# Authoring Cockpit - Simplification of authoring by integration of existing business environment


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# Agenda

- Introduction
- Existing business environment
- Business environment in future
- Summary
- Authoring Cockpit @ Airbus Defence & Space
- Questions/Answers

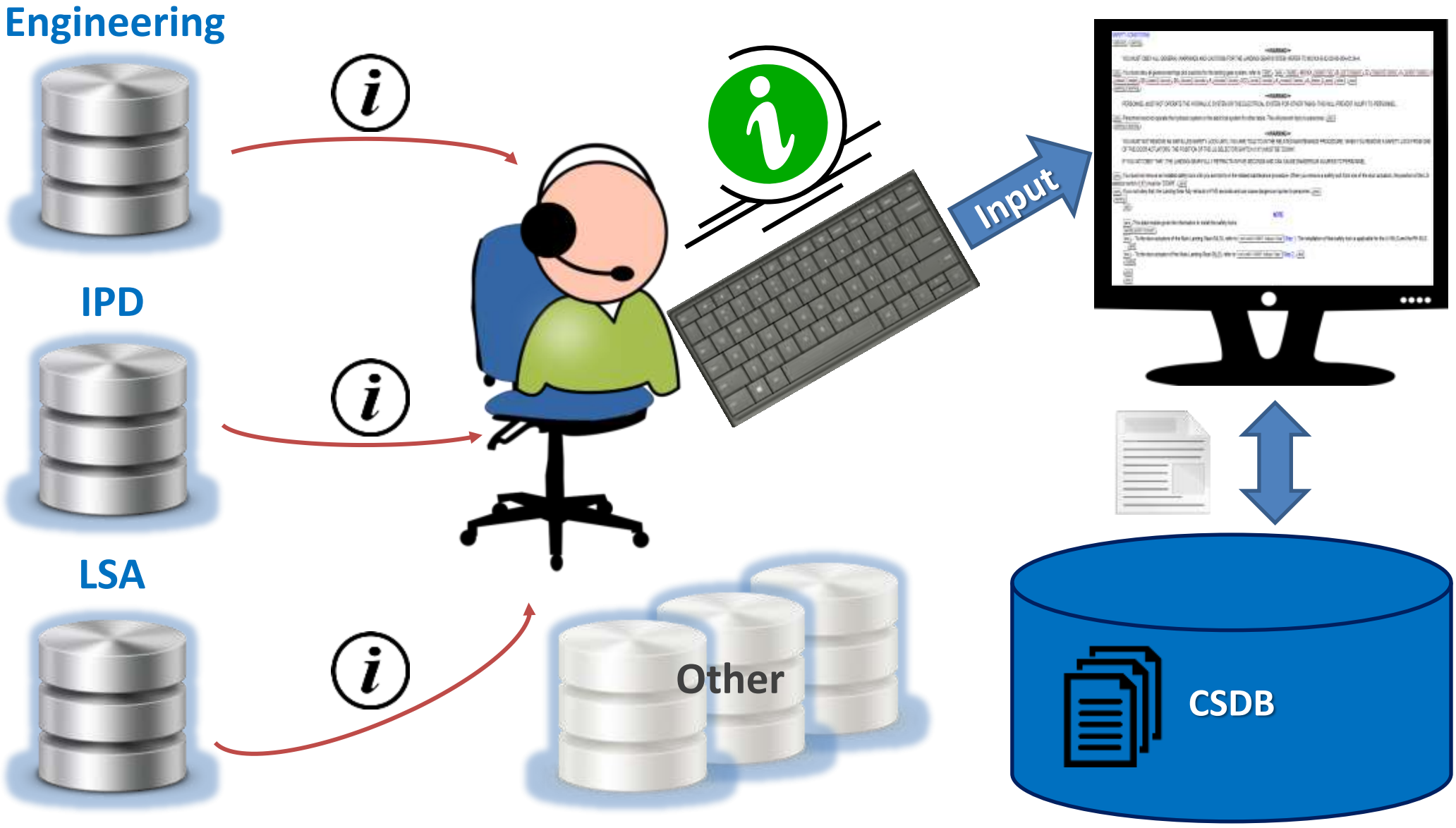
# Introduction

## VISION

**Digitalization** from a Technical Author's point view **means working in a database oriented tool environment** which empowers him:

- to "assemble" Technical Publications similar to the configuration of a car (**intuitive and modular designed GUI – "Authoring Cockpit"**).
- to benefit from an optimized and intelligent data management (**semantic network**).
- to **access and integrate relevant source data directly**.

# Existing business environment - Overview



# Existing business environment - Exemplary task

## Exemplary authoring task

Write a data module describing the installation procedure of the hydraulic pump of Aircraft XY.

## Necessary steps for task execution

1. Initiate a procedural data module in the CSDB.
2. Retrieve source information from LSA database (LSA task „Install procedure“ for equipment 291101).
3. Transform information contained in the LSA task into S1000D schema.
4. Check data module against BREX.
5. Perform quality assurance.
6. Perform first (technical) verification.

# Existing business environment - Exemplary task

## Retrieve source information from the LSA database

**LSA**

Leave authoring tool and log in

Navigate to 291101

Search for corresponding task

Retrieve required information

| Supporting task „Install hydraulic pump no. 1“ | |
|---|---|
| Resources | Subtasks (work steps) |

# Existing business environment - Exemplary task

## LSA Task

| Install hydraulic pump no. 1 | |
|---|---|
| **Resources** | |
| Spares | 2 O-Rings |
| Personnel | 2 Mechanics<br>Skill: Basic<br>Trade: Hydraulic |
| **Subtasks** | |
| Subtask 1 | Remove all blanking caps |
| Subtask 2 | Put hydraulic pump into position |
| Subtask 3 | Torque screws to 10 Nm. |
| Subtask 4 | Connect flexible hoses with pump |
| Subtask 5 | Connect electrical connector with the pump |

## S1000D Data module

```
<dmodule>
  <identAndStatusSection>...</identAndStatusSection>
  <content>
    <procedure>
      <preliminaryRqmts>
        <reqCondGroup>...</reqCondGroup>
        <reqI
        <reqS
        <reqS
        <reqS
          <spareDescr id="spa-0001">
            <name>O-Ring</name>
            <identNumber>
              <manufacturerCode>AX127</manufacturerCode>
              <partAndSerialNumber>
                <partNumber>OR-4711</partNumber>
              </partAndSerialNumber>
            </identNumber>
            <reqQuantity>2</reqQuantity>
          </spareDescr>
        </req
        <reqSafety>...</reqSafety>
      </preliminaryRqmts>
      <mainProcedure>
        <proceduralStep>
          <para>Remove all blanking caps from the hydraulic
          pump.</para>
        </pro
        <proc
          <proceduralStep>
            <para>Connect the electrical connector 12AB with the
              pump.
            </para>
          </proceduralStep>
        </pro
        <proc
        </pro
      </mainProcedure>
      <closeRqmts>
        <reqCondGroup>
          <noConds/>
        </reqCondGroup>
      </closeRqmts>
    </procedure>
  </content>
</dmodule>
```

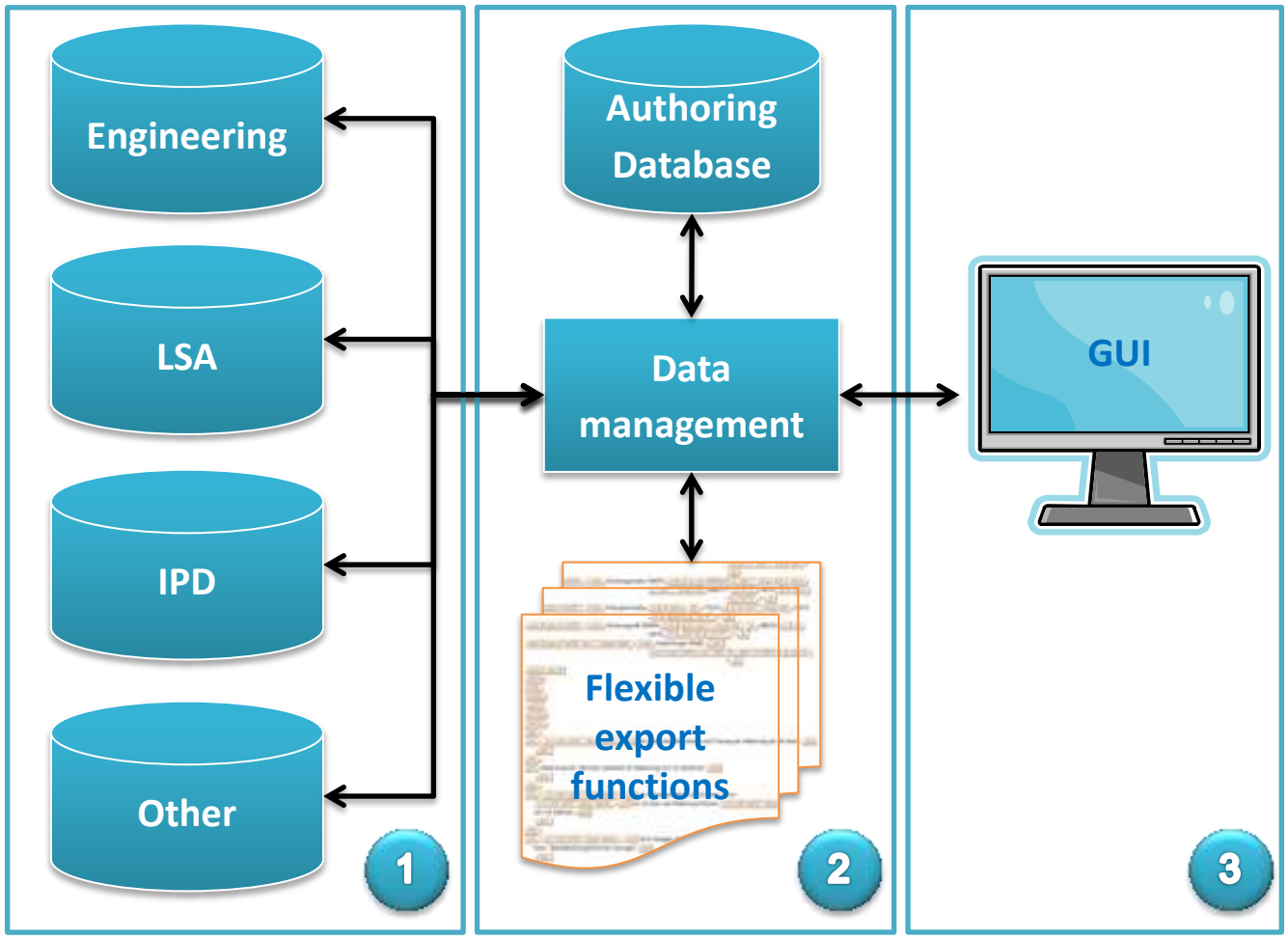
# Existing business environment - Characteristics

- In his daily business the technical author has to collect information from many different data sources…
  - with high manual effort,
  - without traceability.

- The authoring is done directly within S1000D SGML/XML structures, that requires…
  - the author to know one (ore more) S1000D version(s) in detail,
  - the author to project specific definitions (business rules) in detail.

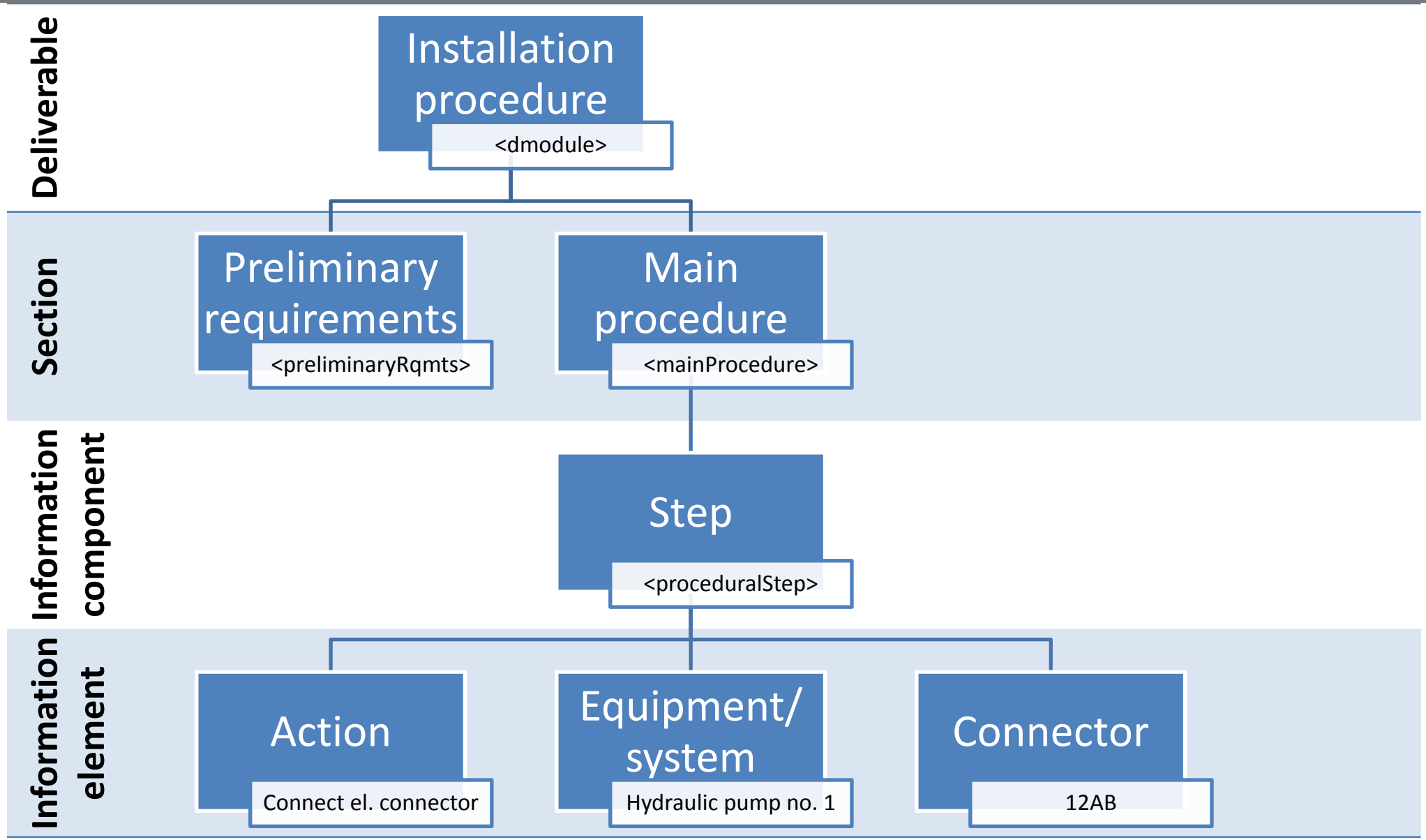
- There is potential for optimization in the flexiblity of export functions.

# Business environment in future - General architecture




1. Source data integration
2. Data management on information element level
3. Authoring Cockpit

# Business environment in future - Data management



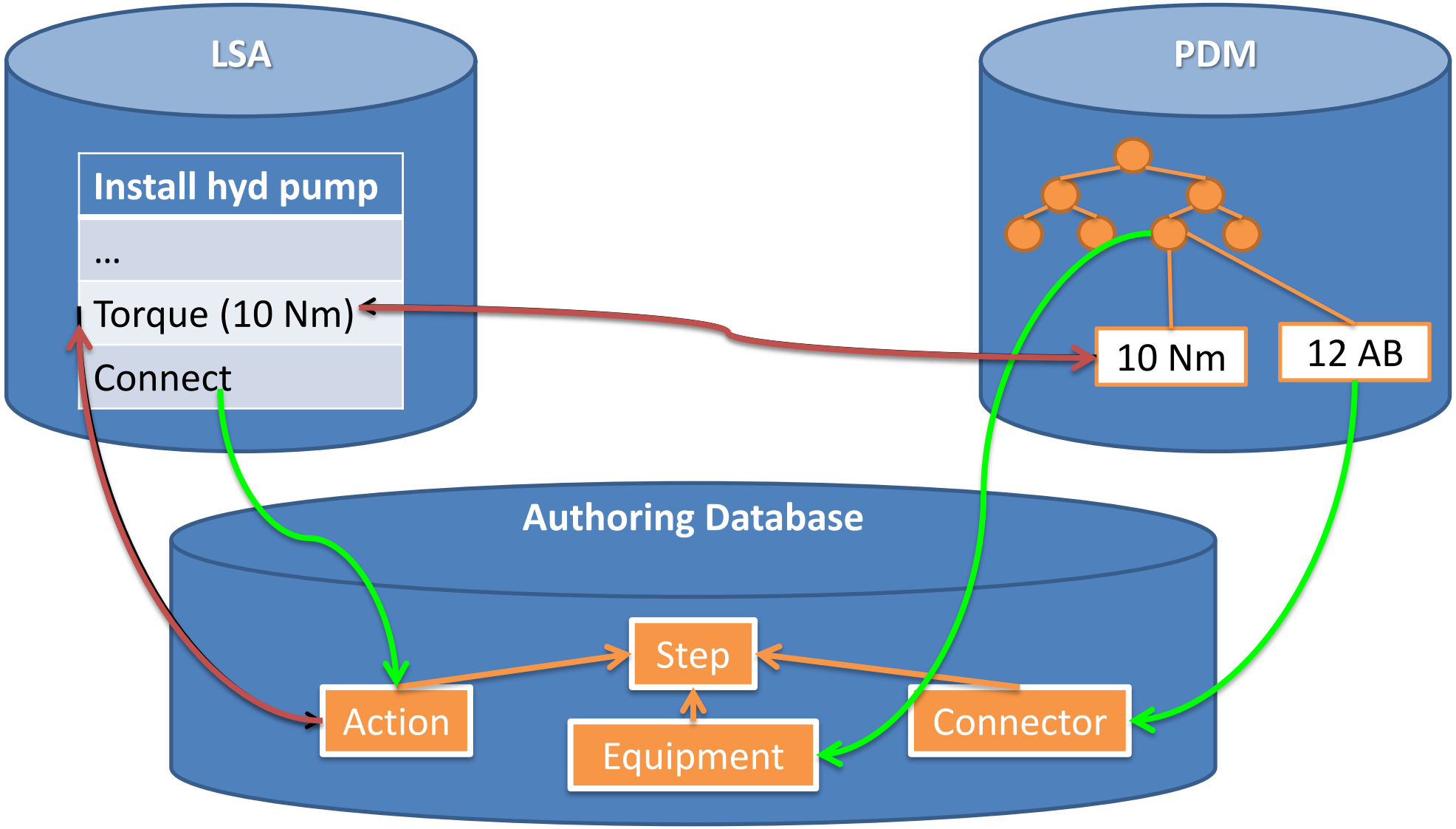
# Business environment in future - Data management

## Relevant tasks for the data management on information element level:

- Identify and define information elements contained within Technical Publications by…
  - analysis of relevant specifications,
  - analysis of existing publications.

- Identify and specify relations/dependencies between these information elements

# Business environment in future - Source data integration



# Business environment in future - Source data integration

## Required tasks related to source data integration:

- Identify relations/dependencies of information elements to external data sources:
  - Identify the relevant data source for each information element,
  - Evaluate possible format conversion.

- Define functional requirements
  - Define the obligation to obtain data from external data sources,
  - Define the visualization of data contained in external data sources,
  - Define the requirements on the traceability mechanism.

# Business environment in future - Authoring Cockpit

## Example:

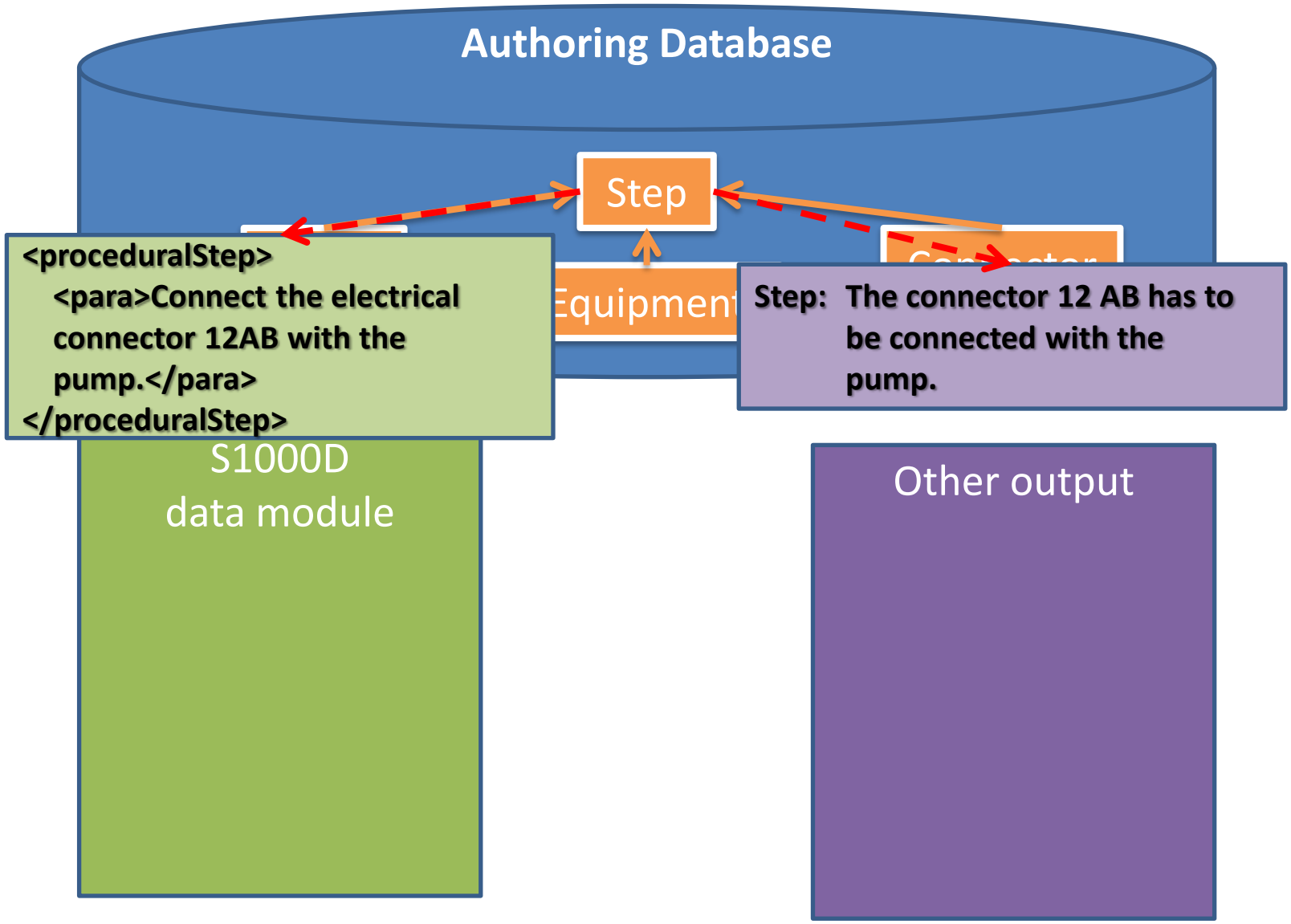
The pilot pushes the throttle lever forward with the goal to accelerate. For the pilot is important that the aircraft accelerates and not the technology behind.

## Conclusion for Authoring:

The Technical Author shall be empowered to focus on the contents of Technical Publications by decoupling him from „the technology behind“ (SGML/XML).

→ So the task is to define the „new way of authoring“ including use cases, related functions and an optimized visualization.

# Business environment within future – Flexible export functions



# Business environment in future - Flexible export functions

## Relevant tasks for the development of flexible export functions:

- Identification of relevant publication/export formats (e.g. S1000D v 4.2 data modules, customer specific lists, etc.).
- Define mapping between information elements and required contents for each publication/export format.
- Define conversion rules and patterns:
  - E.g. in a data module (S1000 v 4.2) a step is a XML element called <proceduralStep>,
  - Patterns have to be defined „Connect [el. connector] to [equipment]“.

# Summary

## Steps for authoring task execution in the future business environment

1. Initiate a procedural data module in the CSDB.
   → No manual initiation required, because data module is generated in the end.

2. Retrieve source information from LSA database (LSA task „Install procedure“ for equipment 291101).
   → Source data can be obtained via direct interfaces. No use of other tools necessary

3. Transform information contained in the LSA task into S1000D schema.
   → Not necessary because transformation is done automatically by an export function. (Data module by touch of a button)

# Summary

4. Check data module against BREX data module.
   → The export functions ensure formal correctness. So no check against BREX data module is required.

5. Perform quality assurance.
   → Because many formal requirements are managed by the tool environment, the number quality checks is predicted to decrease.

6. Perform first (technical) verification.
   → The direct interfaces are able to ensure the usage of already verified information. So the verification effort is expected to decrease.

# Authoring Cockpit @ Airbus Defence & Space

## [2016] Phase 1 – Prototype for procedural data modules

- Setup of a relational database managing information elements
- Implementation of interfaces to external data sources for some examples
- Word-like graphical user interface

# Authoring Cockpit @ Airbus Defence & Space

## [2017] Phase 2 – Information model

- Definition of information elements and relations
- Identification of dependencies to external data sources and specification of related requirements
- Definition of use cases and functions for the Graphical User Interface

# Thank you

for your attention!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