Appendix 1

The Metadata Well – Requirements

Version 26.09.2024

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1 Definitions and References

Axiell: Library system vendor. Library system: Micromarc and Quria. URL: https://www.axiell.com/no/

Biblioteksentralen is a co-operative owned by the municipalities and county councils whose task is to deliver products and services to libraries and similar institutions. Among the services they provide are books with associated metadata. In recent years, they have invested heavily in the development of digital communication and infrastructure services for the libraries. Biblioteksentralen has been the national library's supplier of metadata since November 2020. URL: https://www.bibsent.no/

Bibliotekservice: Library system vendor. Library system: Tidemann. URL: https://www.bibliotekservice.no/

Biblioteksystemleverandørene i Norge: https://biblev.no/

Bibliotek-Systemer: Library system vendor. Library system: Bibliofil. URL: https://bibsyst.no/

BIBSYS Consortium: A consortium of Norwegian academic libraries and other special libraries. The consortium consists of **approximately** 80 institutions within the knowledge sector in Norway, comprising all Norwegian university libraries, the national library, university college libraries, medical libraries, museums and a number of research libraries and institutions. The libraries in the consortium share a joint catalogue.

Bidder: A legal body making an offer to this tender.

Bokbasen is a joint-stock company owned by the publishers Cappelen Damm, Gyldendal, Aschehoug and Akademika, in addition to some bookstore chains, Forlagsentralen and Sentraldistribusjon. They provide infrastructure for publishers, bookstores, online bookstores, streaming services, libraries and schools, and they produce metadata for the publishers and distribute it to the bookstores. Libraries can also purchase the same metadata. Bokbasen was from 2017 to November 2020 the national library's supplier of metadata. URL: https://www.bokbasen.no/

Contractor: The future supplier of the Metadata Well.

CRUD: Create, Read, Update and Delete.

Humord: https://www.ub.uio.no/bruk/sok-i-hele-biblioteket/emneord/humord/

IRI: Internationalized Resource Identifier

Legal Deposit Act: https://lovdata.no/dokument/NL/lov/1989-06-09-32

Libriotech: Library system vendor. Library system: Koha. URL: https://libriotech.no/koha/

LRM: Library Reference Model.

MARC 21: Format for bibliographic data. URL: https://www.loc.gov/marc/bibliographic/

Nasjonalbibliotekets vokabulartjeneste (nbvok) is the vocabulary service provided by the national library, containing controlled vocabularies represented as open linked data according to the SKOS-ontology. Our vocabularies are published using the Skosmos application. SKOSMOS is developed by the national library of Finland and designed particularly with user-friendly navigation in structured vocabularies in mind. URL: (nbvok) https://www.nb.no/nbvok/en/

The national library: The National Library of Norway

National Place Name Register (SSR) URL: https://www.kartverket.no/en/on-land/stadnamn

National strategy for Libraries 2020-2025: Utvidet nasjonal bibliotekstrategi - ut 2025: Rom for demokrati og dannelse: https://www.regjeringen.no/no/dokumenter/utvidet-nasjonal-bibliotekstrategi-ut-2025-rom-for-demokrati-og-dannelse/id2995881/?ch=1

Norsk WebDewey: Norwegian translation of Dewey Decimal Classification, 23. ed. Available as an online resource. More information (in Norwegian): https://bibliotekutvikling.no/kunnskapsorganisering/norsk-webdewey/

Norwegian Authority File: Persons and Corporate Bodies: Norwegian Authority File: Persons and Corporate Bodies is a registry containing information about persons, conferences and corporations, often referred to as authorities. The national library is responsible for all authorities connected to objects in its collections, including material acquired by legal deposit. The other libraries in the BIBSYS Consortium are responsible for authorities connected to their own separate collections. URL:https://bibsys-almaprimo.hosted.exlibrisgroup.com/primo-explore/search?vid=AUTREG&lang=en_US

More information (in Norwegian):

https://bibliotekutvikling.no/kunnskapsorganisering/vokabularer-utkast/felles-autoritetsregister-for-personer-og-korporasjoner/

OAI-PMH: The Open Archives Initiative Protocol for Metadata Harvesting. URL: https://www.openarchives.org/pmh/

RDA: Resource Description & Access – a standard for registration of metadata.

Sikt - Norwegian Agency for Shared Services in Education and Research, is a body that develops, procures, and delivers digital services for education and research. In particular, Sikt is responsible for acquiring and managing the common library services platform for the members of the BIBSYS Consortium.

SRU: SRU- Search/Retrieve via URL. URL: https://www.loc.gov/standards/sru/

Systematic: Library system vendor. Library system: Cicero. URL: https://systematic.com/nb-no/bransjer/library-learning/

2 Introduction

This request for tender has the purpose of establishing a new resource within the Norwegian library network, i.e. a shared metadata source containing open and free metadata. The new resource is to be named The Metadata Well.

The rest of this section describes the environment in which the future Metadata Well is intended to function.

2.1 About the National Library of Norway

The operations of the national library are governed by the Legal Deposit Act (Pliktavleveringslova). The objective of the act is to ensure that all documents made publicly available in Norway are deposited with the national library, so that records of Norwegian culture and society are preserved and made available as source material for research and documentary purposes.

In its role as a research library and custodian of the national collection of deposited material, the national library is a key part of Norway's research infrastructure. Its collection constitutes a unique knowledge base for the benefit of present and future generations.

The national library operates a repository library (Depotbiblioteket), i.e. a collection of surplus books and periodicals, forming a core component of the inter-library lending network in Norway.

The national library aims to make its entire collection digitally available at nb.no. Also, the national library has been given the task of digitising the audio-visual collections of archives and museums in Norway. Hence, digitisation of analogue material in any medium is a continuous and highly prioritized activity.

The national library is mandated by the Norwegian Government to function as a competence centre and service provider for the whole cultural heritage sector, including libraries. This involves guiding and supporting the Norwegian libraries in their aimed-for role as active and relevant agents in their respective communities. the national library's duties in this respect are outlined in the policy document National strategy for Libraries 2020-2025.

The national library has the responsibility to provide useful bibliographic standards and tools to other libraries. The national library provides free access to high-quality bibliographic data for all libraries. The purpose is to free up staff resources in the libraries and ensure consistent, quality-assured metadata in the libraries' catalogues. The delivery consists of metadata and cover images for Norwegian publications like printed books, audiobooks, textbooks, e-books

and language courses. From 1 November 2024 onwards, the metadata descriptions will be supplied by Bokbasen.

2.2 The Norwegian Library Landscape

The library sector in Norway has a long history of resource and data sharing. Through establishing a shared, authoritative metadata resource, we hope to support and strengthen that culture.

The Norwegian library landscape includes organizations of various types, as described below.

2.2.1 The libraries

Public libraries: According to the Act of Public libraries, each individual municipality in Norway must provide a public library within its boundaries, its operation and collection fully funded by the municipality. As of January 1, 2024, there are 356 public libraries in Norway.

County libraries: Library services at the regional level, mostly providing services to the public libraries within the county. Range of services and collections varies greatly. Funded by the county.

School libraries: Libraries in primary, secondary or high school, for educational as well as recreational purposes. In some cases, school libraries double as public libraries.

Special libraries and research libraries: Libraries connected to companies, research institutes or universities and colleges. Varies greatly in size and nature, - ranging from 1 person services in specialized companies to large university libraries with more than 100 employees.

2.2.2 Metadata suppliers and library system vendors

At least two types of corporations outside the library sector should be considered in the Metadata Well context:

Metadata suppliers: There are two commercial metadata vendors in Norway, Biblioteksentralen and Bokbasen. Both companies sell metadata to libraries, Biblioteksentralen also sells books, films and other publications. Bokbasen is the national library's metadata subcontractor, starting November 1, 2024.

Library system vendors: Norwegian libraries use various library systems. Most academic libraries, including the national library, are gathered in the BIBSYS Consortium, sharing one catalogue residing on the Alma Library Platform from Clarivate, with Sikt as the national system manager (currently in a tender process). Public libraries and small special libraries on the other hand, usually have their own local catalogue provided by one of a handful vendors. The systems currently in use are Bibliofil by Bibliotek-Systemer, Micromarc and Quria by Axiell, Tidemann by Bibliotekservice, Cicero by Systematic, Koha, supplied by Libriotech and a few other systems.

Negotiations on protocols, standards and interoperability issues are generally conducted within a collaboration group called Biblioteksystemleverandørene, comprising all vendors/managers of systems used in Norwegian libraries, as well as the national library, Biblioteksentralen and Bokbasen.

2.2.3 Special services

Biblioteksøk ("Library Search")

The national library's Biblioteksøk ("Library Search") provides one point of access to all Norwegian library catalogues as well as allowing the placement of orders for loans. Norwegian library staff and borrowers with a national library card (Bibliotekkortet) can order books and other material available for lending. The books and material ordered can be collected at the nearest library. The order will be processed based on criteria such as availability, geographical location and the number of previous loans. The national library through its repository library (Depotbiblioteket) is a key supplier to Biblioteksøk. Biblioteksøk also provides access to books in the national library's digital collection.

BaseBibliotek is a comprehensive register of all Norwegian libraries (and their foreign interlibrary loan connections) that have been assigned a Norwegian library number. The library number is used to identify libraries in services that libraries use and should also be used as identification against the Metadata Well.

3 Introducing the Metadata Well

3.1 Overall description

The establishment of the Metadata Well is based on measures originally specified in the National strategy for libraries 2020–2023, from The Ministry of Culture and the Ministry of Education and Research.

The Metadata Well shall provide libraries and others with a single authorised source of quality-assured and uniquely identified metadata descriptions. The Metadata Well can also constitute a hub for reuse of metadata between libraries. Suppliers of metadata and other service providers can use the Metadata Well as a basis for additional services. Offering supplementary data connected to metadata descriptions in the Metadata Well, e.g. descriptions of content, keywords, tags, reviews, etc. are relevant examples of such services.

The initial scope of the Metadata Well will cover publications and archive material in Norwegian libraries including material held by the national library, with the Norwegian National Bibliography as a key part.

Hence, the national library with its subcontractor Bokbasen will be the main data providers to the Metadata Well. In addition, other trusted parties can be authorised to update and enrich its content.

As data insertion methods, the Metadata Well must support batch import from data sources like library catalogues, e.g. the national library's catalogue. It must also enable users to edit metadata descriptions directly in the Metadata Well user interface. To accommodate this, the Metadata Well must be accessible via open and standardized interfaces, and offer data in several formats, including MARC 21 and linked data according to one or more ontologies.

The metadata descriptions must be in accordance with current guidelines for metadata and content description, Resource Description and Access (RDA), and the metadata model must be aligned with Library Reference Model (LRM). Entities referenced in metadata descriptions must be assigned globally unique and persistent identifiers so that they can be recognized throughout their life cycle and across systems. The Metadata Well will not include circulation information, nor information about items/copies.

The Metadata Well should accommodate information about data provenance and other administrative data (data about metadata) on a suitably granular level. For example, future versions of Biblioteksøk will be based on data in the Metadata Well, at which point data provenance in the Metadata Well will be crucial (see also 3.2 below).

3.2 Stakeholders and their potential use of and benefit from the Metadata Well

Metadata descriptions in The Metadata Well are meant to be accessible to anyone who wants to develop and offer services based on the data, either for their own use or a market.

In the library sector, the following stakeholders are particularly relevant:

Libraries

- will get access to a single authorised source of quality-assured metadata,
- will be able to reuse metadata from other libraries,
- will be able to provide their metadata to the Metadata Well,
- will have metadata automatically updated from a central source,
- will be able to purchase services related to the Metadata Well from external service providers, for example reviews and recommendations,
- will be able to include metadata search and retrieval in their websites.

Universities, colleges and public bodies

- will get a single authorized source of quality-assured metadata on publications in one place,
- will be able to provide their metadata to the Metadata Well.

Metadata and data providers can connect external data or services to metadata descriptions in the Metadata Well, such as reviews or subject headings.

Bookstores can link metadata from The Metadata Well to books they offer.

Library system vendors can develop services based on data in The Metadata Well.

Service providers can provide services that are based on metadata descriptions in The Metadata Well.

The national library

- will have a central place of delivery for metadata to libraries and other stakeholders,
- will provide the Metadata Well with data from the national bibliography.
- must integrate the production of metadata for the Metadata Well with the production of metadata for its own catalogues and bibliographies,
- can use the Metadata Well as a metadata source for Biblioteksøk.

4 About requirements and their categories

The requirements for the requested software and services are presented in chapters 5 and 6. In both chapters, the requirements are subdivided into thematic groups preceded by short introductions for context and easy comprehension. All requirements are categorized according to the following typology:

1. M: Minimum requirements (MUST requirements)
2. M+ Minimum requirements (MUST + DESCRIBE)
3. E: Explanation requirements (DESCRIBE or SHOULD + DESCRIBE)
4. D: Desired requirements (SHOULD)

For each thematic group, the requirements are ordered according to the above categorization.

4.1 How to answer requirements

The various types of requirements are to be answered by filling in the Response form for minimum requirements (Appendix 3A) and the Response form for desired requirements (Appendix 4A) in the following way:

M: Minimum (MUST) requirements. These requirements must be answered with a simple YES or NO, according to whether the individual requirement is fulfilled in the offered solution.

M+: Minimum requirements: In addition to a binary answer (see above), a textual description is required. The description will not be used for evaluation, only to document and review fulfilment of the requirement in question.

E: Explanation requirements express functionality or features that the offer SHOULD include. Please answer

- YES, if and only if the requirement will be fully complied with in the offered solution. In addition, please provide a description as instructed by the individual requirements. The description must be clear, to-the-point, and no longer than the maximum length indicated in the response form. Note that links to other sources like white papers or

extensive documentation will not be considered during evaluation. Illustrations/figures may in some cases be included without counting towards the maximum length given.

- NO, if the requirement will not be fulfilled in the offered solution

D: Desired requirements represent functionality or features that the offer SHOULD include. Please answer

- YES, if and only if the requirement will be fully complied with in the offered solution. Please also indicate its current status, by filling in one of the following values in the Status column:
    - IMPLEMENTED, if the feature in question is already implemented
    - IN DEVELOPMENT, if the feature in question is under development. If so, please provide an approximate date for planned completion of the development work.
    - PLANNED, if the bidder plan to include the requested feature in the offered solution but has not started development yet.
- NO, if the requirement will not be fulfilled in the offered solution

Descriptions created as response to requirements of type M+ and E should be collected into a separate textual document (Appendix 6 Descriptions), with clear reference from each description to the requirement it relates to.

All text provided by the bidder as response to this tender must be in Norwegian or English.

4.2 Requirements assessment

The minimum requirements (M and M+) are not subject to evaluation. All minimum requirements must be answered YES for the offer to be considered.

Answers to Explanation and Desired requirements (E and D) will be assessed and scored. Assessment and scoring of E requirements will be based on the description given by the bidder.

Not all D and E requirements are considered equally important. Hence, the scoring of individual D and E requirements will depend both on bidder's answer and their relative importance.

The sum of the scores of E and D requirements pertaining to the software solution (listed in chapter 5 below) will be given 50 % weight when computing the total score of the offer.

The sum of the scores of E and D requirements pertaining to implementation and services (listed in chapter 6 below) will be given 25 % weight when computing the total score of the offer.

5 Requirements to the software solution (weight 50%)

The objective of this procurement is to establish a metadata management system (called the Metadata Well) to serve as an authoritative source of metadata for Norwegian libraries and others. Concerning time planning, our goal is to have the Metadata Well up and running by the end of 2025.

The national library strongly prefers that the Metadata Well platform is based on off-the-shelf components as much as possible, and that it already is in operation with existing users.

However, as indicated by the instructions for bidder's response to requirements (see 4.1 above), we expect and accept that some development may be needed to cover the requirements described in this document.

In general, we expect that the offered solution will be in continuous development governed by a reliable software development process, adapting to changing needs and evolving technology.

This chapter specifies functional and non-functional requirements to the Metadata Well as a software solution. For completeness and coherence, both M/M+, E and D requirements are listed together. As stated above, minimum requirements will not be evaluated, hence only E and D requirements will contribute to the weighted score resulting from the bidder's response.

5.1 General/overall requirements

This section lists miscellaneous requirements pertaining to the solution as a whole.

One important concern is the expected data volume, of which it is hard to make a reliable estimate. Ultimately, the Metadata Well may be expected to store bibliographical entities corresponding to the total set of MARC 21 records in the catalogues of most Norwegian libraries, although first and foremost that of the national library and the public libraries.

To give some idea of size, the main catalogue of the national library currently contains about 3.2 million bibliographic records in MARC 21. However, though the intention is to include all catalogues, supplying data to the Metadata Well is not compulsory for any library, hence it is difficult to foresee the growth rate of the metadata volume. For this reason, it is essential that the solution is scalable and prepared for large data volume. See also 6.1 below about a baseline dataset.

Related User Stories: *13, 19.*

No.	Requirement	Max length (pages)	Type (M/D/E)
1	The offered solution MUST support UNICODE as a character set. Please DESCRIBE how, including any limitations.	0.25	M+
2	The offered solution MUST be able to handle large volumes of data, and also be scalable. Please DESCRIBE any limitations.	0.25	M+
3	The offered solution MUST be able to provide access control to the data in the Metadata Well, governing both access via API and direct use (via user interface).		M
4	The contractor MUST be able to provide a procedure for users to request and be granted access to the Metadata Well. Access criteria and user categorizations MUST be defined in collaboration with the national library.		M
5	The offered solution MUST be able to mint and manage IRIs according to syntax defined by the national library.		M
6	The metadata model in the offered solution MUST be aligned with the RDA/LRM model.		M
7	The offered solution MUST include a fully web-based user interface with search facilities.		M
8	In offered the solution, it SHOULD be possible to constrain the use of certain operations (update, delete) to authorized users.		D
9	In the offered solution, it SHOULD be possible to grant/constrain access based on provenance information in the metadata themselves. For example, a user should not be allowed to update data elements for which provenance information declares exclusive rights to others.		D
10	In the offered solution, it SHOULD be possible to grant time-constrained access rights for users.		D
11	The user interface SHOULD exist in both Norwegian Bokmål and English.		D
12	The user interface SHOULD support multilingualism in general.		D
13	The user interface SHOULD support all commonly used web-browsers.		D

5.2 Interoperability requirements

As intended metadata source for all Norwegian libraries, the ability to interact and exchange data efficiently with other systems is crucial for the Metadata Well. Most of its content will be obtained from appointed reliable data sources (rather than created in the system), and

subsequently made available for data consumers such as library catalogues and service providers. Hence, advanced facilities for data exchange are essential, with the capacity to handle large amounts of data.

Interacting with other systems also involves *referencing* their data entities, without importing them into the Metadata Well. Data resources typically used in this way include authority files and external, controlled vocabularies with suitable APIs. For specific requirements on authority support, see 5.4.1 below.

It is strongly preferred that all communication and data exchange with other systems is performed via open, standard protocols and interfaces.

Related User Stories: *4, 5, 13, 16, 17, 20, 22, 23.*

No.	Requirement	Max length (pages)	Type (M/D/E)
14	The offered solution MUST be able to provide an API suite with full CRUD metadata functionality.		M
15	The offered solution MUST support OAI-PMH (including set handling).		M
16	The API Suite SHOULD have good capacity/performance and be scalable. Please DESCRIBE performance including response time, as well as operational conditions affecting performance.	0.25	E
17	Please DESCRIBE which standards and protocols are currently supported by the API suite.	0.5	E
18	The offered solution SHOULD be able to send out event notifications or other forms of messages whenever changes occur in the metadata (e.g. webhooks). Please DESCRIBE the facilities for this, including which events are supported.	0.5	E
19	The offered solution SHOULD provide an API for reading/retrieving data that is open for all.		D
20	The offered solution SHOULD support SRU for search and retrieval.		D

5.3 Data import and export

The data in the Metadata Well will originate from many sources. The national library with its contracted metadata provider, Bokbasen will be a major source, with daily imports to the Metadata Well. Bokbasen alone will supply metadata for about 9000 publications per year. However, Biblioteksentralen, libraries using the service as well as other trusted service providers will probably also supply data to the Metadata Well. Consequently, validation of

incoming data becomes crucial. Incoming data must be validated both against already existing data (deduplication and consistency) and with respect to data quality.

We expect that a large portion of the data to be imported will not exist as RDA/LRM data, possibly not even as linked data, but for example as MARC 21 records. MARC 21 is still the dominating metadata format used in Norwegian libraries, and the Metadata Well infrastructure must accommodate that for some time to come. Hence, advanced mechanisms for data conversion between formats constitute a vital part of the Metadata Well.

The metadata in the Metadata Well must be retrievable via open and standardized interfaces in several formats.

Related User Stories: *8, 24.*

No.	Requirement	Max length (pages)	Type (M/D/E)
21	The offered solution MUST be able to deliver metadata as both MARC21 and as linked data according to RDA/LRM.		M
22	The offered solution MUST be able to import MARC 21 records as well as linked data encoded in RDA/LRM.		M
23	The offered solution SHOULD be able to deliver data in various ways (in addition to OAI-PMH and SRU), for example as downloadable data sets, as queryable data on a linked data endpoint, etc. Please DESCRIBE how.	0.25	E
24	The offered solution SHOULD offer good support for conversion between metadata formats, for example between ONIX and RDA/LRM, between RDA/LRM and MARC21, and between BIBFRAME and RDA/LRM. Please DESCRIBE current out-of-the-box conversions, as well as any mechanisms available for defining and maintaining conversions not covered.	1	E
25	Configurable, advanced matching mechanisms SHOULD be available during import, to prevent entity duplicates and inconsistent metadata in the data store. Please DESCRIBE the facilities for ensuring data consistency during import.	0.5	E
26	Configurable, advanced merging mechanisms SHOULD be available, to select and execute appropriate import actions when ingesting entity descriptions. Examples of import actions: replace existing description with incoming description, merging an incoming description with an existing one	0.5	E

No.	Requirement	Max length (pages)	Type (M/D/E)
	(copying certain data elements from the incoming to the existing description), not import the incoming description. Please DESCRIBE the facilities for ensuring data consistency during import.		
27	The offered solution SHOULD be able to import ONIX records.		D
28	The offered solution SHOULD be able to import linked data encoded in BIBFRAME.		D
29	The offered solution SHOULD be able to validate incoming metadata descriptions against selected application profiles, and report the result in an understandable way, including any errors and warnings.		D
30	The offered solution SHOULD be able to deliver subsets of data corresponding to search result sets in the discovery interface.		D
31	It SHOULD be possible to set up scheduled imports from specific sources.		D
32	It SHOULD be possible to perform test-imports without affecting the existing data, with a report describing the expected outcome.		D

5.4 Metadata management

Even though most of the metadata in the Metadata Well will be imported from other sources, the Metadata Well must offer facilities for manual editing, through which new metadata descriptions can be created and existing ones updated or deleted. For example, functionality for merging duplicate entities is foreseen as a much-needed facility.

The internal representation in the Metadata Well must be entity based. The entity model to be used in the Metadata Well must be well aligned with that of RDA and thereby with the LRM.

Related User Stories: *1, 2, 3, 6, 9, 10, 11, 18.*

No.	Requirement	Max length (pages)	Type (M/D/E)
33	The offered solution MUST include facilities for editing metadata in the form of linked data.		M
34	The offered solution MUST include facilities for registering bibliographic data according to RDA/LRM.		M

No.	Requirement	Max length (pages)	Type (M/D/E)
35	The offered solution's editing facilities SHOULD have an intuitive interface for creating and updating entities, relations between entities and splitting/merging of entities. Please DESCRIBE the editor's functionality in this regard.	0.5	E
36	Please DESCRIBE how RDA/LRM and application profiles is supported in the offered solution.	1	E
37	Please DESCRIBE the level of granularity supported for the provenance information. For example, is it possible to assign provenance to individual information elements, or only to metadata descriptions as a whole?	0.25	E
38	The offered solution SHOULD support multilingual and multiscript metadata. Please DESCRIBE how.	0.5	E
39	The offered solution's editing facilities SHOULD have configurable input control, taking the application profiles used into consideration. Please DESCRIBE which mechanisms exist for this.	0.5	E
40	The offered solution's editing facilities SHOULD support the use of application profiles based on LRM /RDA, to be used as a basis for metadata registration, matching incoming data and producing data exports.		D
41	The offered solution SHOULD support application profile management based on RDA/LRM, including creating/copying, editing and storing.		D
42	The offered solution SHOULD allow for maintaining provenance data (data about metadata), such as information about ownership and rights to the metadata.		D
43	The offered solution SHOULD support provenance data (data about metadata) at single element level. For example, it SHOULD be possible to express that the statement *[<The work Made in Norway> <has subject> <Dewey 745.2>]* is asserted by <Agent NLN>.		D
44	The offered solution SHOULD offer facilities for editing metadata in bulk.		D
45	For authorized users, it SHOULD be possible to start editing entities seamlessly and directly from where they appear in a search result display.		D
46	The offered solution's editing interface SHOULD be able to display relevant, up to date information about connected external entities, such as names of connected agents in authority files and labels of connected concepts in external vocabularies. The set of information elements to display for each source SHOULD be configurable.		D

No.	Requirement	Max length (pages)	Type (M/D/E)
47	The data model SHOULD be able to accomodate work entities which are not connected to any expressions or manifestations.		D

5.4.1 Metadata management – authority control

To ensure consistent and accurate data, the data in the Metadata Well must be authorized against external authority files and vocabularies. In Norway, the *Norwegian Authority File: Persons and Corporate Bodies,* the vocabularies in *Nasjonalbibliotekets vokabulartjeneste (nbvok)* as well as *Norsk WebDewey* are referenced in most library catalogues and must be supported by the Metadata Well.

Entities in the Metadata Well should also be able to reference authorities from other external vocabularies, like *National Place Name Register (SSR)* from Norwegian Mapping Authority and *Humord* from University library of Oslo.

Related User Stories: *3, 6, 10*

No.	Requirement	Max length (pages)	Type (M/D/E)
48	The offered solution MUST be able to interact with the Norwegian Authority File: Persons and Corporate Bodies (BARE) and the vocabularies in nbvok, as authority sources.		M
49	The offered solution SHOULD support as authority sources any external vocabularies accessible via a suitable API. Please DESCRIBE any generic mechanism for this.	0.5	E
50	Metadata originating from linked authority sources (e.g. authority IRI or ID, and/or information elements retrieved from authority sources) SHOULD be updated seamlessly and immediately in the Metadata Well, whenever indicated by updates in the said sources. Please DESCRIBE how this works in the offered solution.	0.5	E
51	Advanced facilities for authorizing agents towards external sources SHOULD be provided. Such authority linking support could be a lookup/search service integrating information from multiple sources (e.g. Norwegian Authority file, Viaf, ISNI, ORCID...). Please DESCRIBE the available facilities for this.	0.5	E
52	The offered solution SHOULD enable users to perform lookups in - and select entities from - external sources (e.g. vocabularies and authority files) directly from the editing		D

No.	Requirement	Max length (pages)	Type (M/D/E)
	interface, thus establishing a live link from the described resource to externally defined entities.		
53	The offered solution SHOULD enable authorized users to perform updates in external sources (e.g. vocabularies and authority files) directly from the editing interface, if suitable APIs are provided by the said external sources.		D

5.5 Search and discovery

Efficient discovery functionality will be important to all Metadata Well users. Users intending to import data from the Metadata Well should have the opportunity to search for specific metadata descriptions. Similarly, those who wish to add new data or amend existing descriptions in the Metadata Well depend on efficient and reliable search to confirm whether the data already exist in the Metadata Well. The system should accommodate both simple, single-box searches and detailed, advanced searches.

Facilities for navigating the data (e.g. browsing search result sets) are equally important. The navigation mechanisms should be designed to exploit the structure of linked data effectively.

Related User Stories: *12, 31, 32, 33.*

No.	Requirement	Max length (pages)	Type (M/D/E)
54	The offered solution SHOULD provide discovery facilities with rich search functionality, supporting for example: • multiple query expression types: Boolean operators, phrases, truncation indicator • multiple match methods: exact match, partial match (e.g. truncation (left/right), contains word, etc) • Counting metadata elements: search for existence/counts of metadata elements, e.g. find works with more than one creator, with no attached expressions, etc. Please DESCRIBE the offered functionality related to the above points.	1	E
55	It SHOULD be possible to perform searches via the user interface without authentication.		D

No.	Requirement	Max length (pages)	Type (M/D/E)
56	The search result interface SHOULD exploit the structure in the linked metadata and allow easy navigation between linked manifestations, expressions, works and other connected entities.		D
57	The discovery facilities SHOULD provide a single point of entry with a simple search function as default.		D
58	The discovery facilities SHOULD provide an Advanced search function, through which multiple information elements ('metadata fields') and entity types are searchable.		D
59	The Advanced search function SHOULD allow search in any information element ('metadata field').		D
60	It SHOULD be possible to search in all metadata elements included in the applied entity model.		D
61	It SHOULD be possible to save search expressions for repeated/later execution.		D
62	The offered solution SHOULD support pattern-based search in the form of regular expressions.		D

6 Requirements to implementation and services (weight 25 %)

This chapter specifies requirements to the implementation process and requested services connected to the Metadata Well operation. For completeness and coherence, both M/M+, E and D requirements are listed together. Note however that minimum requirements will not be evaluated, hence only E and D requirements will contribute to the weighted score resulting from the bidder's response.

6.1 Implementation

The system is to be delivered as a service (software as a service (SaaS)) with system operations and maintenance, data management, initial ingest of data, as well as user support as integral parts of the procurement. Using the solution should not require users to install or run any software on their computer other than a regular web browser.

The contractor organization must be able to demonstrate its capability of delivering the requested services. In this context, the contractor is expected to provide a roadmap for the project implementation.

We believe it is important that the Metadata Well is populated with "real" metadata by the time of production. To this end, a baseline dataset will be identified, which is to be ingested as part of the implementation process.

6.1.1 The baseline dataset

As explained in 5.1 above, the offered solution must be able to accommodate large data volumes. On the other hand, the initial baseline dataset to be ingested as part of the implementation process will be more limited. The foreseen baseline dataset comprises titles published by Norwegian publishing houses during the period from (and including) 2017 to date of production, amounting to metadata for approximately 80 000 publications. The dataset will be prepared by the national library. However, its exact nature and size will have to be discussed during tender negotiations.

No.	Requirement	Max length (pages)	Type (M/D/E)
63	The offered solution MUST be provided as Software as a Service, and the contractor MUST take full responsibility for hosting, operating and maintaining the solution.		M
64	The contractor MUST assume responsibility for bringing the offered solution up to production level, including setup and configuration, ingest of the baseline dataset, as well as setting up the regular data ingest from the main metadata supplier.		M
65	Please DESCRIBE a roadmap for project implementation including development needed to satisfy the requirements.	1	E
66	The contractor SHOULD take an active role in gathering information and requirements for software development needed for the contractor to deliver the Metadata Well with all its functionality. Please DESCRIBE how the communication with the national library will be handled during implementation.	1	E
67	The contractor SHOULD provide its own project manager for organizing and managing the software development needed to deliver the Metadata Well.		D
68	A fully functional test environment for the Metadata Well SHOULD be available both during implementation and after Go Live.		D

6.2 Maintenance and data management

This section outlines requirements to system maintenance and data management.

As new libraries affiliate with the service, the contractor should be able to facilitate the import of data from the libraries' existing catalogs.

It is crucial that the contractor ensures that data is safeguarded appropriately.

The data submitted to the Metadata Well belong in their entirety to the national library and/or other users/data suppliers. Data must be processed and stored within EU/EEA and in accordance with Norwegian legislation, including the regulations stipulated in the General Data Protection Regulation (GDPR).

Related User Stories: *8, 13, 21.*

No.	Requirement	Max length (pages)	Type (M/D/E)
69	The contractor MUST have a reliable plan for data backup and disaster recovery, to prevent data loss in case of a disaster or system failure. Please DESCRIBE.	0.5	M+
70	The contractor MUST perform basic data management in the offered solution, that is, generally over-looking the data and ensuring data consistency.		M
71	The data in the Metadata Well (metadata as well as user data) MUST be processed and stored within EU/EEA and in accordance with applicable Norwegian and EU legislation.		M
72	The contractor MUST agree not to access or use data about users of the system for other purposes than delivering the agreed-upon services, without prior consent from the national library.		M
73	Please DESCRIBE the procedure for testing and deploying upgrades to the offered solution, including the role of any subcontractors.	0.5	E
74	The contractor SHOULD implement proactive routines for discovering and solving critical issues with functionality or data. Please DESCRIBE which mechanisms are in place to ensure that critical issues are discovered and solved swiftly.	0.5	E
75	The contractor SHOULD be able to perform one-time jobs on demand, like retrospective ingest of large data sets (e.g. library catalogues) into the Metadata Well. Please DESCRIBE your availability for this, including notification deadline.	0.25	E
76	The offered solution SHOULD provide simple workflow support, such as task allocation and follow-up. Please DESCRIBE any facilities for this.	0.5	E
77	The contractor SHOULD provide technical data management services, including setting up regular data ingest and exports and defining data conversion schemes.		D

No.	Requirement	Max length (pages)	Type (M/D/E)
78	The contractor SHOULD keep the Metadata Well continuously compliant with up-to-date security standards and functioning with internet browser standards.		D

6.3 Supporting users

The contractor must assume responsibility for implementation, management and maintenance of the solution, which includes the capability to import and grant access to data.

The contractor is required to provide user support related to the service. This also involves handling of queries related to integration with the Metadata Well.

The national library will collaborate as a discussion partner in the service's development and act as a guiding authority on matters pertaining to the application of standards and regulations.

User support should also be provided in the form of training material and up-to-date documentation.

No.	Requirement	Max length (pages)	Type (M/D/E)
79	The contractor MUST be able to provide support concerning all parts of the offered solution. Please DESCRIBE the support system that will be available.	0.5	M+
80	The contractor SHOULD provide training materials and user guidance both for direct use via GUI as well M2M integrations, for example guided tours, FAQ, video or text tutorials, other self-paced learning resources, guidance in the user interface (e.g. tooltips). Please DESCRIBE which guidance is provided.	0.5	E
81	Contractor SHOULD provide detailed, up to date documentation about all user functionality, including precise explanation of the search functionality.		D
82	Contractor SHOULD provide detailed, up-to-date documentation on the API Suite.		D

7 Price (weighted 25%)

Pricing of the offer must be given in the Price form, by filling in the yellow and turquoise fields. All prices are to be given in Norwegian Kroner, excluding any taxes.

The fixed price (No. 1 in Price form) must cover the operational solution, including all features declared by the bidder to be part of the offered solution, and with the baseline dataset installed.

The hourly consultant rate (No. 2 in Price form) indicates the cost for one-time ingests of datasets/catalogues from metadata suppliers and/or libraries. Work corresponding to 250 hours will be used in the Price form for *Total costs* calculation

Annual costs for operation, maintenance and support are subdivided into two parts in the Price form:

1. The annual cost for operating and maintaining the solution as well as basic data management, independent of the number of users (No.3 in Price form).
2. The annual cost for supporting the given number of affiliated libraries and users (No. 4-7 in Price form).

The price to be used for comparison between bidders is the total price for establishment and three years operation of the Metadata Well, as calculated by accumulating the Sum column for No. 1-7 in the Price form.

7.1 Options

The bidders are requested to fill in their hourly rate for optional development work to the extent of 500 hours, typically to cover new functionality in the Metadata Well solution (Options No. 1 in Price form). The number given here will not be used in price calculation, nor influence the bid assessment in any way.