The Universal Environmental Data Model - the PRISMA project

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on behalf of the PRISMA consortia

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PRISMA project partners

Steel Industry
- Celsa Opco
  - Celsa Barcelona
- Tata Steel Technology
  - Tata steel Netherlands
  - TataSteel Services
- Ori Martin
- Acciaierie Bertoli Safau

Plant Builders
- DANIELI Automation S.p.A.
- SMS
- Primetals
- Tenova

Specialist
- AQUILES
- BM SPA
- RINA CSM

Academia
- LTU (coordinator)

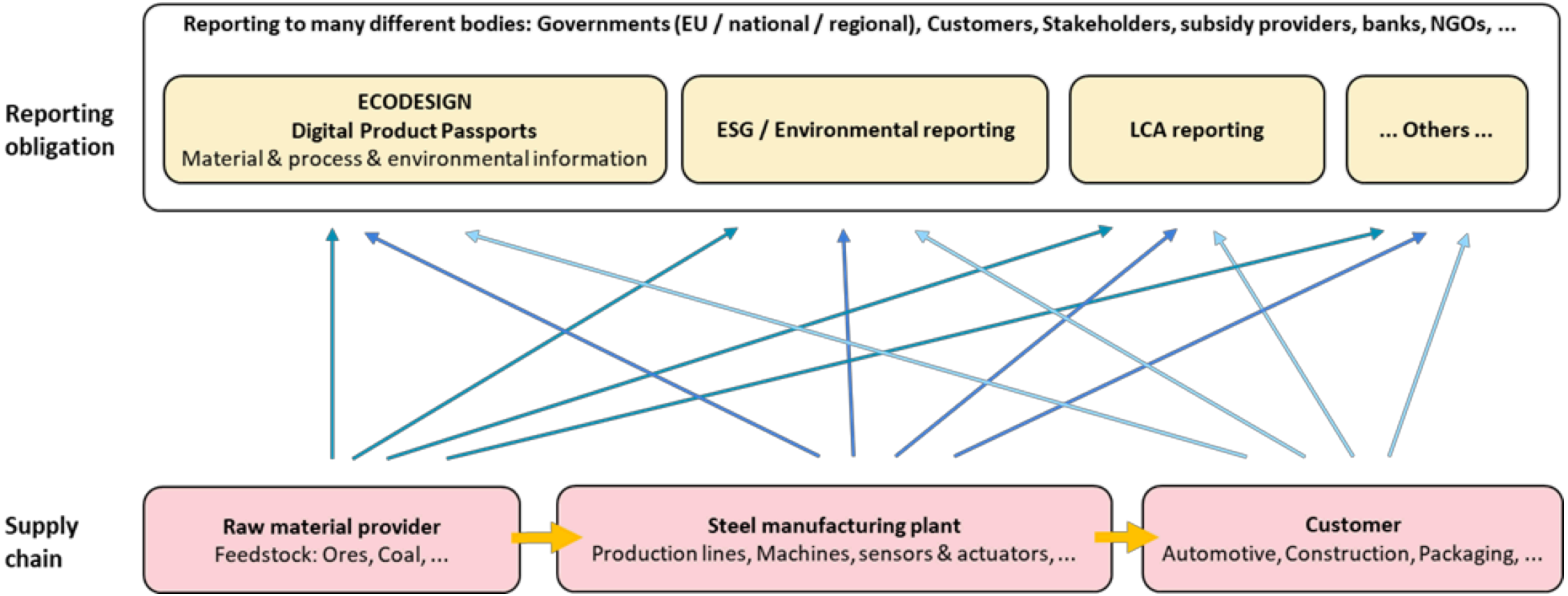
Non-profit association (AISBL)
- ESTEP

Subcontracting (10%, non-partner)
- SSSA
- ERGO
- BeanTech
- STIIMA CNR
- REGESTA
- FASTERNET
- Vetta

PRISMA vision

The vision of the PRISMA project is that the steel industry has access to Evolutionary Framework, Data models and Tools for Environmental Reporting along Steel Value Networks and Lifecycles.

Environmental data reporting challenge



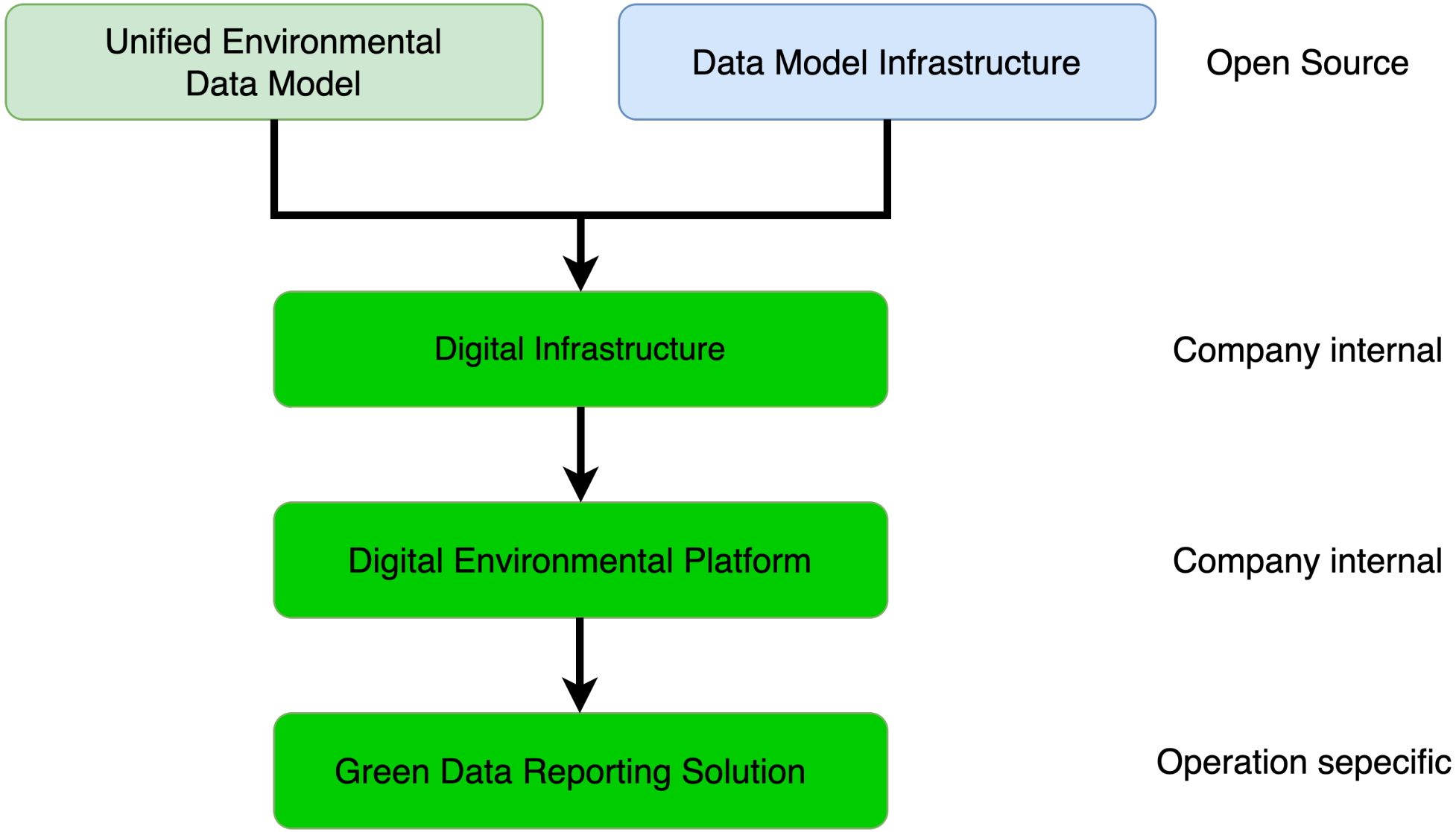
Reporting challenges

1) Reporting must be exchanged among many bodies, according to different standards, definitions, rules, formats.
2) This is valid also for standards regarding applications such as LCA/LCCA and the incoming DPP that is still not based on a cogent definition of Green Steel resulting in a lack of harmonized standardization scenario.
3) Reporting and data collection are still largely *manual processes.*
4) Reporting burden is rapidly *increasing* (for example between steelmakers and customers, due to DPP and the related legislation and existing future standards).
5) Figures in reports are "*static*," and averaged over large periods (years) so, for example, use of LCA in a dynamic perspective is not yet considered by norms and standards despite its evident usefulness in pushing de-carbonization as part of manufacturing efficiency and transparency in monitoring.
6) Figures are "coarse", i.e. not grade specific and not production-route specific. Digitalization might cover these issues however, legacy issues plus unclear and very slow definition of Guidelines towards the deployment of new advances of Digital technologies has proved to be a formidable obstacle equal to the amount of investment needed to reach the total compliance with the Industry4.0/5.0 architecture.
7) The DPP obliges every party in supply chain to request and provide confidential data that is too often depending on the relevant power relationship between supplier and customer and prospectively according to a single batch perspective.
8) Current regulations and standards regarding environmental reporting can be foreseen to change rather frequently asking for re-occurring updates of reporting content and reporting obligations.

Strategic objective

Provide a Unified Environmental Data Model and Digital Infrastructure to be integrated into the ICT landscape of manufacturing facilities for accelerating the de-carbonization of the steel sector.

PRISMA technology



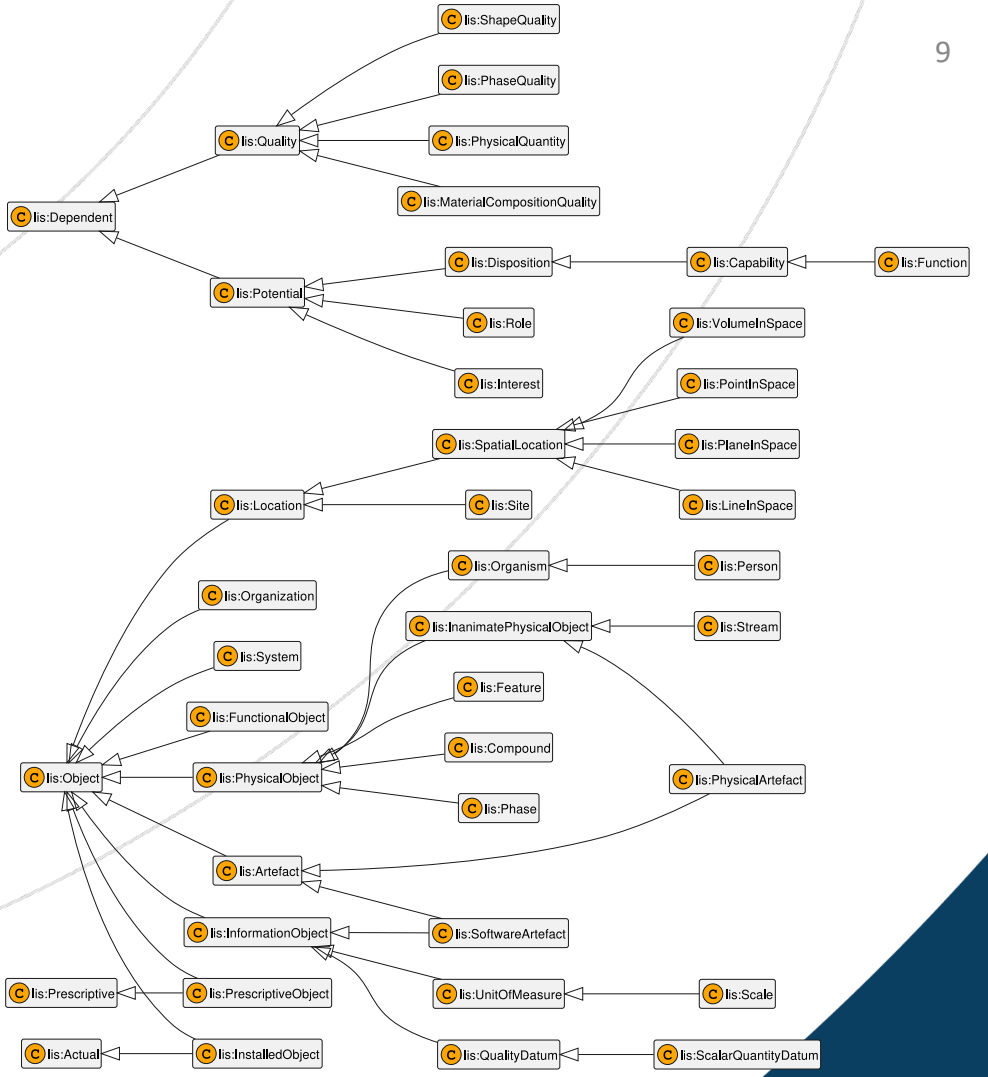
Universal Environmental Data Model

- Challenge
  - Many data models involved
  - Many standards
  - A lot of data
    - PRIMSA will address how to cost effective integrate all data enabling:
    - Environmental reporting
    - LCA
    - LCCA
    - DPP

Data integration/translation - based on Chips-JU project results

Results from the Arrowhead fPVN project

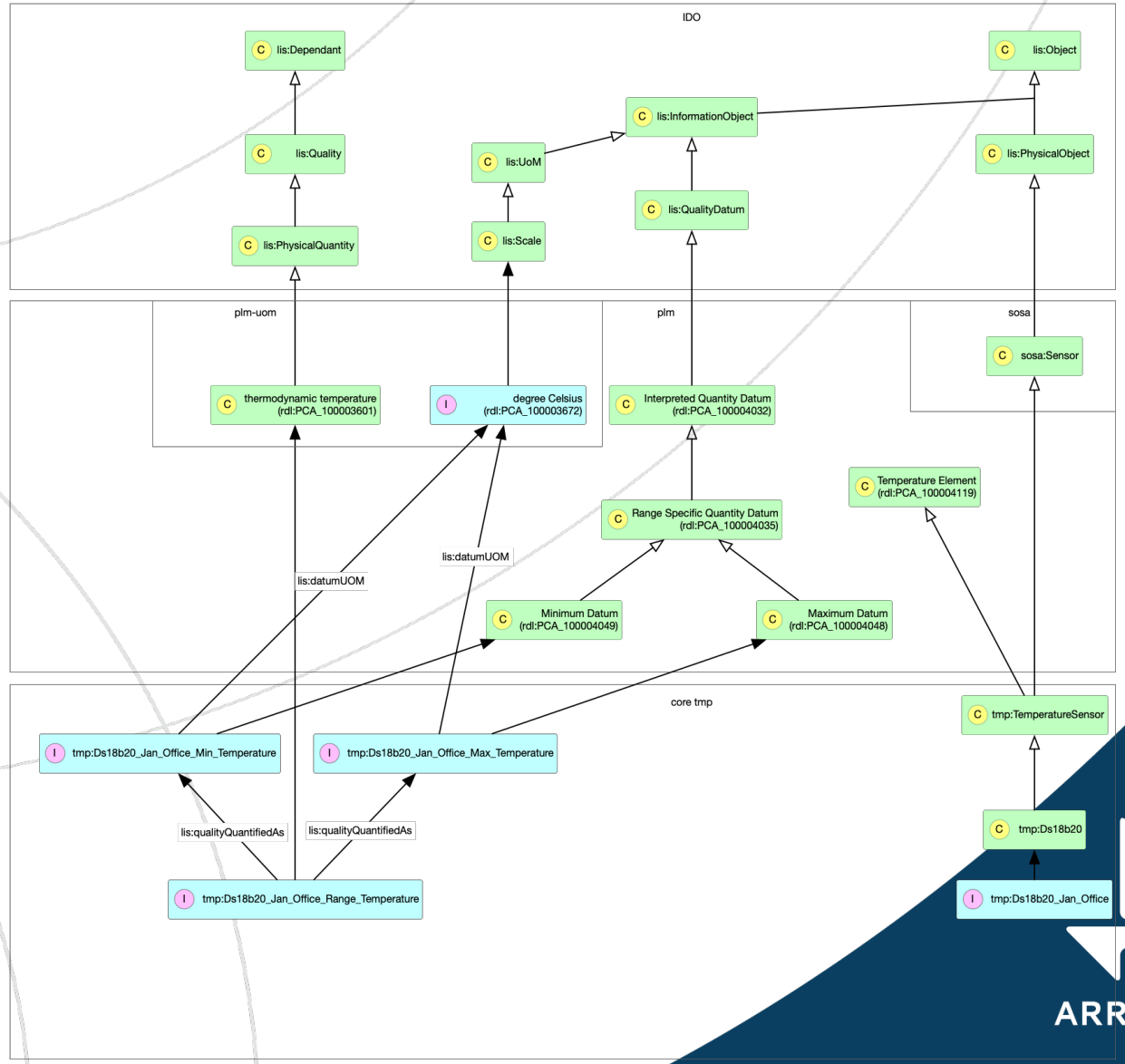
- Usage of upper ontologies
  - Industrial Data Ontology - IDO Standardised as - ISO 23726-3



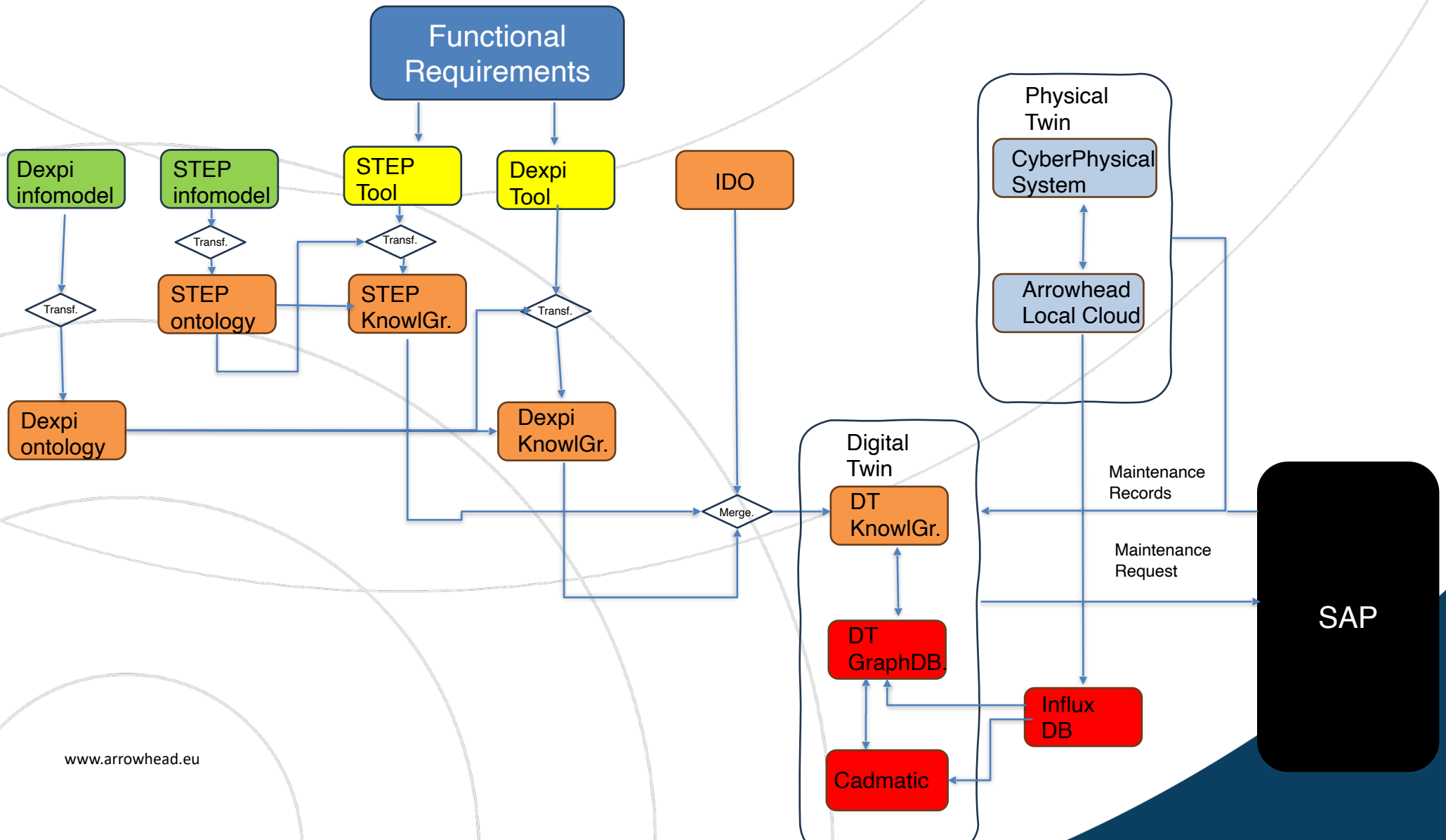
ARROWHEAD
fPVN

Ontology based data model integration approach

- Integration of ontologies based on an upper ontology enabling
  - Semantic interoperability between standardised data models
    - ISO15926, ISO10303, ISO81346, ,,,
- Reduced engineering cost for
  - Environmental data reporting
  - LCA and LCCA
  - DPP

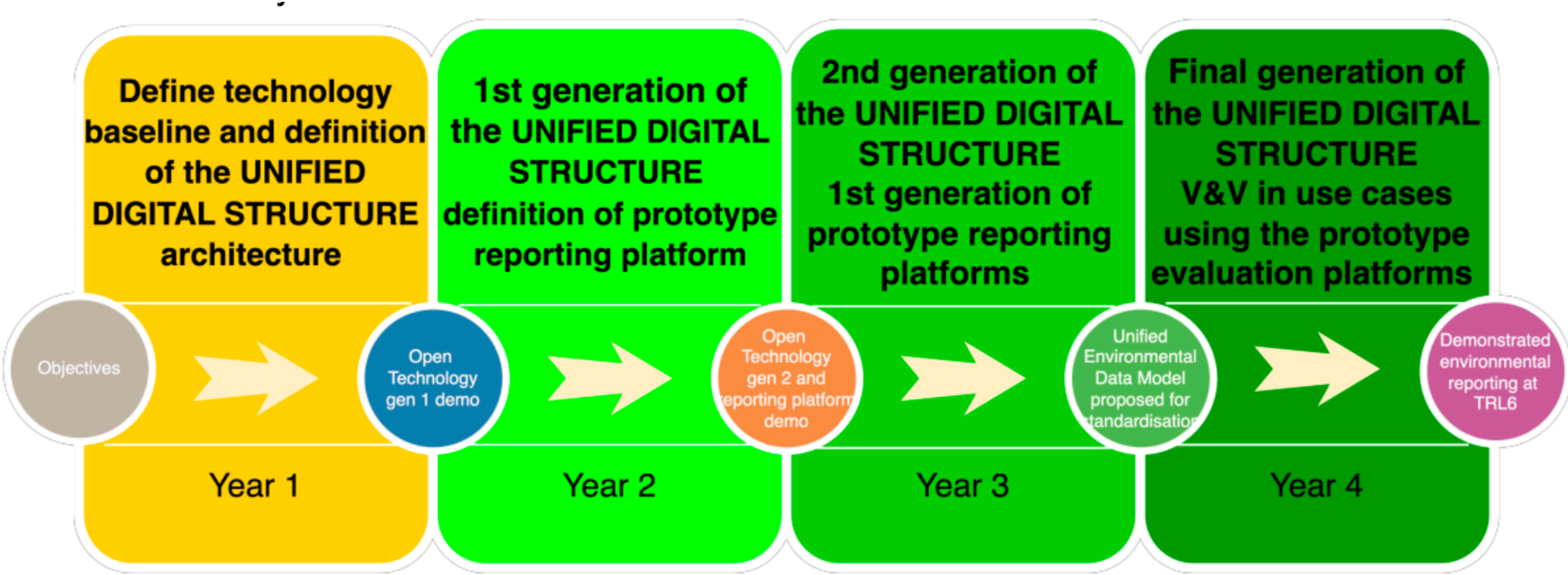


Evaluation in Paper & Pulp industry



ARROWHEAD fPVN

The PRISMA plan



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