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International Energy Agency Wind Task 43 Digitalization: Data Standards Gap Analysis

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Abstract

This work outlines the findings of the IEA Wind Task 43 sub-group who investigated the degree to which industry standards and guidelines support those activities and disciplines which contribute to higher asset value.

A framework for assessing the coverage of standards and guidelines is presented along with initial findings of a gap analysis highlighting potential areas for improvement.

A number of specific examples, or use cases, are presented which highlight the need for more effective development and deployment of standards or guidelines. In addition, a possible approach is proposed which could improve the FAIR characteristics of standards and guidelines i.e. Findable, Accessible, Interoperable, Reusable[1].

Finally, suggestions and recommendations for further work are provided to ensure the availability of standards in support of wind industry digitalization.

Method for Processing of Maintenance Information
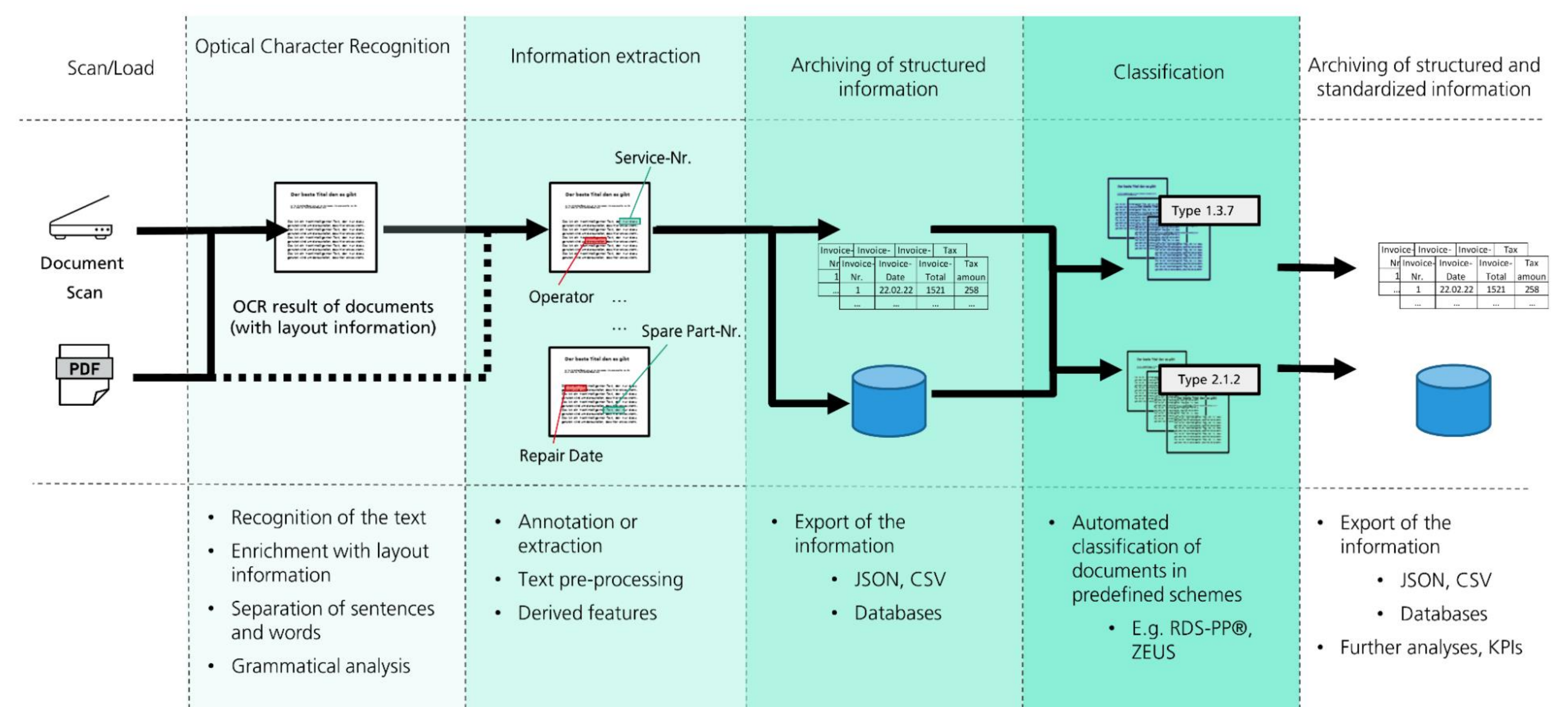
Objectives

A search for applicable standards for wind energy use cases is done. The preliminary search is categorized in the following topics:

- Modelling and Data Collection, Assessment and Management

Furthermore, the standards are categorized regarding their specialization in industry branches. For this purpose, the following categories are defined:

- General, Wind Specific and other Industry Specific

This categorization allows a rough estimate on the possible gaps and creates a basis before concentrating on specific use cases: Risk based maintenance and processing of maintenance information.

Method for the Standard Gap Analysis

Results

The standard gap analysis shows:

- A lack in the standardization of risk assessment procedures
- A vast number of standards and guidelines is specific to other industries. Regional differences or major industries of certain countries lead to the specifications in those regions, while these topics have never been a topic for discussion in others.

For example, accelerating and supporting the usage of standards around a method of processing of maintenance information will:

- Facilitate the digitalization process of past maintenance reports and makes maintenance data machine-readable
- Enable interoperability of various data sets from different enterprises and stakeholders
- Enable the development of data-driven models and KPI-driven maintenance optimization for which standardized data is crucial
- Reduce the workload for preprocessing and labelling service reports which is solely done manually so far

Outlook and Conclusions

It can be concluded that the value of the asset increases with more objective information about it and the proof of its good condition. Missing data standards hinder the availability of good data and therefore hinder further analysis and data sharing. Also, it can be concluded that there is a lack of standards around "data" and "processes" which underlines the need for further asset management standards

Additionally, to evaluate the different use cases an evaluation template based on the data life cycle phases and the product life cycle phases is developed. This can be used to evaluate the different use-cases. The group also proposed a use case for risk-based maintenance of e.g. blades[2].

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