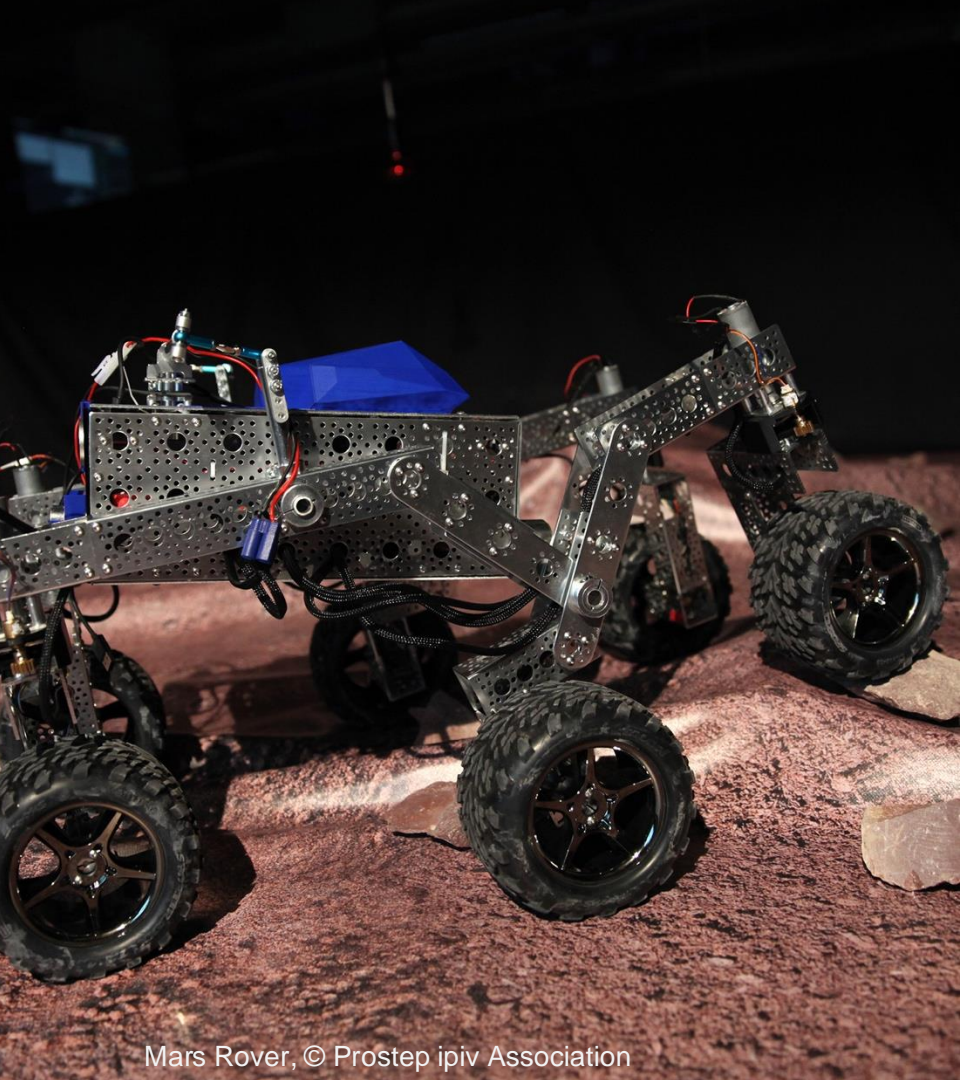




The New Content Information Type Specification for 3D Product Model Data

Stephen Mackey, eArchiving Initiative

eArchiving Initiative Training Webinar



Mars Rover, © Prostep ipiv Association

Agenda

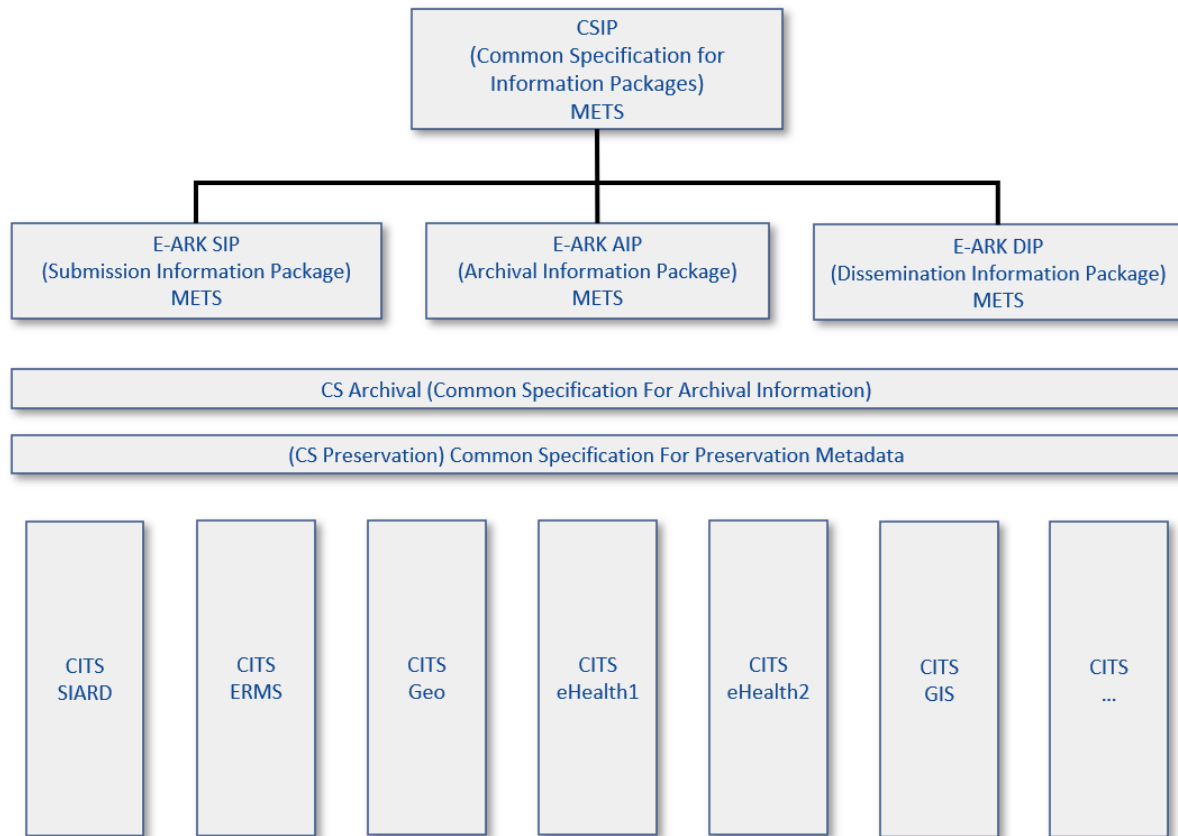
- Introduction to the eArchiving specifications
- CITS for 3D Product Model Data (3DPM)
- 3DPM Specification Requirements
- Next Steps
- Q&A



[This Photo](#) by Unknown Author is licensed under [CC BY-SA-NC](#)

The eArchiving Specifications

Specifications

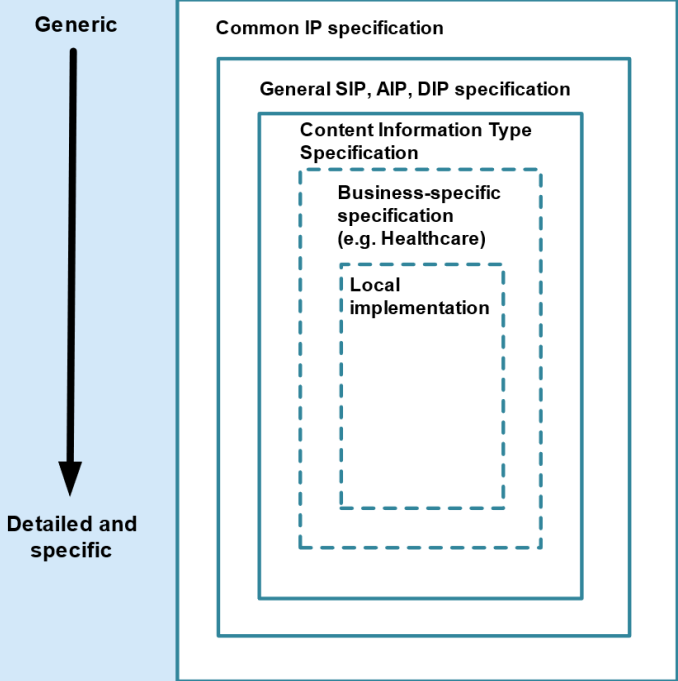


**CITS –
Content
Information
Type
Specifications**

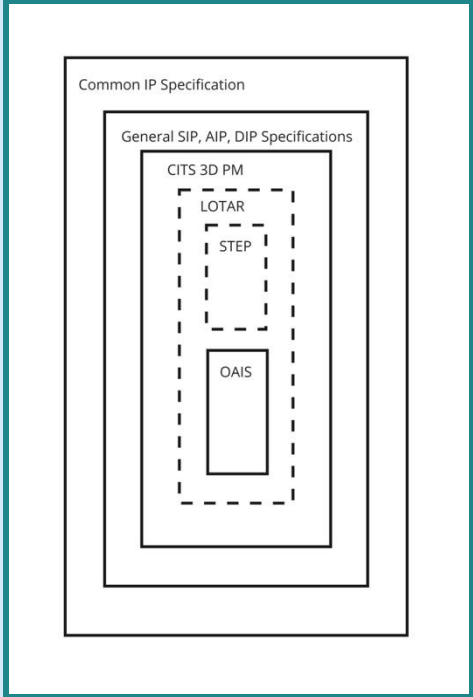
**e.g.
CITS
3DPM**

Layered Model

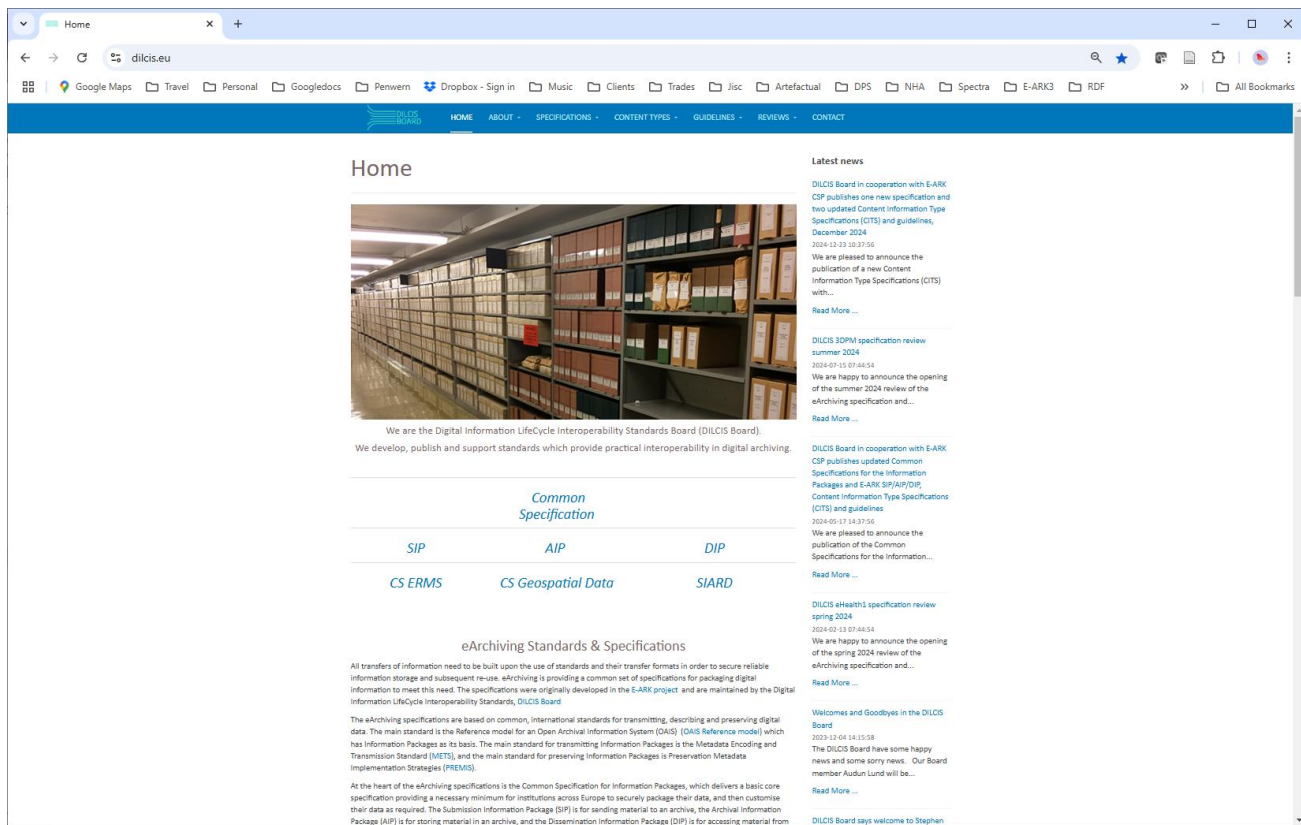
CSIP



3DPM




The DILCIS Board



The screenshot shows the DILCIS Board website in a browser window. The address bar shows 'dilcis.eu'. The navigation menu includes: HOME, ABOUT, SPECIFICATIONS, CONTENT TYPES, GUIDELINES, REVIEWS, CONTACT.

Home



We are the Digital Information LifeCycle Interoperability Standards Board (DILCIS Board).
We develop, publish and support standards which provide practical interoperability in digital archiving.

Common Specification

SIP	AIP	DIP
CS ERMS	CS Geospatial Data	SIARD

eArchiving Standards & Specifications

All transfers of information need to be built upon the use of standards and their transfer formats in order to secure reliable information storage and subsequent re-use. eArchiving is providing a common set of specifications for packaging digital information to meet this need. The specifications were originally developed in the E-ARK project and are maintained by the Digital Information LifeCycle Interoperability Standards, DILCIS Board.

The eArchiving specifications are based on common, international standards for transmitting, describing and preserving digital data. The main standard is the Reference model for an Open Archival Information System (OAIS) (OAIS Reference model) which has Information Packages as its basis. The main standard for transmitting Information Packages is the Metadata Encoding and Transmission Standard (METS), and the main standard for preserving Information Packages is Preservation Metadata Implementation Strategies (PREMIS).

At the heart of the eArchiving specifications is the Common Specification for Information Packages, which delivers a basic core specification providing a necessary minimum for institutions across Europe to securely package their data, and then customise their data as required. The Submission Information Package (SIP) is for sending material to an archive, the Archival Information Package (AIP) is for storing material in an archive, and the Dissemination Information Package (DIP) is for accessing material from

Latest news

DILCIS Board in cooperation with E-ARK CSP publishes one new specification and two updated Content Information Type Specifications (CITS) and guidelines, December 2024
2024-12-23 10:37:56
We are pleased to announce the publication of a new Content Information Type Specifications (CITS) with...
[Read More ...](#)

DILCIS 3DPM specification review summer 2024
2024-07-15 07:44:54
We are happy to announce the opening of the summer 2024 review of the eArchiving specification and...
[Read More ...](#)

DILCIS Board in cooperation with E-ARK CSP publishes updated Common Specifications for the Information Packages and E-ARK SIP/AIP/DIP, Content Information Type Specifications (CITS) and guidelines
2024-09-17 14:37:56
We are pleased to announce the publication of the Common Specifications for the Information...
[Read More ...](#)

DILCIS eHealth1 specification review spring 2024
2024-02-13 07:44:54
We are happy to announce the opening of the spring 2024 review of the eArchiving specification and...
[Read More ...](#)

Welcomes and Goodbyes in the DILCIS Board
2023-12-04 14:15:58
The DILCIS Board have some happy news and some sorry news. Our Board member Audun Lund will be...
[Read More ...](#)

DILCIS Board says welcome to Stephan

DILCIS Board GitHub

The screenshot shows the GitHub profile page for the DILCIS Board. The page header includes the GitHub logo, navigation menus (Product, Solutions, Resources, Open Source, Enterprise, Pricing), a search bar, and 'Sign in' and 'Sign up' buttons. The main content area features the DILCIS Board logo and name, a description: 'We develop, publish and support standards which provide practical interoperability in digital archiving', and statistics: 23 followers, Europe location, website (http://www.dilcic.eu), and email (info@dilcic.eu). Below this are tabs for Overview, Repositories (22), Projects (2), Packages, and People (1). The 'Pinned' section displays six repository cards: E-ARK-CSIP (Public), E-ARK-AIP (Public), E-ARK-DIP (Public), E-ARK-SIP (Public), GroupDocumentation (Public), and E-ARK-Guidelines (Public). The 'Repositories' section shows a search for '3d' with filters for Type, Language, and Sort, resulting in 2 repositories. The first result is CITS-3DPM (Public), described as 'Content Information Type Specification for 3D Product Model (CITS 3D PM)'. The right sidebar shows 'People' (one user), 'Top languages' (Shell, Java, Python, TeX), and 'Most used topics' (specification, standard, archiving, archives, oais).

CSIP: purpose

- Achieve a common understanding of the requirements which need to be met to achieve interoperability of Information Packages.
- Create a common base for the development of more specific Information Package definitions and tools (e.g. CITS, validators).
- Propose an XML-based implementation of the requirements using where possible, standards which are widely used in international digital preservation.
- Achieve a level of interoperability between all Information Packages so that tools implementing the Common Specification can be adopted by institutions without the need for further modifications or adaptations.

CSIP: standards



SIARD



Extensible Markup Language (XML)

The number of standards used increases with each additional CITS



CSIP: principles

3.1 General principles

3.1.1 Principle 1.1

*It **MUST** be possible to include any data or metadata in an Information Package regardless of its type or format.*

This is one of the most crucial principles of the CSIP. To be truly “common”, technical implementations of the CSIP **MUST NOT** introduce limitations or restrictions which are only applicable to certain data or metadata types. If an Information Package implementation fails to meet this principle, it is not possible to use it across different sectors and tools, thereby limiting practical interoperability.

Requirements: e.g. METS

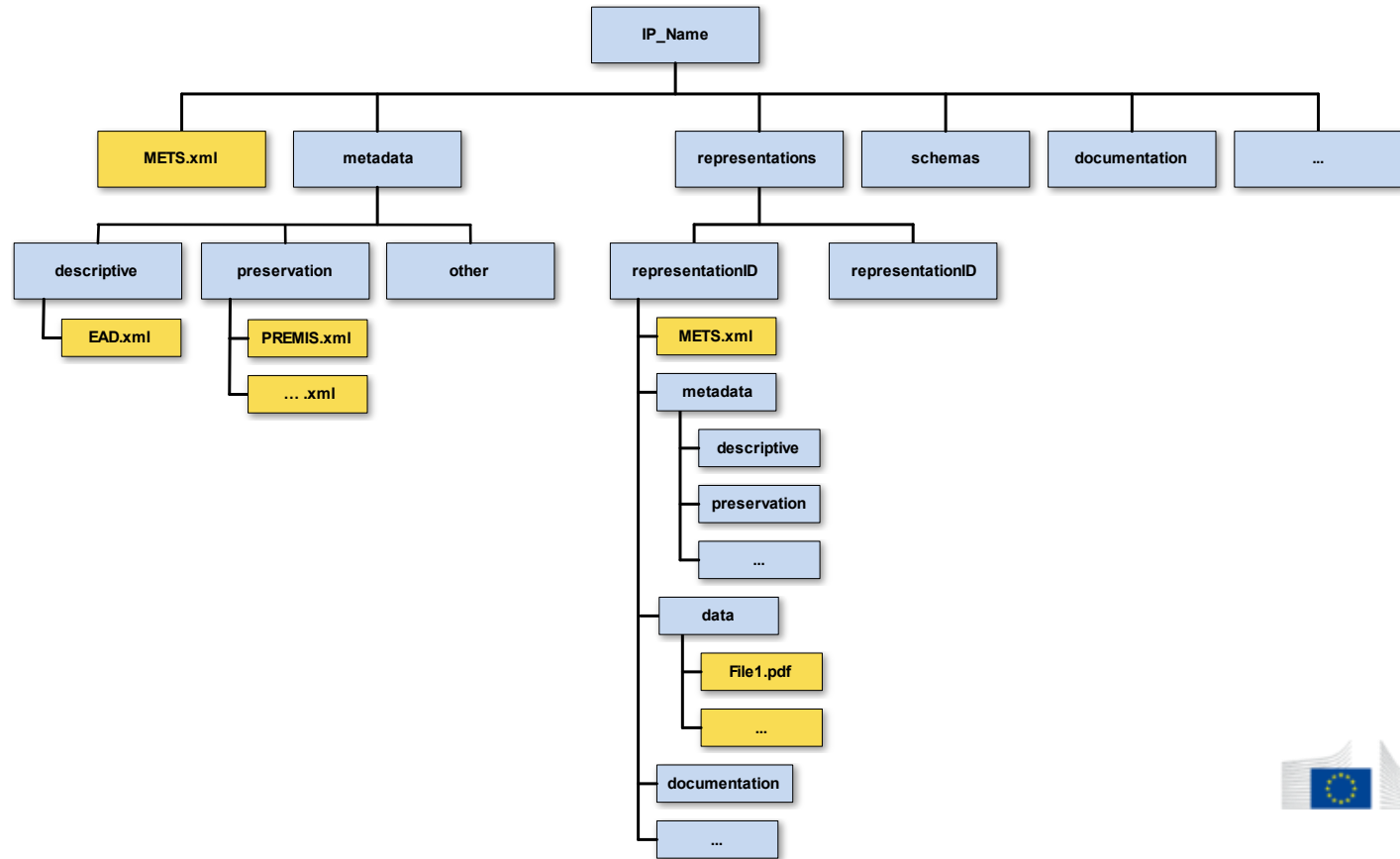
5.3 Use of METS

The main requirement for METS files in a CSIP Information Package is that these need to follow the official METS Schema version 1.12 <http://www.loc.gov/standards/mets/mets-schemadocs.html> (by CSIP used version in May 2019) and the extension schema developed for the CSIP and published by the DILCIS Board. As new versions of METS Schema become available the DILCIS Board will evaluate these and, if necessary, update the CSIP respectively.

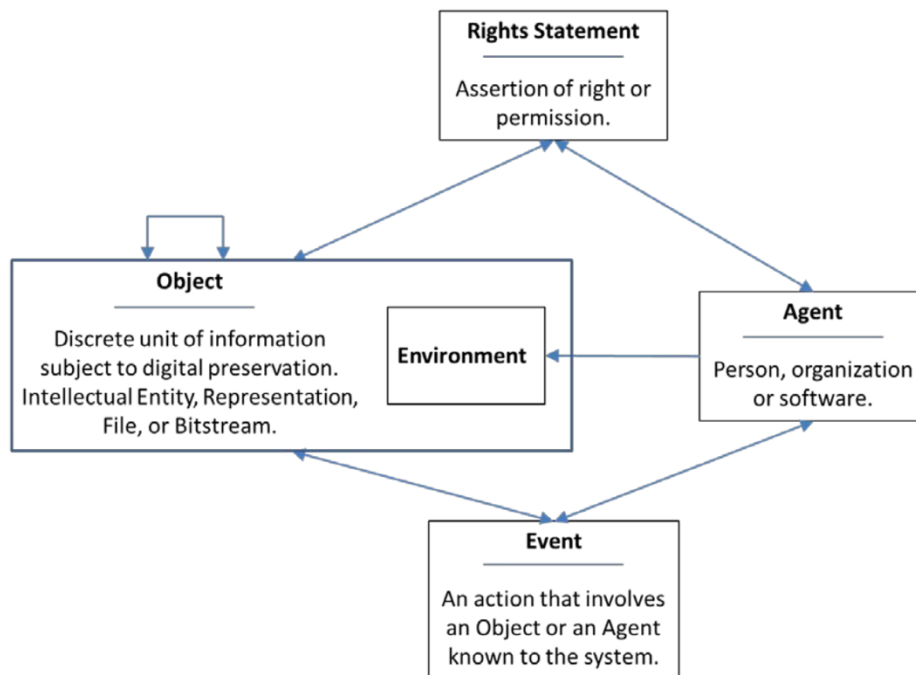
```
<mets:metsHdr CREATEDATE="2018-04-24T14:37:49.602+01:00" LASTMODDATE="2018-04-24T14:37:49.602+01:00" RECORDSTATUS="NEW" csip:OAISPACKAGETYPE="SIP">
  <mets:agent ROLE="CREATOR" TYPE="OTHER" OTHERTYPE="SOFTWARE">
    <mets:name>
      RODA-in
    </mets:name>
    <mets:note csip:NOTETYPE="SOFTWARE VERSION">
      2.1.0-beta.7
    </mets:note>
  </mets:agent>
</mets:metsHdr>
```

The **Metadata Encoding and Transmission Standard (METS)** is a [metadata standard](#) for encoding descriptive, administrative, and structural metadata

Requirements: package structure

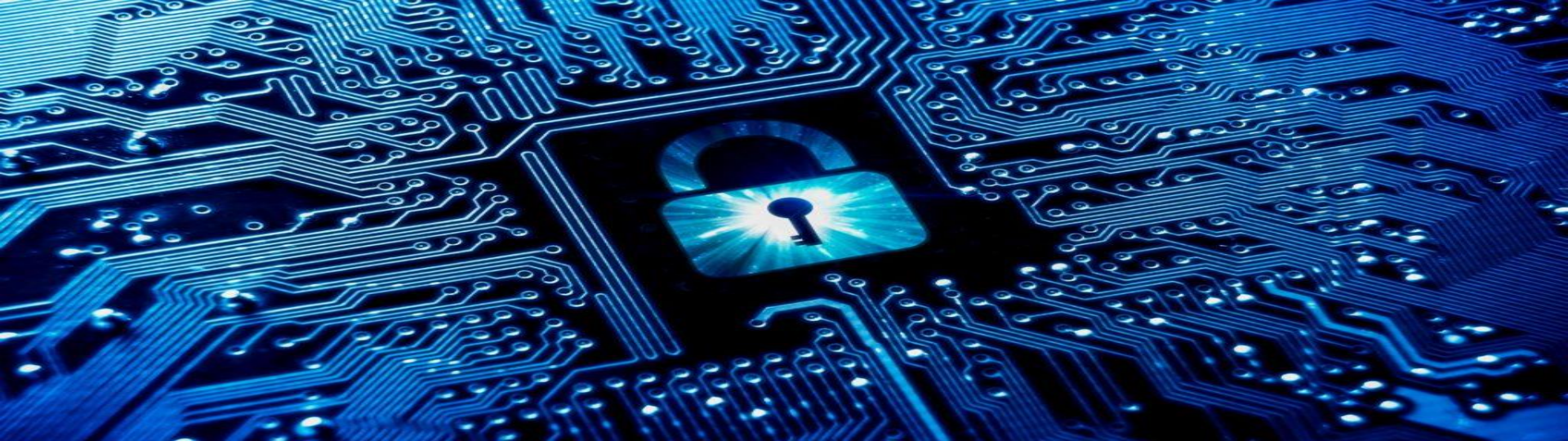


Recommendations: e.g. PREMIS



The use of **PREMIS** is recommended for recording preservation, technical and rights metadata according to the **PREMIS** Data Dictionary.

Figure 1: The PREMIS Data Model



[This Photo](#) by Unknown Author is licensed under [CC BY-SA-NC](#)

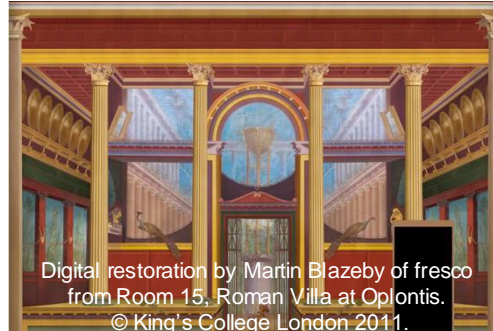
CITS 3D Product Model (3DPM)

3DPM – part of a family of 3D specifications



3D Product Model

Published



3D Cultural Heritage

In development



3D Building Information Model

Planned

3D PM CITS content

- Purpose
- Scope
- Principles
- Use cases
- Implementation (requirements and recommendations)
 - Package structure, extensions
 - Authentication
 - Digital signatures
 - Preservation metadata
 - Rights metadata
 - Use of METS
 - Use of PREMIS



Purpose “

The specification is designed to be used for the transfer of 3D Product Data to archives as well as for records exchange between different 3D Product Information Model systems



Scope

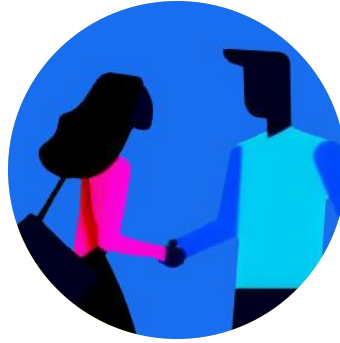
- 3D Product Data:
 - Computer Aided Design (CAD)
 - Product Model Data (PDM)
- Builds on LOTAR – “Long Term Archiving of digital technical product information”, EN/NAS 9300
 - Conformance is not mandatory
- LOTAR is built on ISO 10303 (STEP, Standard for Exchange of Product model data)



Use cases



Submission from engineering department to an organisational archive



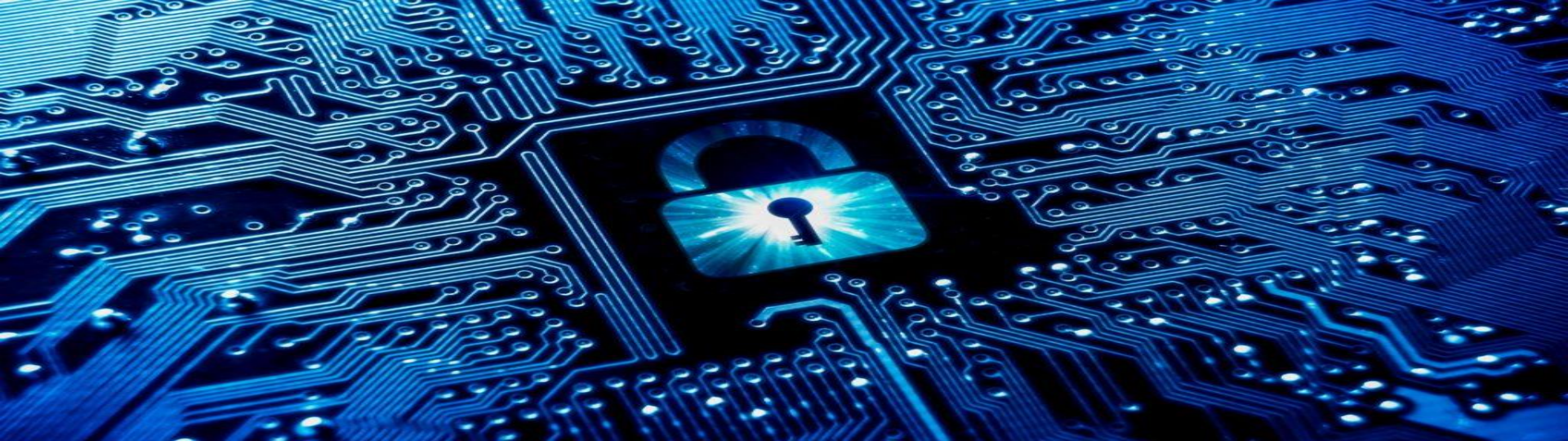
Consolidation of archives intra-organisationally or with sources through acquisition or merger



Dissemination of archival data preserving integrity and authenticity of the package and data object

Principles

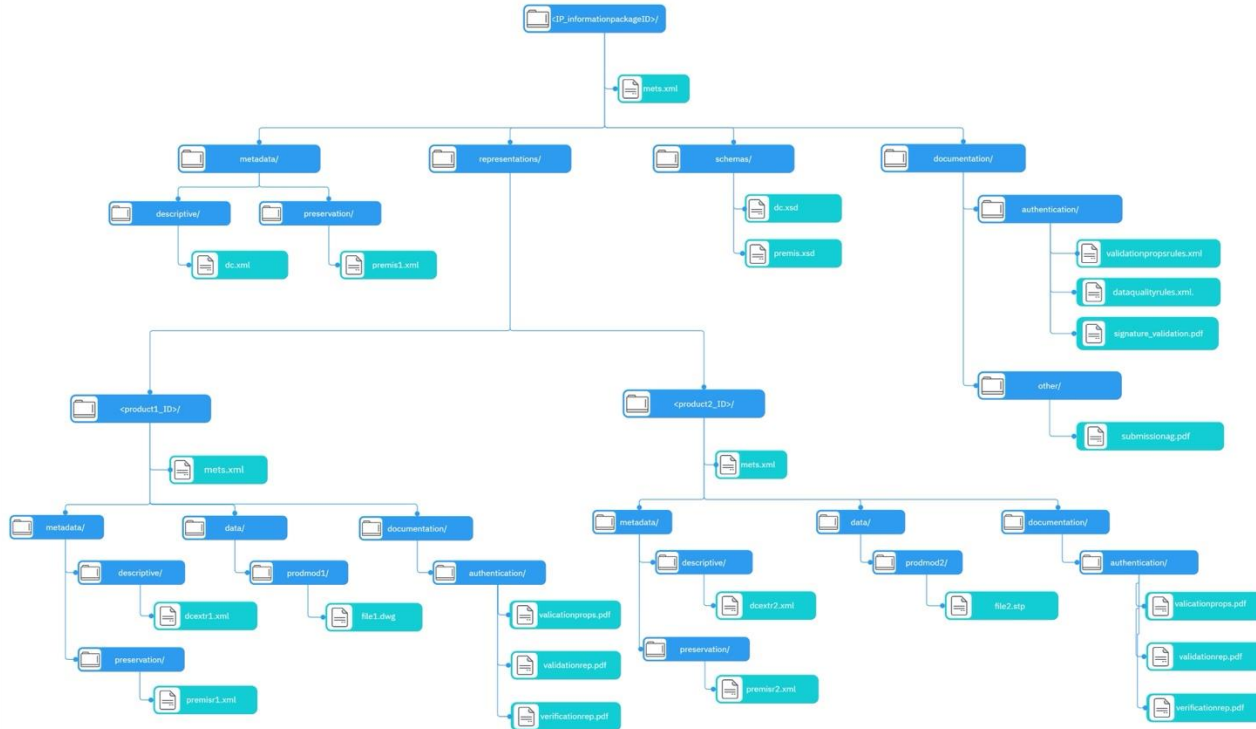
- LOTAR conformance
 - requirements of CITS 3D PM do not conflict with those in LOTAR
 - requirements for package and package (representation) metadata in LOTAR become (non-mandatory) requirements in CITS 3DPM
 - scope of CSIP is not altered by requirements in LOTAR (e.g. process, management)
- Use of PREMIS
 - PREMIS should be used to record technical metadata required by LOTAR, including:
 - Digital signature events
 - Verification events and results
 - Validation events and results



[This Photo](#) by Unknown Author is licensed under [CC BY-SA-NC](#)

3DPM Requirements

Package structure



Core model



LOTAR: “The core model identifies the essential minimum of data which is required to preserve the design intent for a given purpose. The domain specific parts of LOTAR identify a purpose or set of purposes through appropriate use cases, and therefore the core model which is required to support the business cases. The core model is defined as a system of data elements together with their representation information, interpretation information and data quality criteria they must meet.”

LOTAR Domain Parts typically reference ISO 10303 (STEP) application protocols

Authentication

- LOTAR requires:
 - Validation information – consistency of data content between representations (is it a true reflection?)
 - Verification information – quality of data within tolerances (is it good enough?)
 - Digital (engineering) signatures on transfer to archive to verify authenticity
- Represented in 3DPM by:
 - PREMIS events
 - Validation properties rules data
 - Validation properties
 - Data quality rules
 - Verification results reports

On github

- Specification
- Guideline
- METS profiles
 - Root
 - Representation
- Example
 - MARS Rover

The screenshot shows the GitHub repository page for 'CITS-3DPM'. The repository is owned by 'Lufkin' and has 2 branches and 1 file. The repository description is 'Content Information Type Specification for 3D Product Model (CITS 3D PM)'. The repository contains several files and folders, including 'examples', 'guidelines', 'profiles', 'schemas', 'site', 'spec-publisher@github', 'specification', 'LICENSE', 'PUBLICATION.md', 'README.md', 'create-guidelines.py', 'create.py', 'create.py', 'metadata.py', 'spec-templating', and 'specification.py'. The repository is licensed under 'CC-BY-NC-SA'. The repository is also featured in the 'Languages' section, which shows 'HTML' as the primary language.

CITS-3DPM

Content Information Type Specification for 3D Product Model (CITS 3D PM)

The CITS 3D PM is a Content Information Type Specification (CITS) for 3D Product Models as used in the engineering and aerospace industries. The specification is designed to be used for the transfer of data as well as for exchange between different 3D Product Model systems. The specification is supported by METS profiles for the Root and Representation METS files, an accompanying Guidelines document and package examples. The 3D Product Model content specification lends its scope to the area of 3D digital product data such as computer aided design (CAD) or product data model (PDM) data where there is a current commercial demand for the long-term archiving of the state of data in the CITS® "long-term archiving and transfer of digital technical product information" which is [highlighted in a report by the European Commission \(2005\) on preservation of scientific and technical data](#).

The "Open reference model for Archiving Information System" (ORAS) does not extend into areas detailed in the I-448 common specification for information packages (CIP-448) reference and builds on I2-7032: the Standard for the Exchange of Product model data (STEP) and so with this I-448 3D PM CITS we have the opportunity to add to an existing layered standards model.

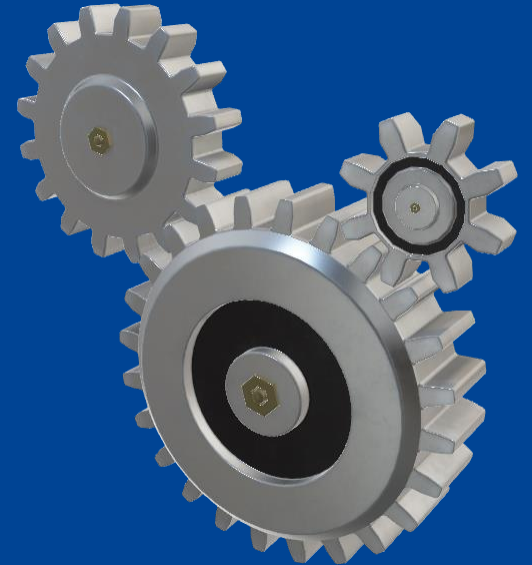


[This Photo](#) by Unknown Author is licensed under [CC BY-SA-NC](#)

Next Steps

Next Steps

- User feedback via GitHub issues
- Ongoing maintenance (next revision is v1.0.1)
- LOTAR
 - New revisions of core parts have more specific requirement statements
 - New core part (021) to be developed for metadata requirements
- Define metadata requirements for describing product structures
 - AIP specification
 - Ontologies (e.g. Records in Contexts, RiC)
- Further examples





Thank you for listening!

Contact



<https://e-ark4all.eu/>



support@e-ark-foundation.eu



[@EU_eArchiving](https://twitter.com/EU_eArchiving)



<https://www.linkedin.com/groups/8343650/>



<https://www.youtube.com/@e-ark>