For each treatment process, Planets documents the outcome and stores an XML report.

For characterisation, we have developed two new XML-languages; XCDL (eXtensible Characterisation Description Language) – to describe the properties of digital objects – and XCEL (eXtensible Characterisation Extraction Language) – to extract properties from objects. They allow the Planets tools to extract properties of different digital objects and compare them with one another. For example, you may want to migrate a .doc file containing footnotes to PDF/A. Some conversions will lose the relationship between the text and the footnote, others will not. By comparing these characteristics, you can confirm that this relationship was maintained during the conversion from the .doc to PDF/A format.

The characterisation service draws on the Planets Core Registry. This registry contains descriptions of file formats, preservation software products and information about their suitability to preserve particular content. The Core Registry extends the PRONOM Registry originally developed for The National Archives of the United Kingdom and will be compatible with UDFR, the Universal Data Format Registry. The descriptions in the Planets Core Registry are updated from the aggregated results of experiments carried out in the Testbed.



«Understanding the risks associated with particular digital assets is a key challenge for preservationists around the world. Planets automates the process of identifying the characteristics of digital materials we wish to preserve.»

Adrian Brown, The Parliamentary Archives, UK

## Preserving the content



GRATE emulation tool

The Planets Core Registry contains a suite of customised and wrapped third-party preservation action tools as well as technical descriptions of digital object types and the suitability of tools to preserve them. As a Planets user, you can identify, compare and deploy the most appropriate tool(s) or service(s) to preserve particular content. You can also combine tools to deal with a range of objects including groups of related objects (e.g. PDF with embedded video) and specify sequences of actions (e.g. convert MS DOS Word to Open Office XML to PDF).

You may also preserve digital objects for the long-term by emulating obsolete IT environments such as old x86 versions (8086/8088) on current systems. Using one of the emulation tools available through the registry, you may run software and access digital content created on legacy systems, such as MS Windows 95, 98 or 3.1 documents or computer games like Aztec running on a Commodore 64.

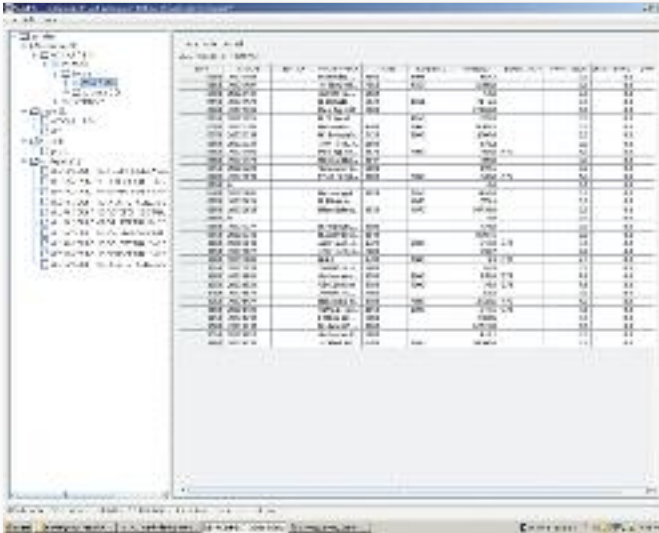
To access target environments from your local computer, the University of Freiburg has developed GRATE: Global Access to Emulation Services. It allows you to access complex emulation services remotely using a web browser, so you do not have to install elaborate software on your own systems.

Planets is already supporting dozens of input and output sources and formats for text, image, audio, video and web content. To learn more about this continually updated, growing list of supported formats, please see the enclosed product specification or visit [www.planets-project.eu](http://www.planets-project.eu)



«From a recent survey of 76 organisations, we have confirmed that Planets tools can help manage and preserve all of the most commonly-used file formats.»

Frank Houtman, The National Library of the Netherlands



SIARD suite



«In 10 years' time, 85 per cent of organisations will need to preserve databases. This is a challenge as relatively little research has been carried out on preserving databases and they are not simple things to preserve.»

Pauline Sinclair, Tessella Technology and Consulting

## An example: Archiving Relational Databases

Organisations frequently hold vital administrative information and scientific data in central databases, 90 per cent of which are relational. The proportion of institutions that expect to need to manage databases for the long-term will rise from half now to almost nine in ten by 2020, according to a Planets survey. Because up to 85 per cent of all stored data is inactive at any given time, maintaining today's databases is prohibitively expensive and difficult. Archiving databases could offer a much less costly way to ensure future access to database content. Until recently, this was virtually impossible due to a lack of standards.

This is why the Swiss Federal Archives has developed SIARD (Software Independent Archiving of Relational Databases), an open storage format for relational databases. They also provide a set of software tools, the SIARD Suite, for long-term storage and access to database content. SIARD and the SIARD Suite offer a unique archival solution to preserve database content, metadata and relations. SIARD has been accepted as the standard format for all deliveries from Swiss federal government and administration offices to the archives.

Using the SIARD Suite, database contents and the respective metadata are stored as a collection of XML files contained in an uncompressed zip archive. After conversion into .SIARD format, the metadata can be edited and enhanced. The whole set of converted data may then be uploaded into a new database, possibly to be integrated with other data. In this way, related data from a number of different sources could be consolidated into a single source.

### SIARD Suite:

- Platform independent, operates in a Java 1.5 (or higher) environment on Windows and Linux, PC and Mac
- Integrated in Planets Framework; click and install on your computer or use the Planets web application
- Conversion services include MS Access, MS SQL and Oracle to and from SIARD



Testbed experimentation environment

## Testing tools and plans

The Planets Testbed is a web-based application that provides its users with a controlled and easy-to-explore environment for scientific experimentation in digital preservation. It combines hardware, software and sample data to show which preservation approaches and tools will work effectively for different types of digital content. It will also help to benchmark these tools and services drawing on practical experiences of other users and best practices.

### The Planets Testbed provides:

- A methodology for systematic, reproducible experimentation by distributed actors
- Structured documentation of the experiments which is available for the long term
- Automated evaluation of the results
- Shared access to the experiments
- A robust and scalable platform

### Using the Planets Testbed will allow you to:

- Systematically analyse potential digital preservation actions such as migration and emulation, based on empirical evidence
- Experiment on various preservation tools and services within a controlled environment
- Test various combinations of preservation workflows such as migration of MS WORD to PDF or PDF/A
- Try out migration strategies using various tools on different types of digital objects such as text, image, audio and video
- Measure and compare the results, e.g. of a conversion process, against pre-defined requirements
- Perform systematic experiments against pre-defined requirements of a conversion process using structured sets of data
- Contribute to building a body of evidence to demonstrate the success of particular tools on particular object types and to inform future preservation planning
- Provide feedback from the preservation community to software developers



«When we take preservation action, we want to know the consequences. We need to know what risks are involved.»

**Barbara Sierman**, The National Library of the Netherlands



Interoperability framework

## Enhancing your archiving system

The Planets Framework unites tools and services from across the spectrum of digital preservation solutions into an easily-managed suite. Planets users may choose all or selected parts of the web-based, distributed service network. The Planets Framework is extensible, which means that developers or solutions providers may test their own tools and integrate them into Planets via a standard interface.

Planets users will be able to search for and select services from the Service Registry as well as share information about these services. Through workflow templates, simple services such as characterisation or migration can be combined into complex workflows, including some or all of the following steps: identification, validation, characterisation and migration.

The Planets software comes in distributable packages that can be downloaded from a website and deployed to an office PC, a server or a company-wide network. The software is simple to install and administer.

The Planets Framework allows for Planets tools and services to be integrated within common archiving and library systems. This is achieved by writing an adaptor to call on specific services contained within the Planets Framework from your own system's interface. Once an adaptor is incorporated within your system, you can run tools wrapped in Planets from any platform.

Planets provides its users with a stable environment to complete essential digital preservation planning, content characterisation and digital preservation action procedures. The software is flexible and adaptable and can enhance your existing archiving, library or document management system.

«The long-term presentation of our research is vital. I think the Planets process is what will be best for us.»

Lance Deveson, Australian Council for Educational Research (ACER)

«We are looking to develop our current preservation services further and it's tools we're looking for, so the tools coming out of Planets are the sort of things we'll be wanting to take advantage of.»

Grant Young, Cambridge University Library

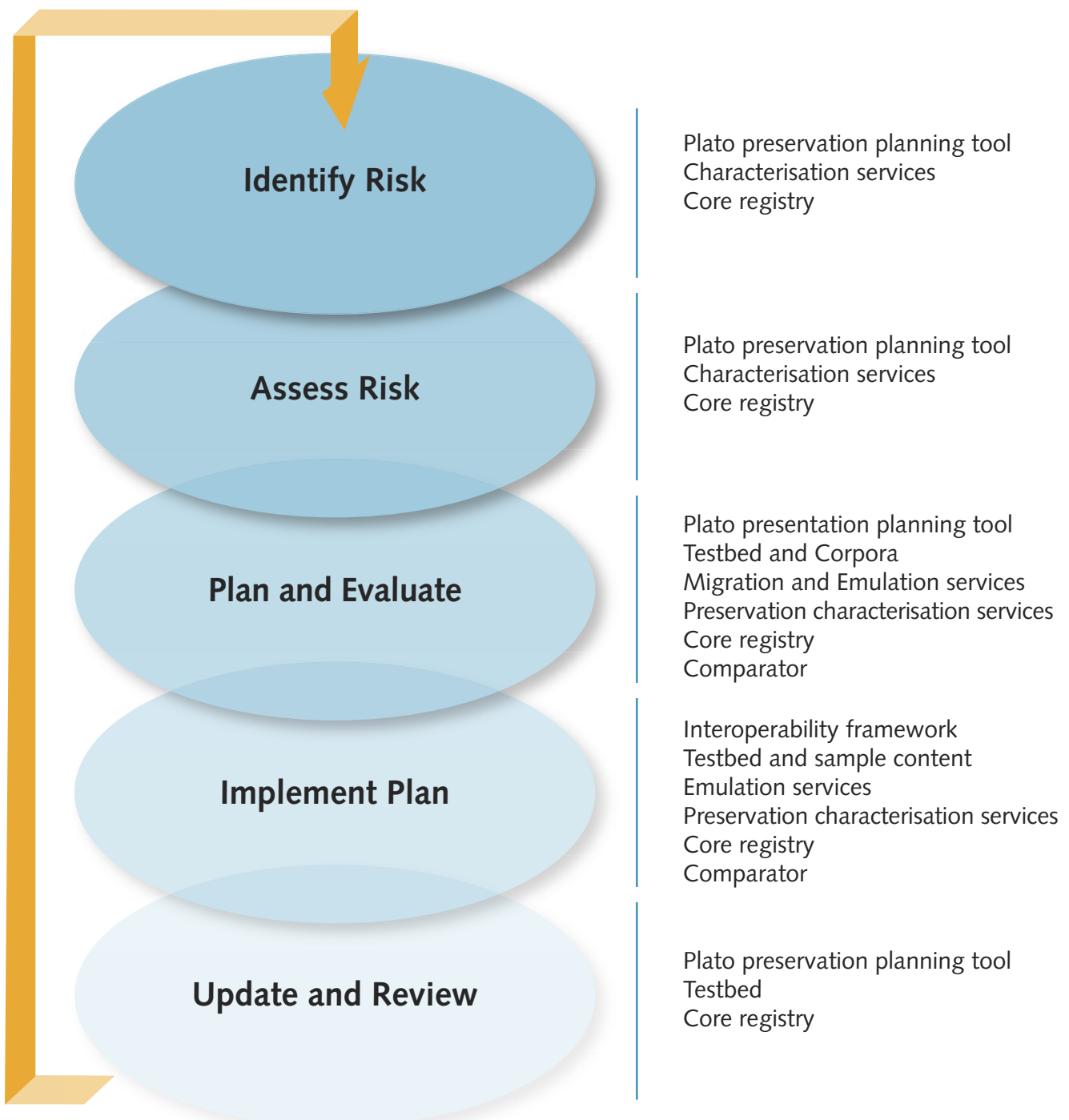
### The Planets Framework:

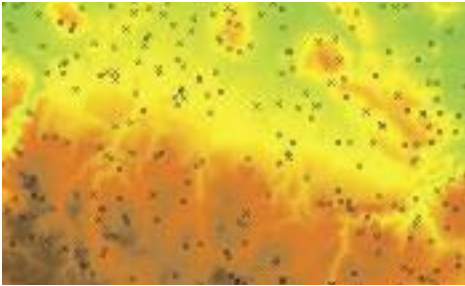
- Platform-independent architecture
- OAIS compliant
- Compatible with common library and archive systems
- Allows users to execute many preservation actions automatically, including complex multi-step migrations, e.g. MS Word to Open Office XML to PDF

## Reducing Risk

«Just as preserving books, journals, manuscripts, films, tape recordings and other material requires the application of time, effort and money, so does preserving their digital counterparts – e-books, e-journals, video and audio recordings, including music. This is not a one-off activity but an integral part of the business cycle, to manage risk within operational and financial planning.»

Andrew Herbert, Microsoft Research





Digital information matters and it is all at risk; documents, spreadsheets, images, sounds, video, e mail and more.

## Ensure the bits that matter are not lost!

### Using Planets technology means your organisation can:

- Exploit €15 million investment into unique research and technology development conducted by 16 leading European research and memory institutions
- Recognise and address threats to your valuable digital content
- Make informed and accountable preservation decisions based on the best available evidence
- Take advantage of tools and services for your preservation planning, characterisation, conversion, migration, emulation and database archiving activities
- Help to create the evidence base about preservation tools and their behaviour
- Benefit by sharing experience and exchanging know-how in a community of experts
- Take advantage of work by experts in the field and some of the most prestigious research and memory institutions in Europe



«For more than two decades the world has been amassing huge volumes of content online, with little thought as to how it will be used or accessed in future. Loss or deterioration of archived digital information has a real-world cost – to citizens and to digital society and the economy.»

Lynne Brindley, The British Library

## The British Library, London and Boston Spa (UK)



«Planets technology will help us preserve and use the digital output of the United Kingdom forever.»

Paul Wheatley, Digital Preservation Manager

The British Library manages 150 million analogue items and huge amounts of digital data. It participates in large-scale digitisation projects and is creating a web-archive for the UK. Its most pressing preservation challenges include the sheer scale of its digital collection, the variety of sources and formats and the non-uniformity of content (e.g. different html versions within the web-archive or DVDs distributed with magazines or books, containing software, multimedia content, text or audio files.)

Richard Boulderstone, Director, e-Strategy and Information Systems, affirms: "Planets will provide the technology component of our digital preservation solution." The British Library is in the process of integrating key components of Planets into its Digital Library system and has begun to use Planets in its digital preservation activities. Planets Preservation planning tool, Plato, was used to find a solution to preserve 80 terabytes of digitised newspapers in the TIFF format. They were migrated to JPEG2000 which resulted in the library reducing the storage costs, minimising the preservation risk and ensuring the quality of the content would be sufficient for future use cases. Planets provided the ability to finely balance these complex requirements while formally documenting the decision process in a TRAC compliant manner.

### The British Library

- Analogue material: 150 million items
- Digital material: 250 terabytes including digitised newspapers, books, manuscripts and sound, e-books, maps, video, multimedia software and web pages
- Digital Library System (DLS) developed in-house



## The National Archives of The Netherlands (Nationaal Archief), The Hague (NL)



«Planets will help us to plan, validate  
and undertake preservation actions.»

**Hans Hofman**, Senior Advisor Digital Longevity

The National Archives is responsible for managing the archives of the Netherlands and its overseas dominions of the past. It accommodates born-digital material like electronic records and digital camera pictures, scanned photographs and other digitised copies made from analogue originals e.g. maps.

Due to the nature of its content and its digitising efforts, The National Archives anticipates it will manage petabytes of data in the near future. It plans to implement the whole Planets suite of tools. It has already used Plato to compare three different strategies for regaining access to old emails and text files generated on legacy systems which are now obsolete.

### The National Archives of The Netherlands

- Analogue material: 100 kilometres of paper and parchment records; one million photographs; 300,000 maps
- Digital material: two terabytes
- Expected amount in 2011: 20 terabytes

## The National Library of The Netherlands (Koninklijke Bibliotheek), The Hague (NL)



«We look forward to discussing common problems with other memory institutions, swapping experiences and hopefully coming to mutually beneficial conclusions, for example, we would like to add some of the metadata we developed to the Planets technical registry.»

**Barbara Sierman**, Digital Preservation Manager

The National Library manages copies of almost all print publications produced by commercial publishers in the Netherlands as well as millions of e-journal articles. It holds contracts with leading publishers in the field of Science, Medicine and Technology, including Elsevier, Springer and BioMed Central, increasing its digital voluntary deposit collection by an estimated two million items per year. In addition, The National Library is involved in major digitisation and web-archiving activities. It expects to increase its digital collection by a factor of almost 26 (11 terabytes to 290 terabytes) within two years. Its greatest concerns include:

- Lack of storage capacity
- Voluminous and complex new types of content such as websites and multimedia objects
- Running the ingest system within the same environment as the library's large-scale access system

The National Library is planning to use Planets preservation planning, characterisation, migration and emulation tools as well as its format registry. It has strong expectations for the preservation community gathering around Planets.

### The National Library of the Netherlands

- Analogue material: six million objects
- Digital material: 11 terabytes
- Projected increase for next year: 50,000 books; 90,000 print issues of periodicals; two million new digital items
- System used since 2003: e-Depot, based on IBM™ DIAS

# KB

Koninklijke Bibliotheek

## The Swiss Federal Archives (Schweizerisches Bundesarchiv), Bern (CH)



The Swiss Federal Archives is legally responsible for preserving documents – paper records, photos, audio and film recordings – of the Swiss government, the parliament and the federal administration. Its digital material amounts to roughly 13 terabytes, increasing by an estimated one terabyte in 2010. From 2012 on, all federal administrative institutions will be asked to deliver master records to the archives in digital form only. Consequently, the Swiss Federal Archives anticipates very large digital data deliveries, including databases, in the next two decades.

The Swiss Federal Archives established SIARD as a mandatory file format for database deliveries in 2007 and will integrate the SIARD Suite tools for database conversion in the Planets Framework. It has been testing Planets tools for preservation planning, characterisation and migration on databases, videos and text data such as files and emails.

### The Swiss Federal Archives

- Analogue material: 50 kilometres of paper records, audio and video tapes
- Digital material: 13 terabytes
- Projected increase for next year: one terabyte
- Digital-only delivery from all federal institutions starting in 2012
- System used: Digital Information Repository (DIR) developed in cooperation with Tessella Technology & Consulting, based on Tessella's Safety Deposit Box (SDB)



«Being able to evaluate and compare different preservation tools and conduct tests on large data collections is an extremely useful instrument for long-term preservation planning, Planets will help us to prepare for our digital future.»

Krystyna Ohnesorge, Head of Innovation and Preservation



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra

Swiss Confederation

## The Austrian National Library (Österreichische Nationalbibliothek), Vienna (AT)



Image courtesy of the Austrian National Library

«Planets will add the preservation planning component to our long-term preservation system.»

Max Kaiser, Head of Research and Development

Within the last five years, the Austrian National Library has digitised large amounts of analogue material including newspapers, books, pictures and papyri as well as audio recordings and holdings from its special collections such as incunabula, posters and flyers. It also collects online publications and harvests the Austrian internet based on a new deposit law.

The Austrian National Library plans to update its commercial repository system in 2010 and to integrate the Planets preservation services into this system. Planets will be used during pre-ingest to characterise digital objects, to create preservation plans, to carry out actions to transform objects into accessible formats and to verify that those actions have been successful. The Austrian National Library is planning to use the Planets Testbed to decide on appropriate file formats for image preservation, taking into account measurable properties such as rendering efficiency, robustness and error resilience.

Furthermore, the Austrian National Library expects to gain from Planets

- The ability to identify threats to its collections
- Insights that improve decision-making with regards to archiving strategies
- A platform to assess archiving tools and services and a starting point to implement viable solutions

### The Austrian National Library

- Analogue material: eight million items (as of December 2008)
- Digital material: 25 million files (500 gigabytes) of archived web sites; six million digitised items (books, newspapers, journals, incunabula, papyri, pictures etc.); 1400 hours of digitised sound recordings
- Repository system used: Ex Libris™ Digitool 3.0

## The Royal Library of Denmark (Det Kongelige Bibliotek), Copenhagen (DK)



«Taking part in international projects like Planets and implementing the results is one of the ways in which we try to be at the cutting edge of digital preservation research and development.»

**Birgit Nordmark Henriksen**, Head of Digital Preservation

The Royal Library has the legal obligation to preserve Denmark's cultural heritage for future use. It will start mass-digitisation projects in 2010, which will increase the volume of its digital archive by 200 terabytes. Two of its major preservation challenges are the vast variety of digital formats its content comes in and the different types of data carriers it is stored on. Last year, for instance, the Royal Library merged with another institution, thereby acquiring large amounts of data in formats it had never managed before. It is now going to use Planets to characterise and validate these data to provide an overview of the collection and plan its future in the systems of the Royal Library.

The Royal Library is also cooperating with the State and University Library at Aarhus to gather and preserve the Danish part of the internet. This "Netarchive.dk" currently holds 100 terabytes of web content and is expected to grow by 80-100 terabytes annually over the next few years.

### The Royal Library of Denmark

- Analogue items: 30 million items
- Digital material: 20 terabytes
- Mass digitising projects leading to increase of 200 terabytes



## The State and University Library, Aarhus (DK)



Image by Thomas Søndergaard

The State and University Library serves as the University Library for the University of Aarhus as well as a national legal deposit library. It houses the national media and newspaper collections and is running or planning massive digitisation projects including carriers such as DAT tapes, reel tapes, cassettes, wax cylinders and VHS tapes as well as 12 million pages of newspapers.

The State and University Library is responsible for the preservation of all Danish radio and television programs and has been recording and digitising broadcasts from both analogue and cable, satellite and the internet since 2005. It plans to use a wide range of Planets tools and services. It has integrated the Planets Framework into its Fedora-based repository system and is planning to run experiments using this prototype on live data. Given the huge amount of audiovisual material in its repository, the State and University Library is especially interested in testing and applying tools wrapped in Planets such as SoX and MEncoder.

### The State and University Library

- Analogue material: 180,000 physical units of audio and video material
- Digital material: 400,000 hours of audio and video material; two million pages of digitised paper material
- Digital archive of 500 terabytes
- Expected increase in 2010: 140 terabytes
- Digital Object Management System based on Fedora Commons

«We would never be able to solve a global problem like digital preservation on our own. This is why cooperations like Planets are extremely useful.»

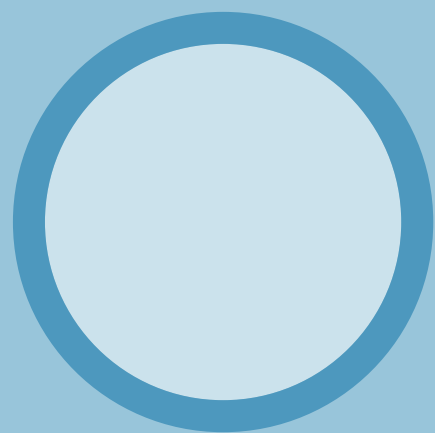
**Bjarne Andersen**, Head of Digital Resources



Planets staff



If you have any questions or would like to find out more about the Planets tools and services, please contact us at [info@planets-project.eu](mailto:info@planets-project.eu) or visit our website: [www.planets-project.eu](http://www.planets-project.eu)



Planets is a four-year project, co-funded by the European Commission under the Information Society Technologies (IST) priority of the 6th framework Programme (IST-033789). The Project began on 1 June 2006. It has a total budget of €15 million.

**Further information:**

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