

AIP Batch Export (CPP-006)

CPP-Identifier	CPP-006
CPP-Label	AIP Batch Export
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1. Description of the CPP

As part of an exit strategy, the TDA batch exports *Information packages* and all associated *Metadata* in a manageable format/structure for *Ingest* into another TDA.

Inputs and outputs

Input(s)	
Data	<i>AIP(s)</i>
	<i>File(s)</i>
Metadata	<i>Storage Metadata Information</i> (Identifier of AIP to be exported, including identifier to AIP versions)
	Target location for export
Documentation / guidance	Contractual Documentation for batch export (for service providers, if applicable)
	<i>AIP</i> Specification
	Exit Scenario Plan
	Documentation of Export <i>AIP</i> (supported target structure and format)
Output(s)	
Data	External copies of one or several complete <i>AIPs</i>
Metadata	Only <i>Metadata</i> contained in <i>AIPs</i>

Definition and scope

While the TDA manages *Information packages* across their life cycle, stores them as *AIPs*, and delivers them as *DIPs* to its consumer, it also needs to plan for situations in which an export of *AIPs* becomes necessary.

Scenarios that require an AIP Batch Export include, but are not limited to:

- *Exit Scenario*: The TDA changes a major part of its system infrastructure, such as the digital preservation workflow software or the database.
- *Succession Planning*: The TDA ceases to exist and needs to hand over its archival holdings to a successor.
- *Additional External Storage*: The TDA wants to store additional offline copies of their *AIPs*. The *AIP* export will create a physical *AIP* as opposed to a logical one. This

includes e.g. *Metadata* which might be kept in a database to be written into an XML or json *File*.

- *Disposal*: If the TDA decides to dispose data (e.g. as part of Re-Appraisal) the data might be handed over to an external entity such as a different TDA that wants to preserve it. The *AIP* likely contains a level of information richness (e.g. in form of versions and full audit trails) that the *DIP* format of the TDA does not offer.
- *External Request for Export*: An external entity (e.g. a customer for a digital preservation service) might request the data preserved by the TDA for use cases such as verification of provenance information.

This CPP may export 1-n *AIPs* including all *AIP* versions from the TDA to a storage location external to the archival storage. The target location can be located externally (e.g. an external SFTP server) or internally (e.g. to a different network share). The process makes no assumption as to the type of storage exported to (e.g. disk, tape).

The exported *AIP* should include all available information where possible (i.e. contain all *Files* and all accompanying *Metadata*). In addition to *Descriptive*, *Structural*, *Administrative* and *Technical Metadata*, this includes any *Provenance metadata* which might exist and describes any events undertaken on the *Object* during its lifespan within the TDA.

The format and structure of the exported *AIP* should be documented including an explanation of all internal identifiers or schemas that might be used within. This documentation needs to be provided as a sidecar *File* with the *AIP Batch Export*.

Process description

Trigger event(s)

Trigger event	CPP-identifier
<i>AIP</i> is requested from external entity (e.g. customer for digital preservation service)	/
Succession plans are applied to transfer custody of <i>Objects</i> to another TDA	/
The TDA extends bit-level preservation capabilities and creates new (internal or outsourced) copies of <i>AIPs</i> (e.g. to implement geographically distributed storage or to copy <i>AIPs</i> to an offline storage system)	/
The TDA changes its system and all <i>Information packages</i> need to be exported (i.e. Exit scenario)	/
The TDA has flagged data for disposal and the <i>AIPs</i> are to be handed over to an external entity	/

Step-by-step description

No	Supplier	Input	Steps	Output	Customer
1			Receive list of <i>AIPs</i> to be exported		
2		Target structure and format of exported <i>AIP</i>	Optional (if multiple target structures and formats are supported):		

			Set export to transform exported <i>AIP</i> to desired structure and format		
3		List of <i>AIPs</i> to be exported	Select <i>AIPs</i> to be exported in TDA (e.g. by creating a set based on <i>AIP</i> identifiers and <i>AIP</i> version identifiers, if applicable)	Inventory of <i>AIPs</i>	
				Inventory of <i>AIP</i> versions	
				Location of information belonging to <i>AIPs</i> and <i>AIP</i> versions	
4		Inventory of <i>AIPs</i>	Optional (depending on handling method for updates in TDA) for each <i>AIP</i> : Lock <i>AIP</i> to avoid it being updated during export	Locked location of source <i>AIP</i>	
		Inventory of <i>AIP</i> versions			
5		Inventory of <i>AIPs</i>	For each <i>AIP</i> in inventory list:		
		Inventory of <i>AIP</i> versions	Create logical structure for <i>AIP</i>		
		<i>Storage Metadata Information</i>			
6			For each <i>AIP</i> in inventory list: Write logical structure to target location	Logical structure tree of exported <i>AIPs</i>	
7			For each <i>AIP</i> in inventory list:	<i>Files</i> in logical structure tree of exported <i>AIPs</i>	

			Copy <i>Files</i> to target location		
8		Database query for <i>AIP</i>	For each <i>AIP</i> in inventory list: If (additional) <i>Metadata</i> is stored in other place than <i>AIP</i> (e.g., database): collect all other information belonging to <i>AIP</i> (<i>Metadata</i>)	All information belonging to <i>AIP</i>	
9		Result of Database query for <i>AIP</i>	For each <i>AIP</i> in inventory list: If (additional) <i>Metadata</i> is stored in database, transform <i>Metadata</i> into target format and write to target location, add export as provenance information into <i>Metadata File</i> during transformation	Metadata <i>File(s)</i> in target location	
		Mapping for export of selected <i>Metadata</i> from database to flat <i>Metadata</i>		Provenance information in metadata <i>File(s)</i>	
10		Inventory of <i>AIPs</i>	For each <i>AIP</i> in inventory list: The <i>AIP</i> in the target should be verified, including <i>Files</i> and <i>Metadata</i> to ensure it is complete and correct (e.g. using checksums)	Number of <i>Files</i> matches (step 12)	
		Inventory of <i>AIP</i> versions		All checksums match (step 12)	
		List of <i>Files</i> (excluding <i>Metadata</i> files) at target location		Alert that number of <i>Files</i> do not match	
		<i>Fixity Metadata</i> from source <i>AIP</i>		Alert that any of the <i>File</i> checksums does not match	

11		<i>AIP</i> ID	Optional (depending on handling method for updates in TDA): for each <i>AIP</i> : Release lock on <i>AIP</i>	Released lock	
12		<i>Files</i> in target location	If required: perform additional repacking of <i>Files</i> at target location to meet target structure and format of exported <i>AIP</i> (e.g., tarball)		
		Target structure and format of exported <i>AIP</i>			
11		List of <i>AIPs</i>	Repeat steps 5-12 for each <i>AIP</i> to be exported		
12		Documentation of Export <i>AIP</i> (supported target structure and format of exported <i>AIP</i>)	Add documentation to target location	Documentation of Export <i>AIP</i> (supported target structure and format of exported <i>AIP</i>)	
13		Inventory of <i>AIPs</i>	Document export in audit trail	Audit trail for export	

Rationale(s)¹ and worst case(s)

Rational	Impact of inaction or failure of the process
When a TDA is closed down, it will have to pass data on to another TDA as part of succession planning. This might have to happen on short notice.	Data is lost
When a TDA acts as a service provider, data will have to be exported in bulk to those who are subscribing to the service.	Data owner potentially loses control over data
If a TDA is using external services and systems, e.g. for storing and preserving its <i>AIPs</i> , then it may need to exchange or transfer <i>AIPs</i> to or from third-party services and systems.	Data is lost, data can't be efficiently transferred between TDAs and preservation services.

2. Dependencies and relationships with other CPPs

Dependencies

CPP-ID	CPP-Title	Relationship description
CPP-001	Checksum Generation and Recording	<i>Fixity metadata</i> is used to verify the integrity of data written into the exported <i>AIP</i> .
CPP-002	Checksum Validation	To ensure the integrity of the data during transport from the TDA storage, the exported <i>Files</i> ' checksums need to be verified.

Other relations

Relation	CPP-ID	CPP-Title	Relationship description
Triggers	CPP-002	Checksum Validation	Checksum validation is one of the methods used to verify the integrity and

¹ Term derived from PREMIS.

			completeness of the data written into the exported <i>AIP</i> .
Not to be confused with	CPP-017	Disposal	By default, batch export does not remove the content from the TDA
Not to be confused with	CPP-025	Enabling Access	Access is typically granted to the <i>DIP</i> which may be different from the <i>AIP</i> (e.g. the <i>DIP</i> may only present the last version or one of several <i>Representations</i>). The <i>AIP</i> contains all preservation <i>Metadata</i> which a <i>DIP</i> may not
Affected by	CPP-021	AIP Versioning	Versioning impacts how the export will have to be run and where and how information about the versions may be found. In addition a policy might determine if only the last or all versions should be exported
Affinity with	CPP-011	Replication	Replication creates new parallel copies of <i>AIPs</i> within a TDAs archival storage. AIP Batch Export exports <i>AIPs</i> to external locations.

3. Links to frameworks

Certification

Certification framework	Term used in framework to refer to the CPP	Section
CTS Link	“Technical aspects of business continuity, disaster recovery and succession planning”	R15 Technical Infrastructure Organisational aspects are covered in R03 Continuity of Service
Nestor Seal Link	Export	C12 Crisis / successorship management
ISO 16363 Link	Export	4.3.5 Also touched in 3.1.2.2 “The repository shall monitor its organizational environment to determine when to execute its succession plan, contingency plans, and/or escrow arrangements.”

Other frameworks and reference documents

Reference Document	Term used in framework to refer to the process	Section
OAIS Link	/	The process is not described in OAIS but one of its purposes, Succession Planning, is briefly mentioned in 3.3.6 “Follows established preservation policies and procedures.
PREMIS Link	/	/

4. Reference implementations

Publicly available documentation

Institution	Organisation type	Language	Hyperlink
TIB – Leibniz Information Centre for Science and Technology and University Library, Germany	National library	English	https://wiki.tib.eu/confluence/spaces/lza/pages/93608980/Export+and+exit+scenario
	Non-commercial digital preservation service		
	Research infrastructure		
	Research performing organisation		
CSC – IT Center for Science Ltd., Finland	Non-commercial digital preservation service	Finnish	https://urn.fi/urn:nbn:fi-fe2024051731943 (section 13)
Archivemata	Digital preservation system	English	https://www.archivemata.org/en/docs/archivemata-1.17/user-manual/archival-storage/archival-storage/#download-ing-an-aip