eIDAS/EUDI related views in the eArchiving Reference Architecture

Integrating ETSI 119 511-12 protocols for the preservation of electronic signatures

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Clarifying scope and context

Traditional Archives

- Taking over ownership
- Taking over responsibility
- Trusted service by nature
- Focusing on preserving content (and metadata) for the long-term

1. **Preserve the digital signatures**
   This solution supposes the deployment of considerable means to preserve the necessary mechanisms for validating the signatures, and does not address the need to simultaneously preserve the intelligibility of documents;

2. **Eliminate the signatures**
   This option requires the least adaptation from archival institution, but impoverishes the description of the document, as it eliminates the signature as one technical element used to ensure the authenticity of the documents;

3. **Record the trace of the signatures as metadata**
   This solution requires little technical means, and records both the existence of the signature and the result of its verification. However, digital signatures lose their special status as the primary form of evidence from which to infer the authenticity of the document.

(Stančić 2016; Blanchette 2006)

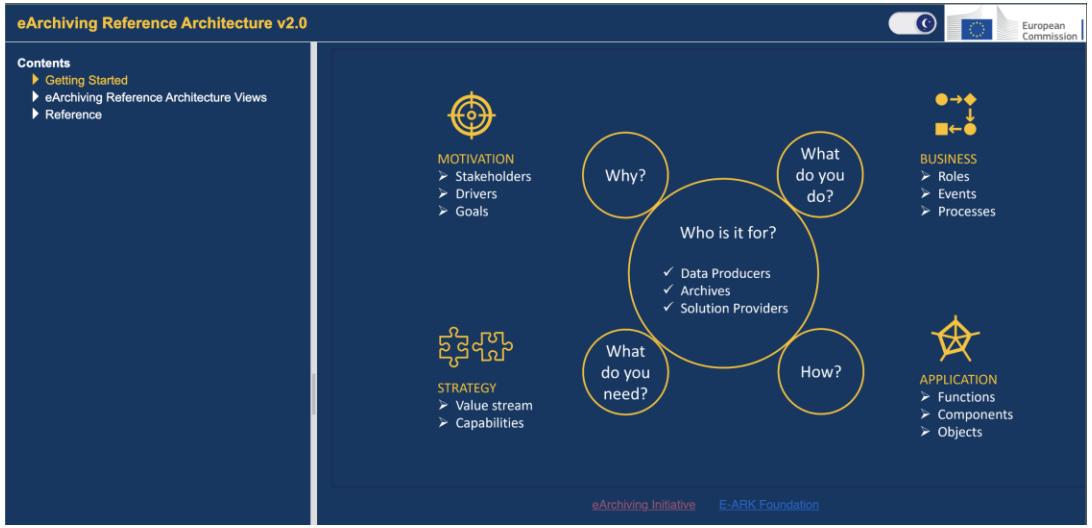
Trust Services

- Not taking over ownership
- Taking over responsibility
- Qualified trust service
- Focusing on preserving preservation evidence (electronic signature) for the mid-term

Clarifying scope and context

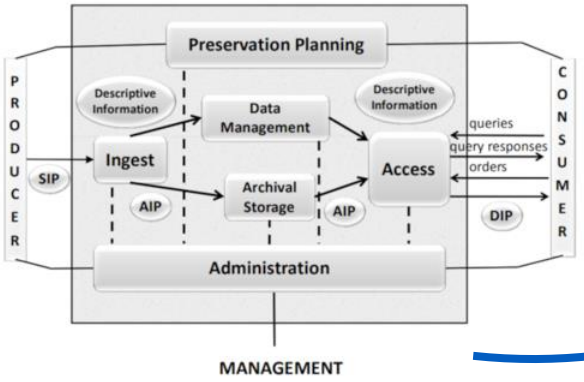
Traditional Archives

eArchiving Reference Architecture



Trust Services

OAIS



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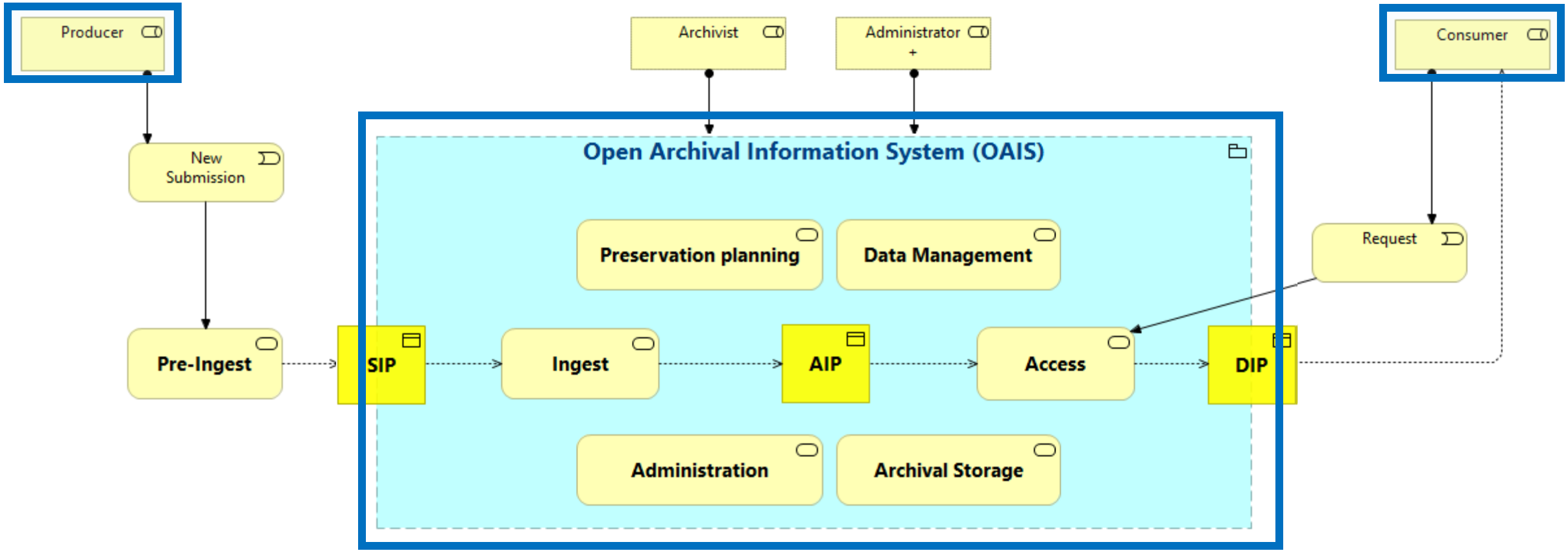
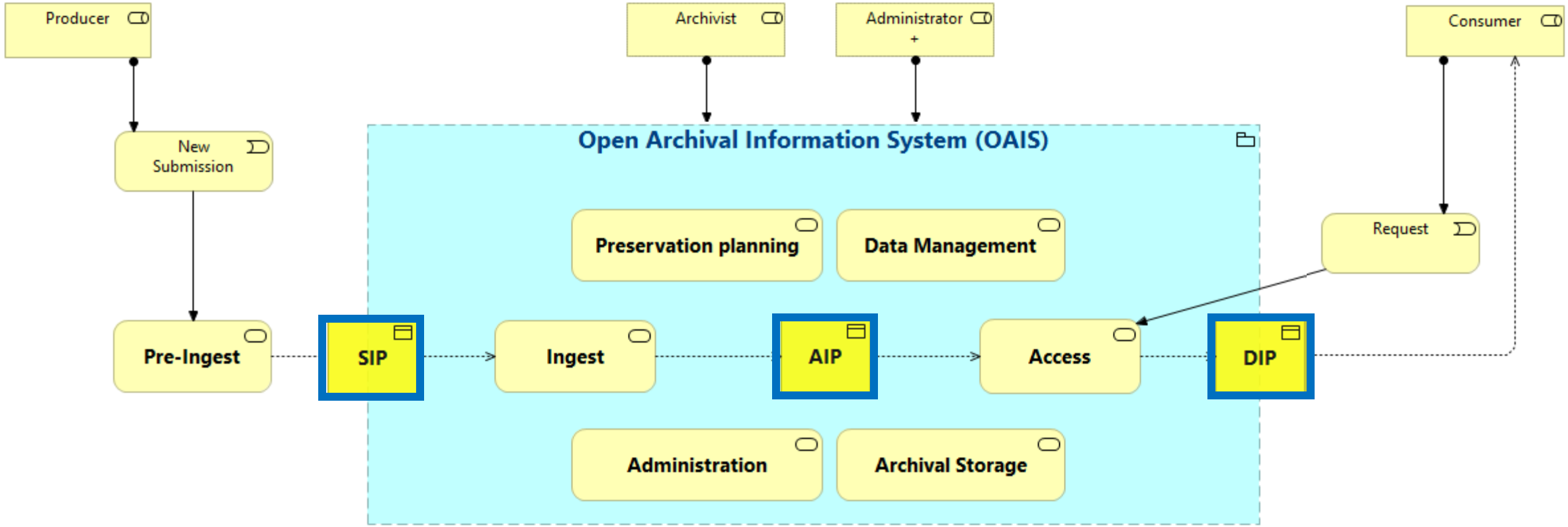
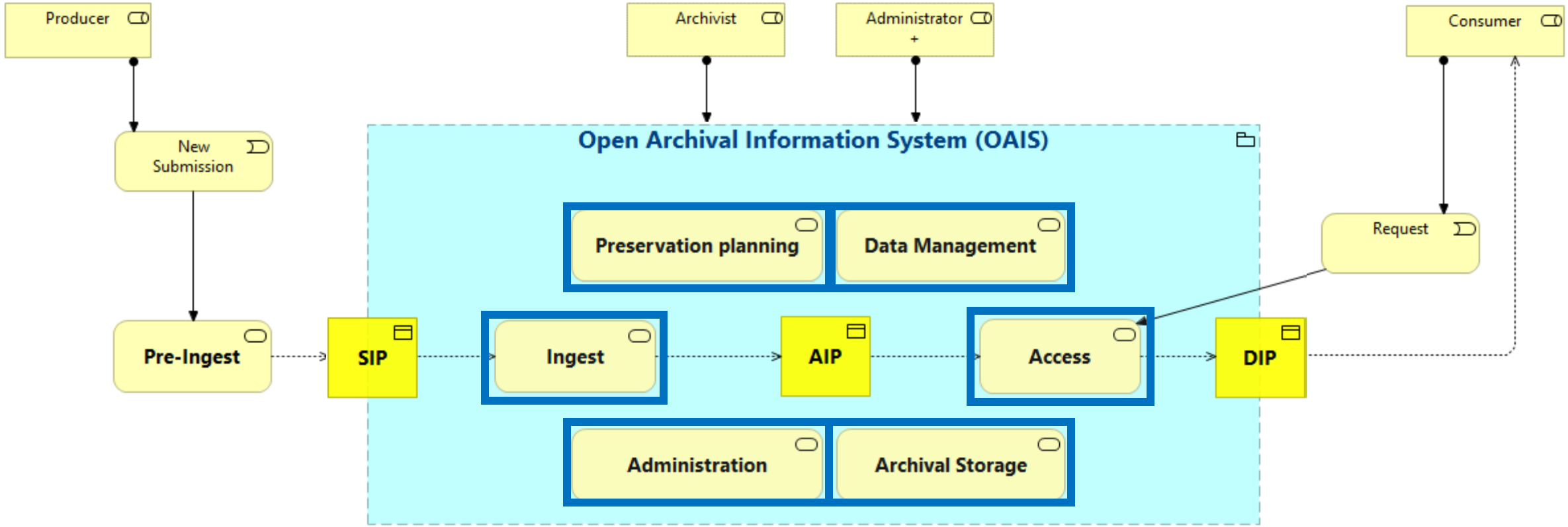
The OAIS Reference Model



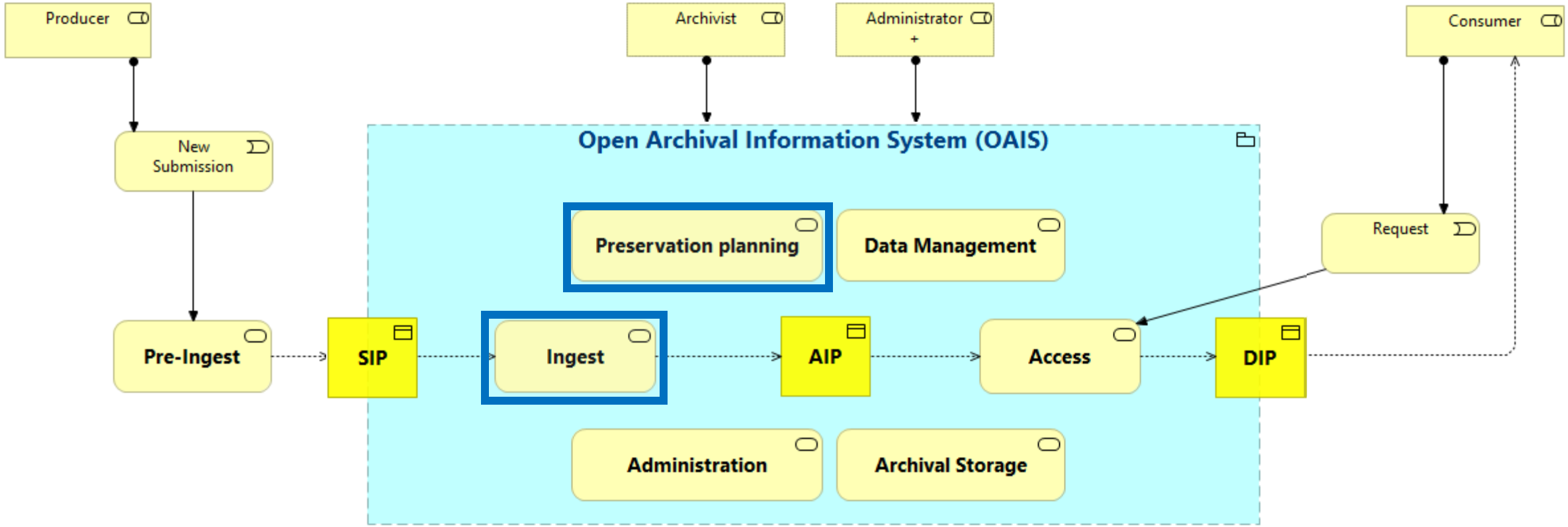
The OAIS Reference Model



The OAIS Reference Model



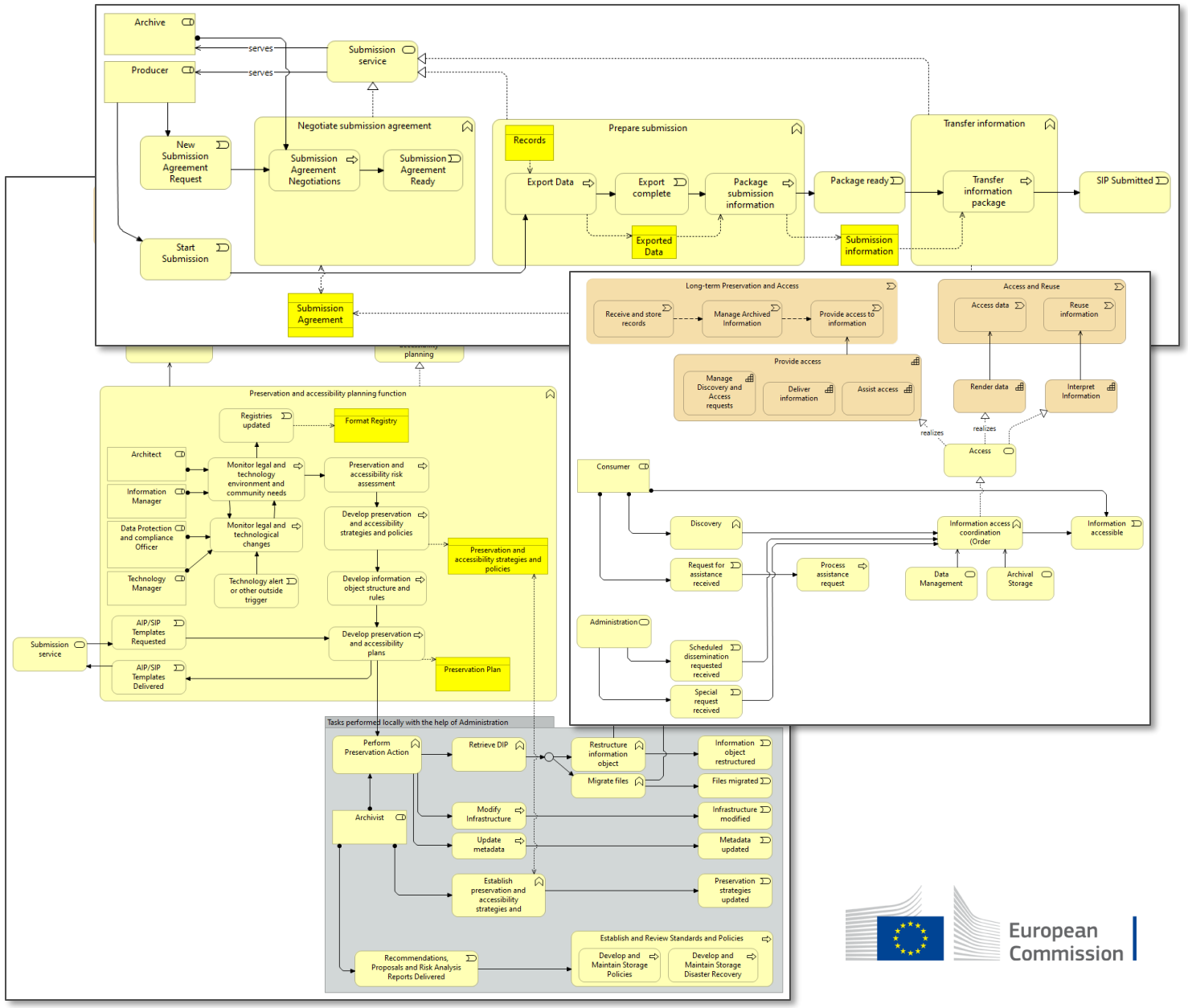
The OAIS Reference Model – Modifications needed



The eArchiving Reference Architecture Business views

eArchiving Reference Architecture v2.0

- eArchiving Reference Architecture Views
  - 01 Core Views
    - 01 Motivation
    - 02 Strategy
    - 03 Business
      - 01 Pre-Ingest
      - 02 Ingest
      - 03 Access
      - 04 Preservation Planning
      - 05 Data Management
      - 06 Archival Storage
    - 04 Application
  - 02 Example scenarios



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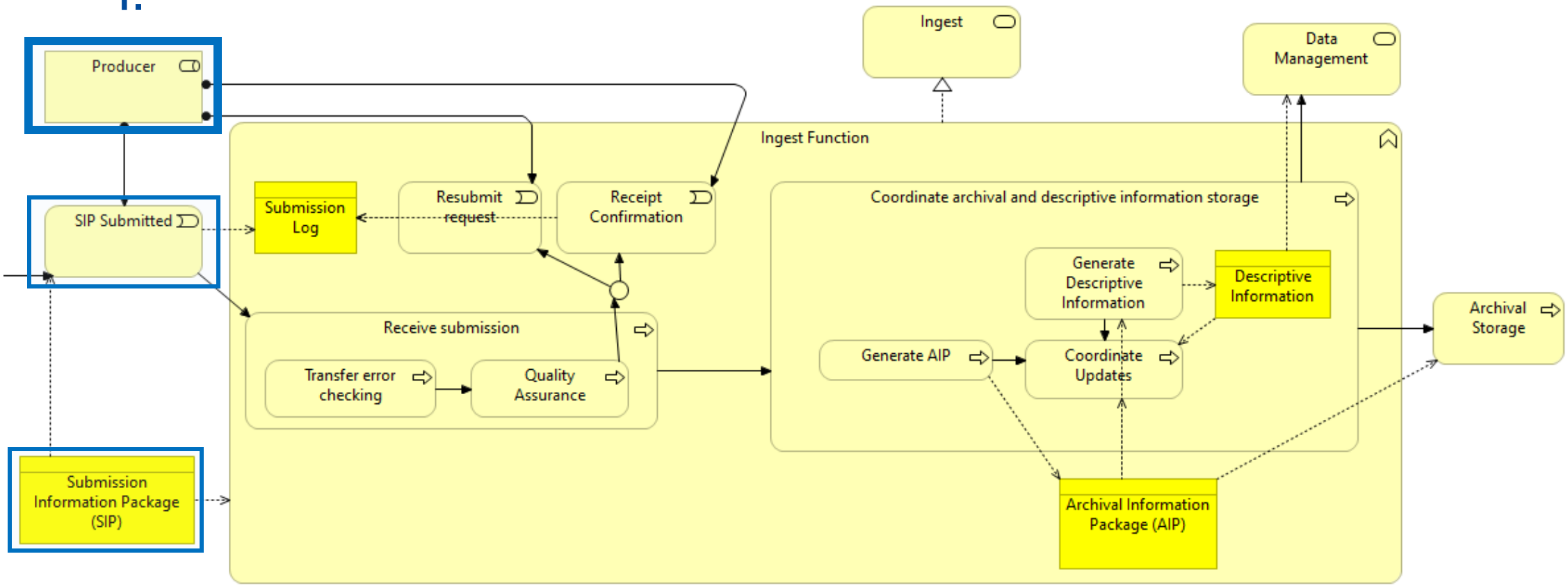
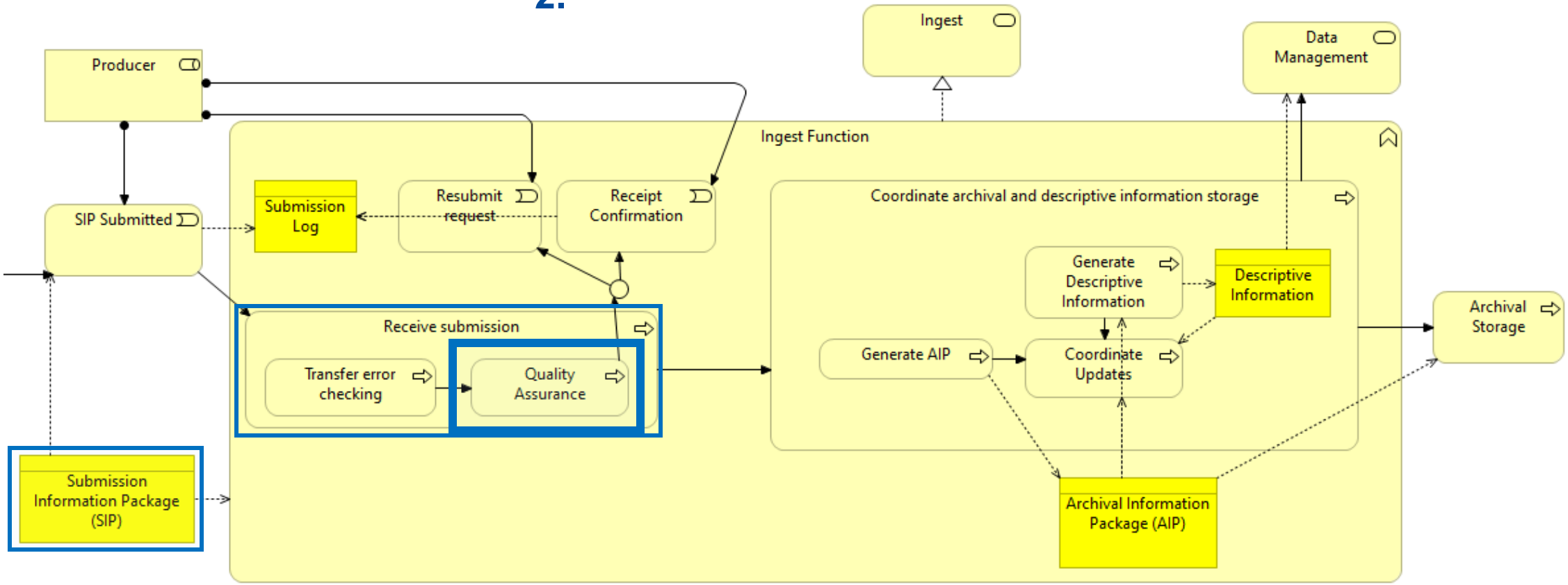
OAIS Ingest Process in the eArchiving Reference Architecture

1.

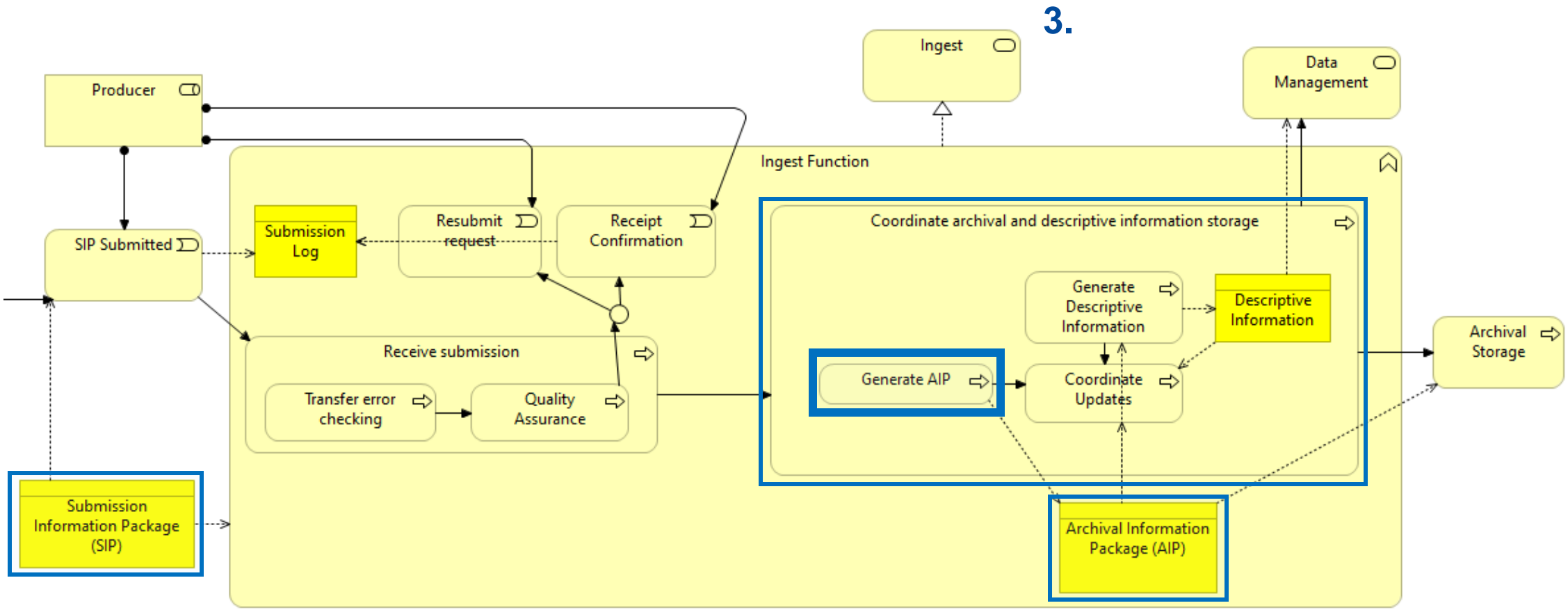


OAIS Ingest Process in the eArchiving Reference Architecture

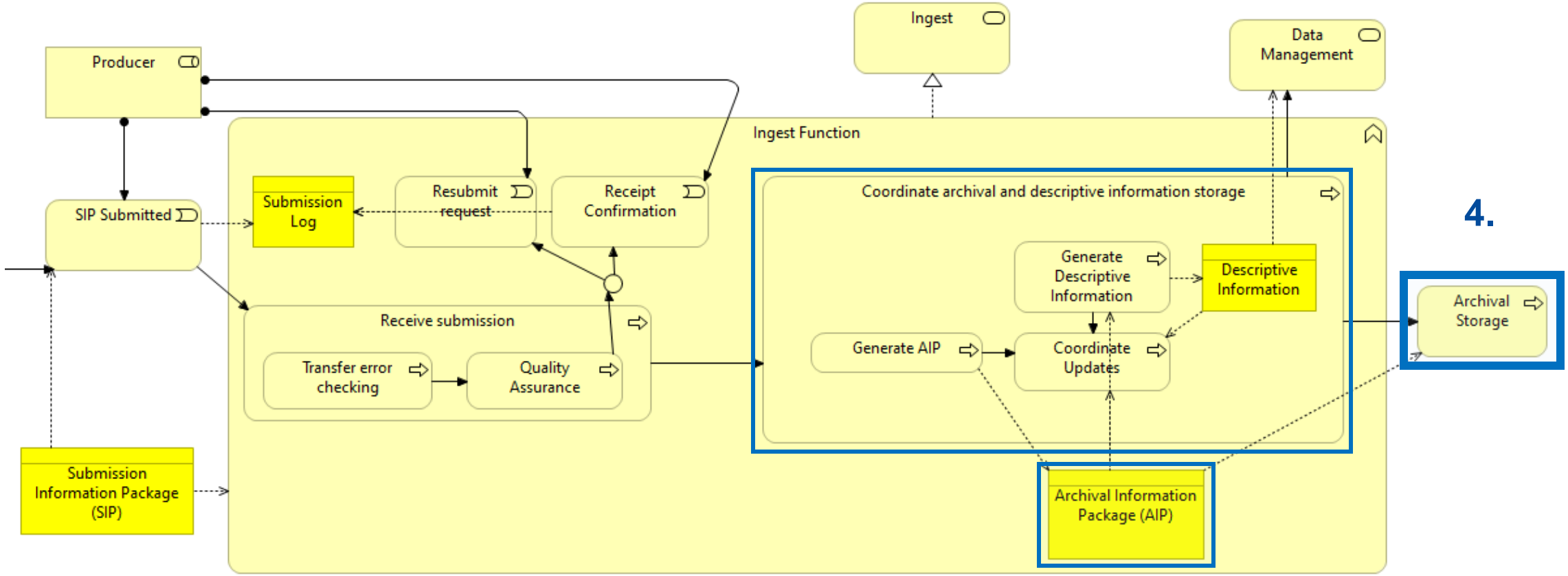
2.



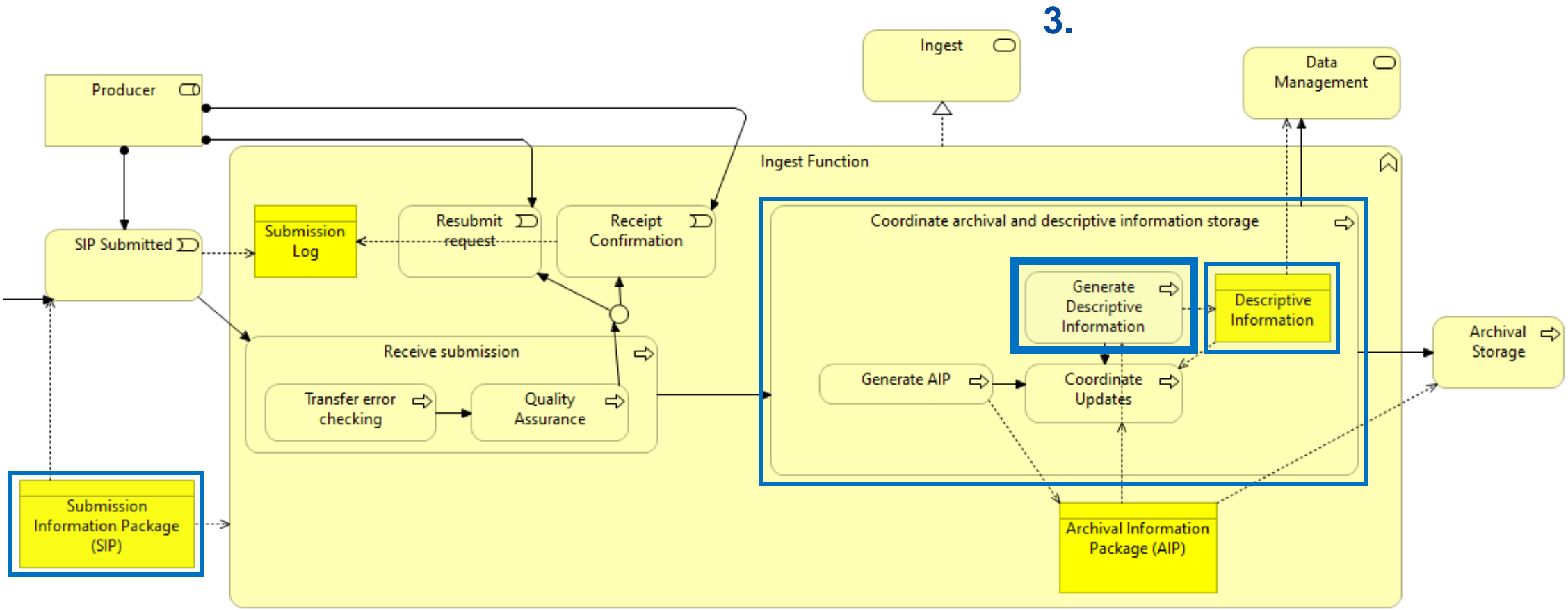
OAIS Ingest Process in the eArchiving Reference Architecture



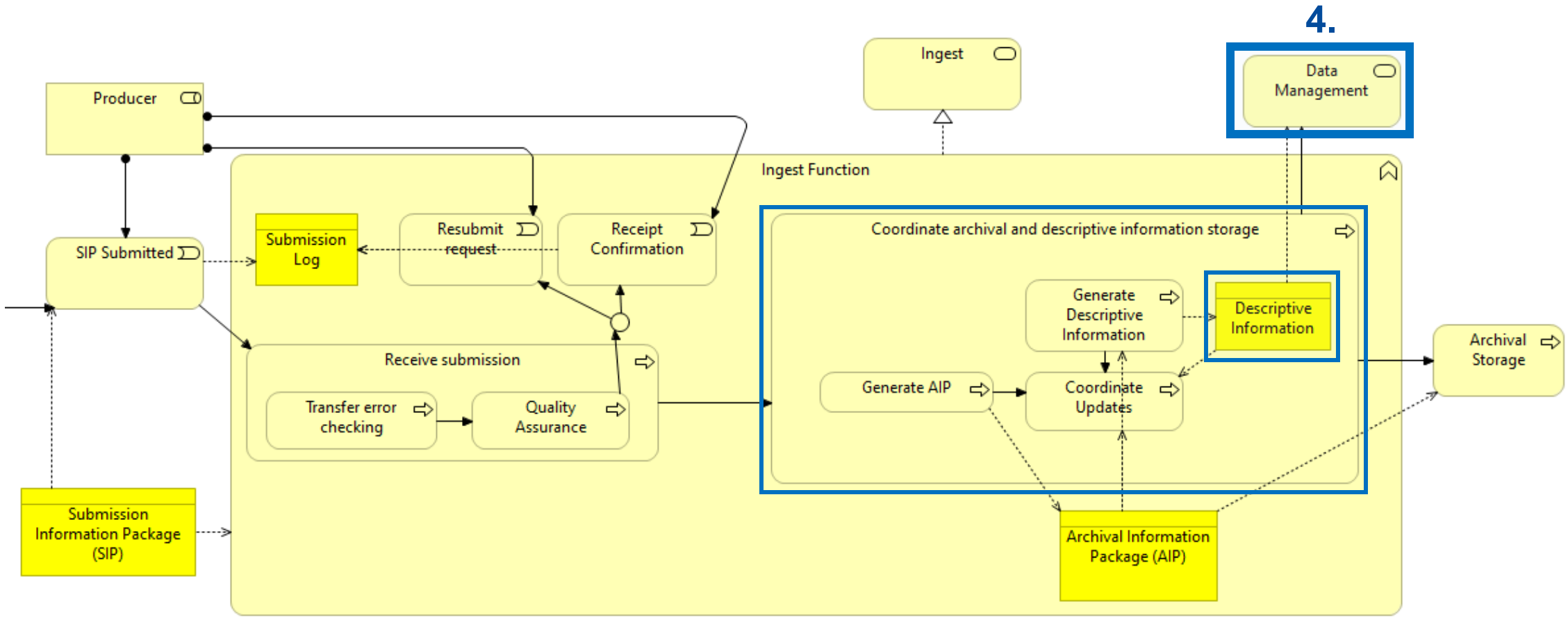
OAIS Ingest Process in the eArchiving Reference Architecture



OAIS Ingest Process in the eArchiving Reference Architecture

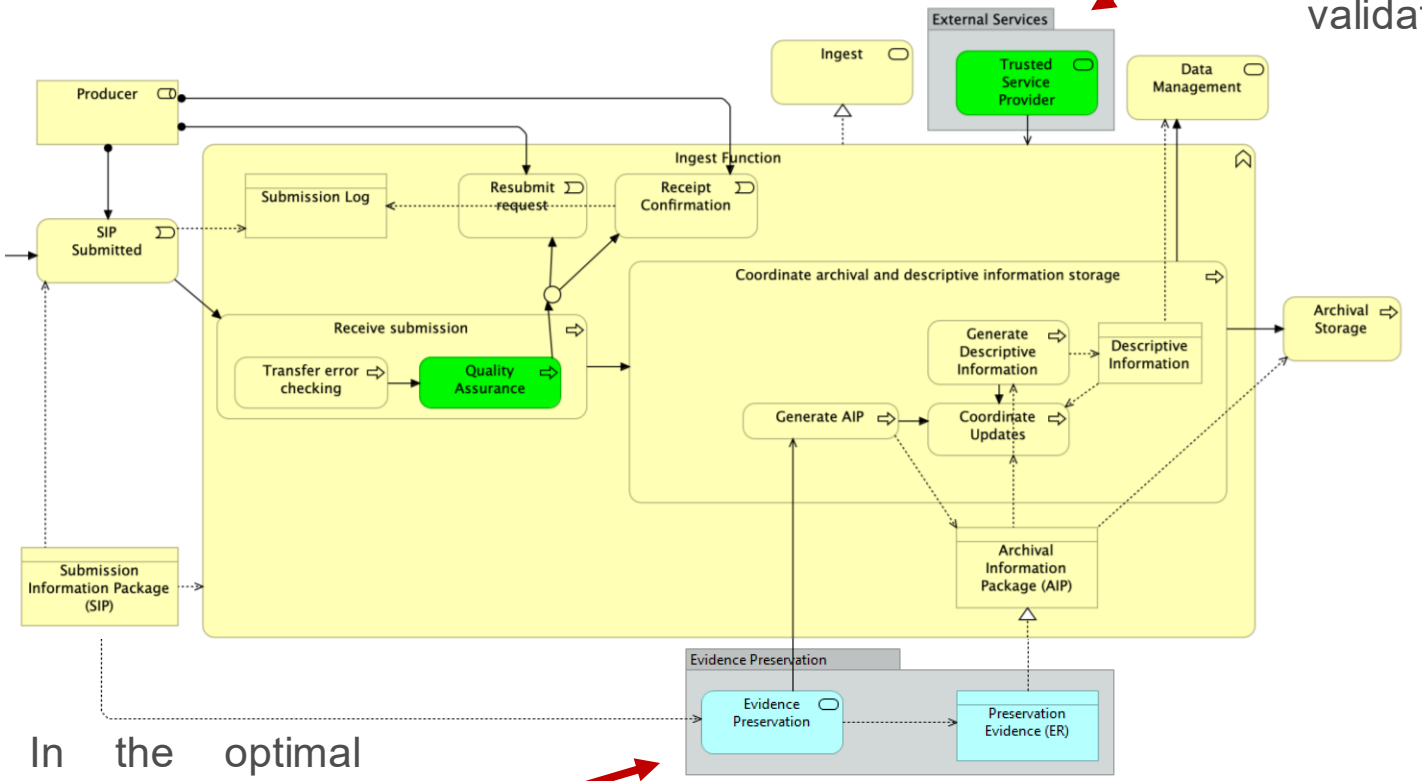


OAIS Ingest Process in the eArchiving Reference Architecture



Integrating ETSI 119 511-12 standards in eArchiving Reference Architecture

Generalization to serve ingest at any point, because an external trusted service provider can be used during the creation of the AIP and during quality assurance to validate signatures and timestamps.



Evidence Preservation. In the optimal scenario, the service should provide the preservation evidence (or pointers) to include in the AIP, then ingest coordinates updates and send the AIP to archival storage, and metadata to the data management function.

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Evidence preservation scenarios

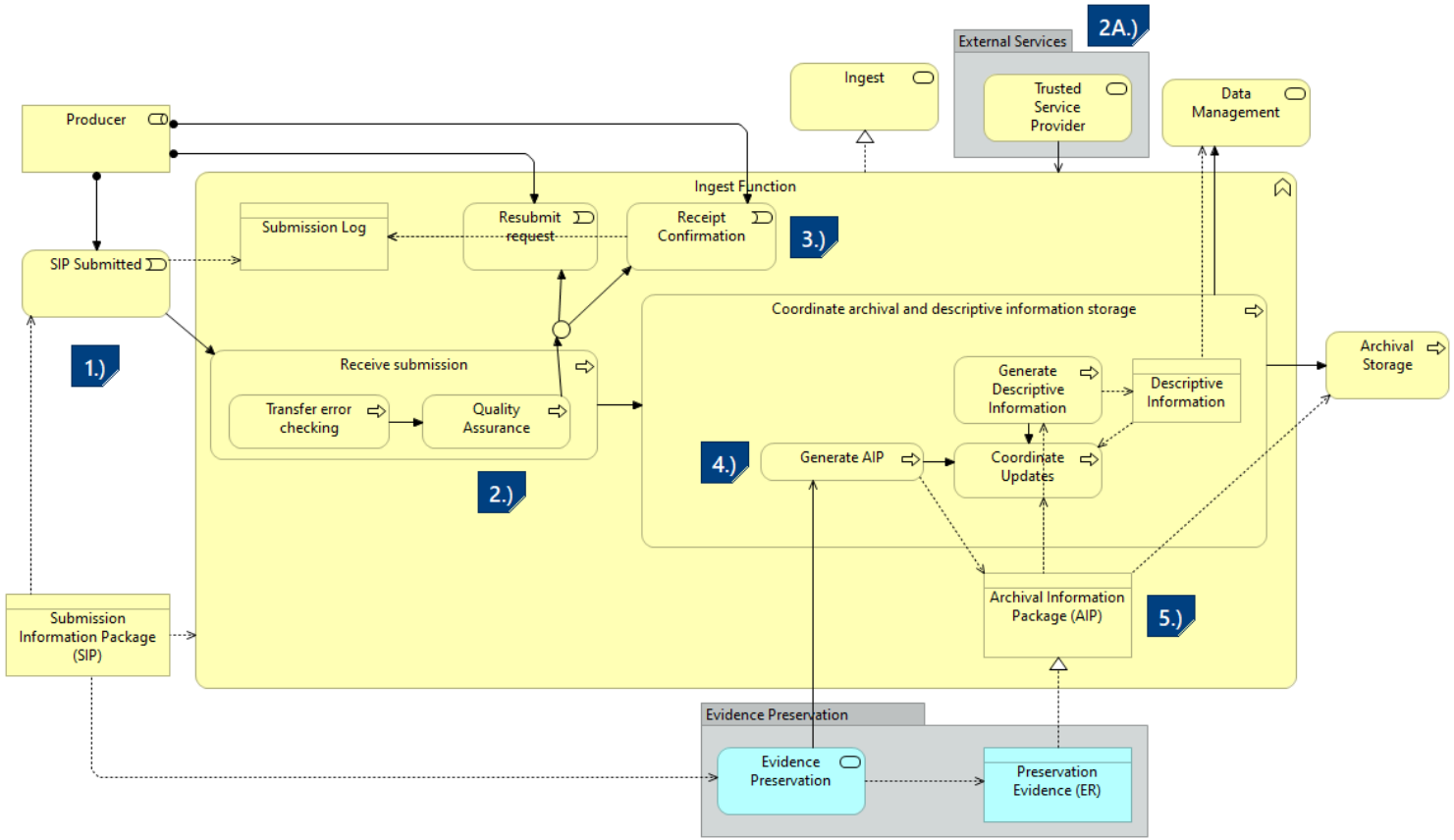
Scenario A
Preservation Evidence is part of the Archival Information Package (AIP)

- A.1 – Ingest scenario
- A.2 – Monitoring and augmentation scenario
- A.3 – Monitoring and augmentation (without OAIS re-ingest)

Scenario B
Preservation Evidence is fixity information (Metadata)

- A.1 – Ingest scenario
- A.2 – Monitoring and augmentation scenario

Scenario A
Preservation Evidence is part of the AIP
A.1 – Ingest



1. A Submission Information Package (SIP) that contains signed information (e.g. documents or package contents) is submitted for ingest.
2. During Quality Assurance, the contents of the SIP are validated, including the digital signatures.
   This validation can be performed internally or by resorting to an external service provider (2A).
3. The validation passes and the producer is informed, the package continues the Ingest process.
4. During the AIP generation, the evidence preservation application service is used, where the preservation evidences are generated.
5. The preservation evidence (or pointers) are then incorporated into the AIP (by the Archive) for which descriptive information is generated. The AIP is sent to storage, and the metadata is sent to Data Management at the end of the ingest process.

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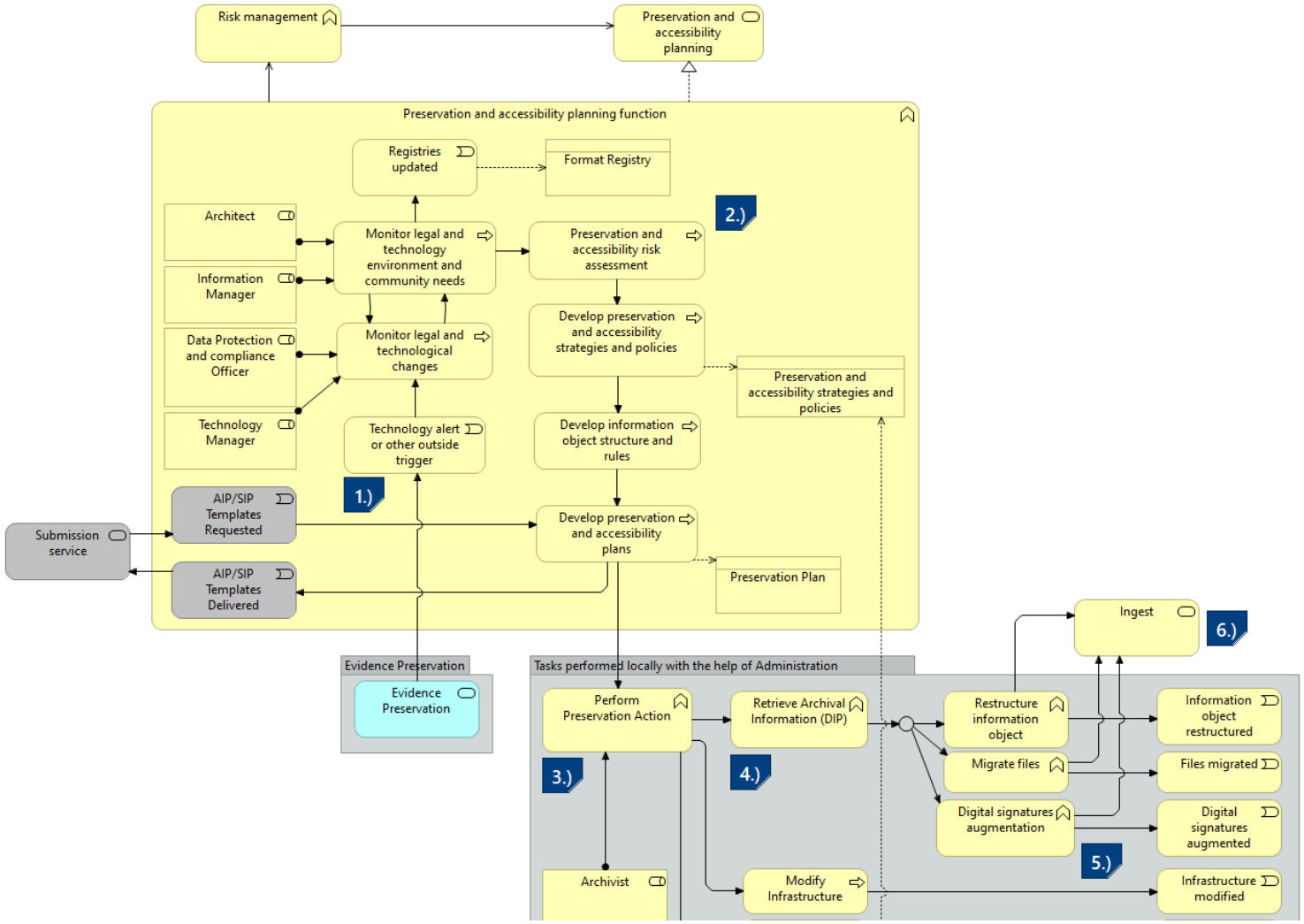
Scenario A
Preservation Evidence is part of the AIP
A.2 – Monitoring and augmentation scenario



1. The Evidence Preservation service sends a trigger to preservation planning to perform a digital signature augmentation action.
2. Risk management is performed. Information objects structures and rules are revised. Preservation policies and plans are updated.
3. The preservation action for this event is defined, and the affected packages are identified.
4. The affected packages are collected from storage and combined into a Dissemination Information Package (DIP).
5. The DIP which is then transformed into a SIP that will be re-submitted to ingest.
6. During ingest, the newly redefined preservation policies will be applied, and new preservation evidences will be generated that follow the new procedures. This will result in a new version of the AIP with updated evidence information.

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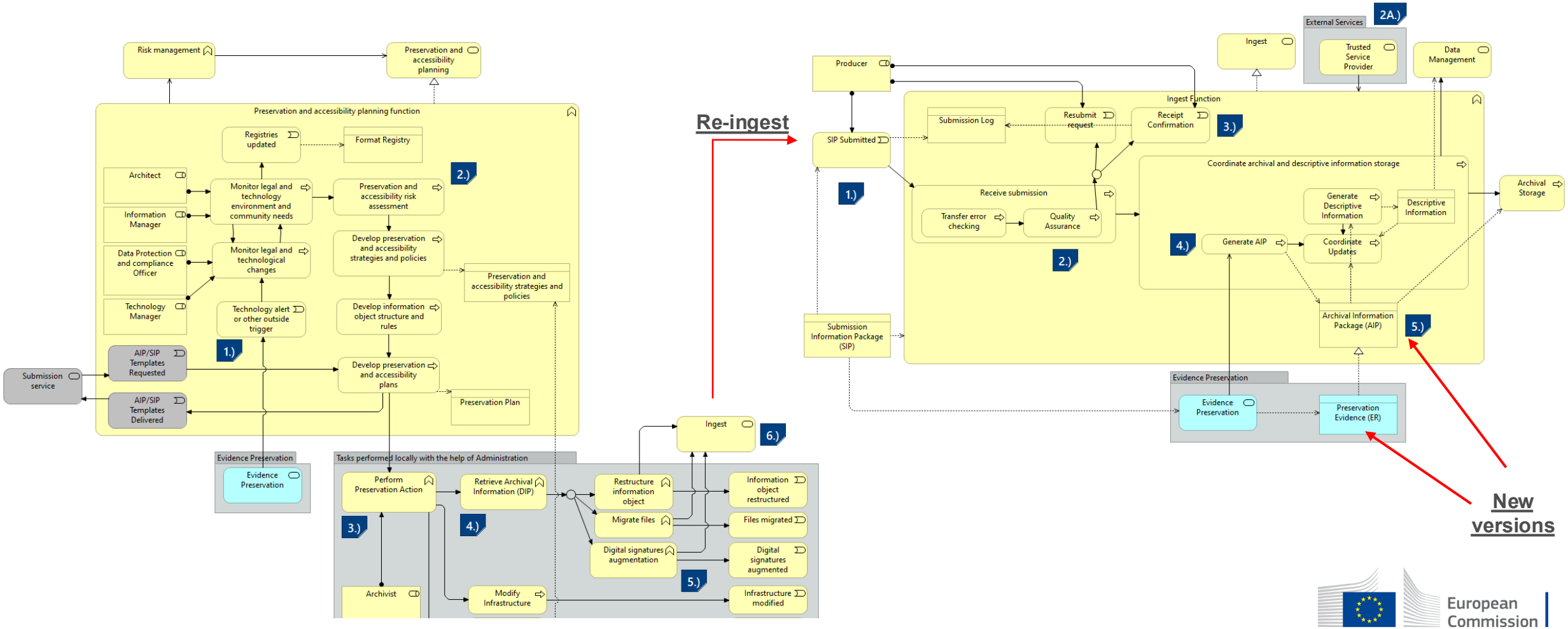
Scenario A
Preservation Evidence is part of the AIP
A.2 – Monitoring and augmentation scenario (whole picture)



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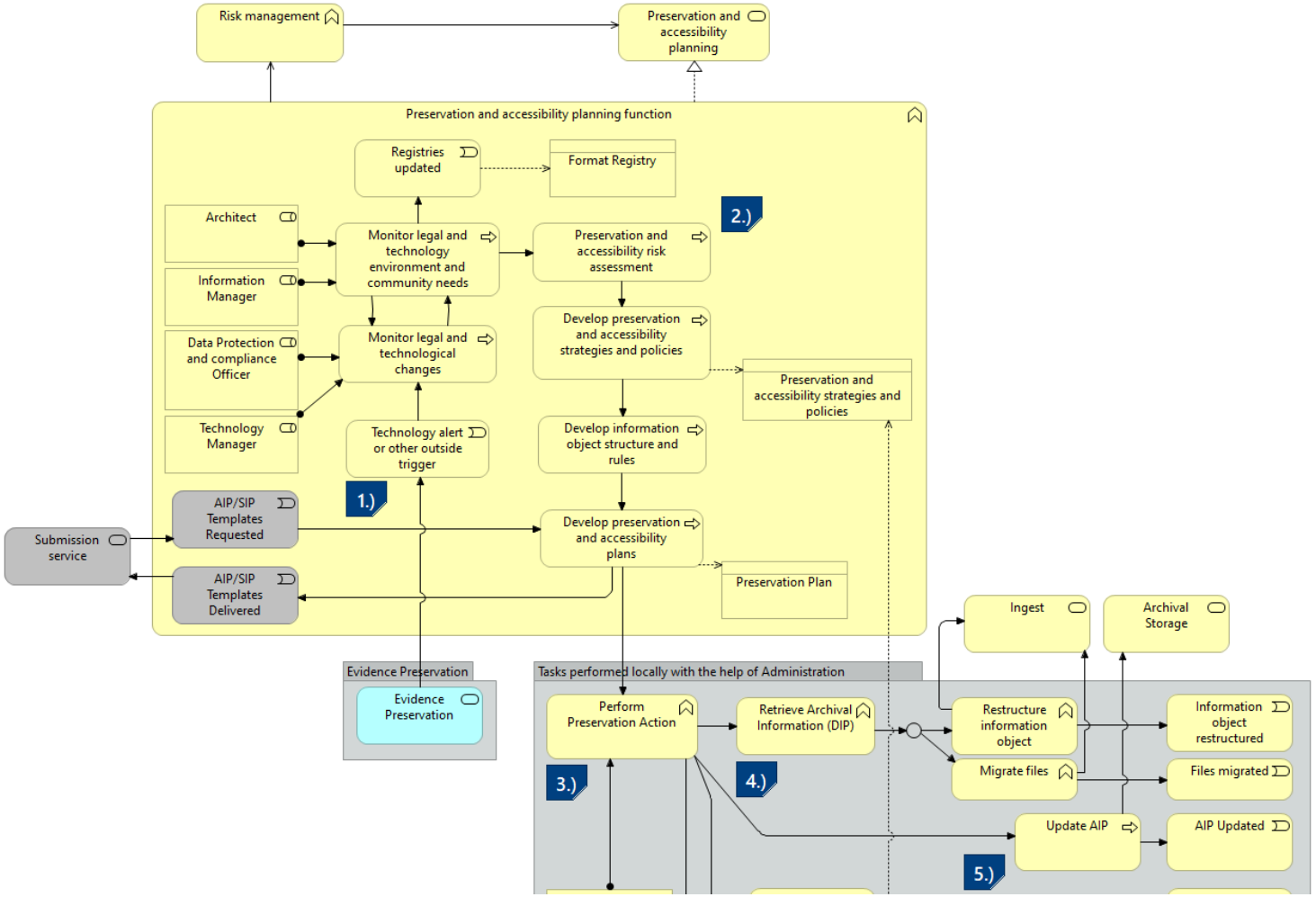
Scenario A
Preservation Evidence is part of the AIP
A.3 - Monitoring and augmentation (without OAIS re-ingest)



1. The Evidence Preservation service sends a trigger to preservation planning to perform a digital signature augmentation action.
2. Risk management is performed. Information objects structures and rules are revised. Preservation policies and plans are updated.
3. The preservation action for this event is defined, and the affected packages are identified.
4. The affected packages are collected from storage and combined into a Dissemination Information Package (DIP).
5. The DIP is then transformed into an AIP that will be sent to Archival Storage for update.

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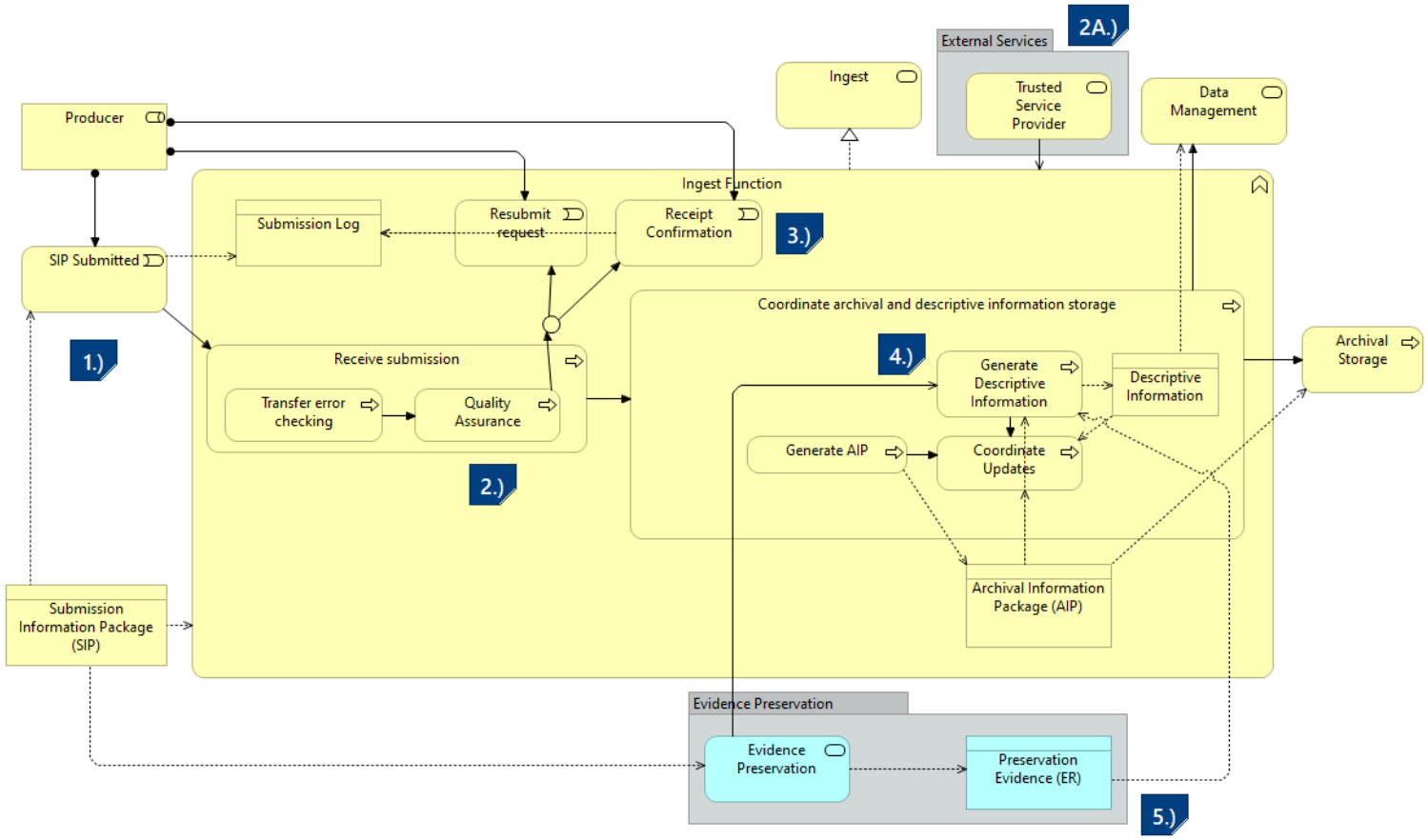
Scenario B
Preservation Evidence is fixity information (Metadata)
B.1 – Ingest



1. A Submission Information Package (SIP) that contains signed information (e.g. documents or package contents) is submitted for ingest.
2. During Quality Assurance, the contents of the SIP are validated, including the digital signatures.
   This validation can be performed internally or by resorting to an external service provider (2A).
3. The validation passes and the producer is informed, the package continues the Ingest process.
4. During the AIP generation, the evidence preservation application service is used, where the preservation evidences are generated.
5. The preservation evidence (or pointers) are then incorporated into the descriptive information (by the Archive). The descriptive information is sent to Data Management at the end of the ingest process.

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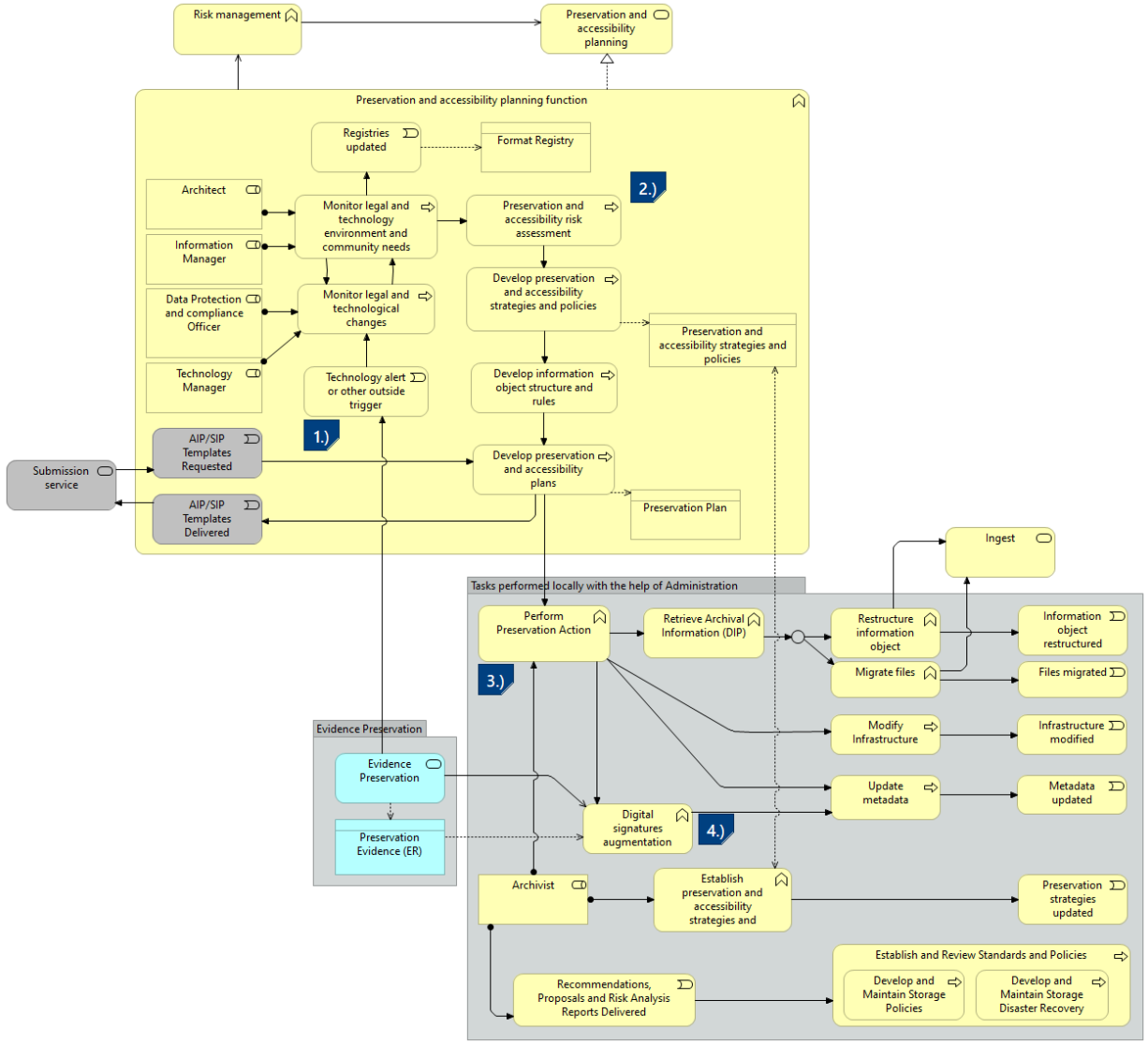
Scenario B
Preservation Evidence is fixity information (Metadata)
B.2 – Monitoring and augmentation scenario



1. The Evidence Preservation service sends a trigger to preservation planning to perform a digital signature augmentation action.
2. Risk management is performed. Information objects structures and rules are revised. Preservation policies and plans are updated.
3. The preservation action for this event is defined, and the affected packages are identified.
4. The affected packages preservation evidence metadata is updated, by using the evidence preservation application service.

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Planned Next Steps

- Waiting for the approval of the Implementation Act
- Discuss the current views and scenarios with more service providers
- Looking for a Pan-European common understanding and best practices
- Finalise the views and scenarios
- Publish in a next version of the eArchiving Reference Architecture

Thank you

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