- Printed materials required the creation of metadata, to reuse the books and journals. Cataloging these materials is done by humans or by intellectual intelligence.

- Digital materials are based on structured and/or unstructured data and are machine oriented. Finding, accessing, operating and re-using digital data can be done automatically or by means of artificial (machine) intelligence.

German-Dutch dialogue on the future of libraries

- Actually libraries picked these developments up focusing metadata, OCR, OLR and other options of pattern recognition.

- Examples are discovery systems, curation of data, data visualisation, deep learning and neural networks.

- The impact of AI on cultural institutions and players beyond libraries are being discussed in a working group of the German Council for Culture.

German-Dutch dialogue on the future of libraries

Enrichment (disambiguation) of data sets with metadata - also beyond libraries - to:

- corporations,
- places,
- persons,
- classification and verbal subject indexing,
- monographs and journal titles etc.

Mapping procedures, identifiers also via PIDs (DOI, ISBN, OCN,URI,URN etc.) enable automation

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German-Dutch dialogue on the future of libraries

Semantic contextualisation of metadata Linked (Open) Data based on RDF/XML modeled data (triple stores) - (partially) automatable:

- Data resource: catalog holdings, master and standards data, thesauri, scientific systematics (= ontologies).
- Examples: Subject bibliographies, German Digital Library, Europeana, Union Catalogues, Wikipedia.
- Knowledge Graphs (LOD trees or clouds)

German-Dutch dialogue on the future of libraries

Improve searchability of annotations (metadata) to full texts and of full texts (TDM) themselves.

- Application areas: Edition sciences, lexicology, linguistics - "Digital Humanities".
- Prerequisite for empirical working methods in humanities and social sciences new research objects, working methods and presentation of results (visualizations)
- Requires structuring of metadata and full texts according to XML as well as modeling of data resources for annotation and contextualization according to RDF.