Requirements List for a New Library System

Consortium of Icelandic Libraries
27.3.2018

Table of Contents

Definitions

- **1st and 2nd level support:** 1st Line/level Support – Basic level of support. The customer representative is a generalist with a broad understanding of the product and can help with basic problems or refer them to the 2nd level support.
2nd Line/level Support –Staffed by technicians who are more specialized than 1st level support.
- **Automatic Log In (ALI):** The process of a user connecting to the System by sending a request from a system he is already logged in to, and by that request he automatically is logged into the system with his current credentials.
- **Contract Price:** Those items of the Total Project Cost which the Buyer selects and commits to in a contract.
- **Contracting Authority:** Contracting Authority means the State, a regional or local authority, body governed by public law, association formed by one or several such authorities or one or several such bodies governed by public law.
- **Economic operator:** This term covers equally the concepts of contractor, supplier and service provider. It is used merely in the interest of simplification.
- **EEA:** European Economic Area.
- **European Identification:** eIDAS is an EU regulation on electronic identification and trust services for electronic transactions in the internal market. It is a set of standards for electronic identification and trust services for electronic transactions in the European Single Market.
- **Evaluation Group:** A group of 3 or more professionals, with knowledge in fields relevant to the Tender and the products tendered will be appointed to evaluate the Tenders. The evaluation group will evaluate the Tenders and put forward a proposal to the Purchaser.
- **Final Acceptance:** When the System has been up and running trouble-free for three consecutive months following final installment by the Vendor and passing of an acceptance test by the Buyer.
- **Fyrirtækjaskrá Ríkisskattstjóra:** Register of Enterprises at the Directorate of Internal Revenue - A business in Iceland must be registered at the Register of Enterprises at the Directorate of Internal Revenue which issues to it an ID and VAT number. The DIR runs and maintains the register.
https://www.rsk.is/fyrirtaekjaskra/
- **Gegnir:** An Icelandic brand name for the integrated Aleph library system from Ex Libris. For further information use the following link:
http://www.exlibrisgroup.com/products/aleph-integrated-library-system/
- **Gengisskráning (Exchange Rate):** The rate of the Icelandic króna (ISK) can fluctuate from day to day. Once a day, the Central Bank of Iceland issues the official exchange rate of the króna against foreign currencies, for use as a reference in official agreements etc. The official rate is also used by commercial banks. The rate can be acquired automatically see for example:
https://www.cb.is/default.aspx?pageid=fcac51d5-09ce-11e5-93fa-005056bc0bdb
- **Inna (Secondary Schools):** Inna is an information system for secondary schools, for students, parents and faculty.

- **Invitation to Tender/ITT:** When a contracting authority seeks written binding Tender for a supply, service or work from more than one entity on the basis of the same information and within the same response deadline.
- **Island.is:** The National Portal log in service at www.island.is is owned by the Icelandic state and operated by Registers Iceland. https://www.island.is/en/indentification-services
- **Islykill:** An IceKey is an authentication which is linked to the official Icelandic identification number of an individual or legal entity. https://www.island.is/en/icekey-e---certificate/about-icekey/
- **Kennitala (e. identification number):** All individuals that establish permanent residence in Iceland, or are Icelandic citizens, shall be registered in the National Registry and need an identification number (kennitala) that is a ten-digit long number. The kennitala is abbreviated as ID No. https://skra.is/english/individuals/me-and-my-family/my-registration/id-numbers/
- **Leitir.is:** National Search and Discovery Platform for Libraries, Museums and Photographic Collections (https://www.leitir.is)**.** An Icelandic brand name for the Primo search and discovery system from Ex Libris. http://www.exlibrisgroup.com/products/primo-library-discovery/
- **Manufacturer/Developer:** The company that manufactures/develops the tendered product(s).
- **Maintenance:** As the System passes acceptance tests it enters the maintenance phase. The maintenance phase, covered by the maintenance fees, includes new versions and new releases of the system, patches and upgrades as they become available and ensures that the Purchaser has the rights to using the System while it is in production.
- **Mentor (Elementary Schools):** Cloud based E-learning system used by elementary schools in Iceland. It's designed to be used for students, parents and faculty. https://www.infomentor.co.uk/
- **NULI**: National and University Library of Iceland. http://landsbokasafn.is/index.php/english/the-library
- **Office hours:** Icelandic Office hours 08:00 – 17:00 (GMT), Monday through Friday.
- **Power of Attorney:** A written document in which the principal (the company Tendering) appoints another person to act as an agent on his or her behalf, thus conferring authority on the agent to perform certain acts or functions on behalf of the principal, e.g., make a binding Tender.
- **Purchaser:** The Ministry of Finance and Economic Affairs, Iceland.
- **Rafræn Skilríki (*e. electronic identification*):** A secure methodology for personal authentication via GSM phone or special eCards. Used by both the public and private sector in Iceland for the authentication of Icelandic citizens.
- Reply documents for **SHALL and SHOULD:** A list or an attachment with Tender document pertaining technical specifications and demands set out by the contracting authority (not to be modified by the Tenderer) and shall be filled out by the Tenderer and returned with his/her Tender. The Tenderers are requested to complete the templates in the reply document according to instructions and must detail what is tendered (for example the words "compliant" or "yes" are not sufficient).

- ALL demands are listed in the **Reply Document**, and if there are discrepancies between the "Invitation to Tender Document" and the "Reply Document", the text in the Reply Document supersedes.
- **Ríkiskaup:** The Icelandic central purchasing body. https://www.rikiskaup.is/english
- **Vendor:** The party/parties from which Ríkiskaup accepts a Tender in this Invitation to Tender.
- **SHALL:** In this Invitation to Tender the word SHALL is a mandatory requirement. The Tenderer must fulfill all SHALL requirements in the Tender; otherwise, the Tender will be rejected.
- **SHOULD:** In this Invitation to Tender the word SHOULD is a requirement that needs to be fulfilled to varying degrees in the Tender. SHOULD requirements may be included in the Tender specifications evaluation model, and if it is included, the corresponding Tender component submitted by the Tenderer will be evaluated for scoring or points.
- **The Ministry of Finance and Economic Affairs:** Ministry of Finance and Economic Affairs oversees State finances and is also responsible for government properties, taxation, customs and other revenues of the state, public purchases and matters pertaining to the Nordic Investment Bank. https://www.government.is/ministries/ministry-of-finance-and-economic-affairs/
- **Supplier:** The manufacturer of the tendered item(s) and/or the party/parties supplying the Tenderer with the tendered item(s).
- **The System:** Refers to all software and services, which are delivered to the Purchaser and is being bought within this Invitation to Tender.
- **Tender Documents:** Denotes the Tenderer's Tender as well as all required attachments. The Tender Documents must include all relevant information so that the Purchaser can validate and assess the submitted Tender.
- **Tenderer/Candidate:** An economic operator who has submitted a Tender shall be designated a Tenderer. One which has sought an invitation to take part in a restricted or negotiated procedure or a competitive dialogue shall be designated a candidate.
- **Total Project Cost:** The total cost of the System, integration, testing, training, hardware and maintenance fee for 5 years.
- **Ugla (universities):** Ugla is the inner web of the University of Iceland and is an important information medium and a working tool for both students and employees. http://rhi.hi.is/node/422
- **VAT:** Value-added Tax levied in accordance with Icelandic Law.
- **Working Day:** All days excluding Saturdays, Sundays and Icelandic legal holidays.
- **Time Zone:** All hours mentioned in this document refer to Icelandic local time.
- **Þjóðskrá Íslands (Registers Iceland):** Registers Iceland maintains a National Registry and issues ID to all citizens in Iceland. https://www.skra.is/

1. Introduction

1.1. About Landskerfi bókasafna hf. (Consortium of Icelandic Libraries)

Since 2001 libraries in Iceland have cooperated on a nationwide basis through the company Landskerfi bókasafna hf. (e. Consortium of Icelandic Libraries). The company is owned by the Icelandic government and municipalities.
The company was set up to operate a central national library system and a single catalog for Iceland, called Gegnir, and to provide professional services to Icelandic libraries. Since then the company's statutes have been expanded and the company is now able to provide services to museums and other cultural heritage institutions.

Iceland is a small island country, with a population of around 340,000 inhabitants. As such, it is a perfect venue for providing library services on a national scale, which is exactly what the company does. Although the number of libraries in Iceland, scattered around the island, is relatively high their resources tend to be rather limited. Library cooperation on a nationwide level helps to streamline the library functions since the library systems control is carried out centrally by the Consortium of Icelandic Libraries. This national library consortium is available to all libraries in Iceland, including the National Library, public libraries, research- and university libraries, school libraries, etc. In addition, it provides services to a variety of historical-, art- and photography museums.

Currently the company utilizes the following systems:
- Aleph library system from Ex Libris (branded **Gegnir**)
- Primo search and discovery system from Ex Libris (branded **leitir.is**)
- SFX link resolver system from Ex Libris
- **Sarpur** cultural-historical system for museums
- Overdrive platform for lending e-books and audio books. (branded **rafbokasafnid.is**)

Gegnir, **leitir.is** and **Sarpur** are hosted by local hosting companies in Iceland. SFX and Overdrive platforms are used as subscription services.

One of the main characteristics of the systems that the company utilizes, is that they are operated on a national level. Gegnir is open to all libraries in Iceland and most of them, i.e. some 300, have taken advantage of the membership. Leitir.is is also a nationwide search and discovery portal – and the same applies to the cultural-historical database Sarpur. Another characteristic of the company is that it manages the system-operations for Icelandic libraries but not their contents and subscriptions. Another key factor of the Consortium of Icelandic Libraries is, that it is based on extensive and effective cooperation with the affiliated libraries. This applies to daily operations and services, as well as to new initiatives.

Providing services to the affiliated libraries is a very big part of the consortium's system management. Libraries call for assistance or services by creating a work-order on the service platform or by calling the helpdesk. The service platform also contains extensive guidance on the use of the systems and other related activities. Another way to disseminate information on the systems is through seminars and workshops that the

company organizes. On the average about twenty courses are held every year, both on the premises of the company as well as outside the capital. These meetings are a venue to introduce innovations as well as to offer guidance on the use of the systems for experienced librarians as well as new employees of the libraries. Participants have the opportunity to exchange views and discuss possible improvements. Thus, the courses also provide an opportunity for the company to improve its services.

For more information on Consortium of Icelandic Libraries:
https://landskerfi.is/ and https://landskerfi.is/about-us

1.2. Environment and Major Stakeholders in the Icelandic Library World

The current library system is the national library system for Iceland. It holds a union catalog and serves as a library system for about 300 libraries. The member institutions include the National and University Library of Iceland, several smaller universities, most public libraries, elementary schools and secondary schools as well as research and special libraries.

The size of the system by end of 2016 is:

Bibliographic records:	1,217,686
Items:	5,914,538
Circulation:	3,067,395
Patrons:	175,242
Libraries:	306

The uniqueness of the system is the high number and the diversity of the member libraries. There is a total of 306 defined libraries in the system, see table below. Some organization have many libraries or branches. For example, there are seven universities in Iceland, which have 22 libraries or branches. In smaller communities, public- and elementary school libraries have often been merged in order to increase efficiency. In that scenario the elementary school library has been merged in to public library.

Number of libraries/branches by type

Library type	Number of libraries
Public Libraries	84
Secondary School Libraries	22
Elementary School Libraries	117
Universities	22
Special Libraries	61
Total:	**306**

The different types of libraries have different needs, in regard to the system's setup, circulation rules and services required from the Consortium of Icelandic Libraries. Public libraries have needs regarding efficiency of all circulation tasks, also creating means for the patrons to service themselves, on the web, in self-service devices and/or by using apps. University libraries need good workflows for managing electronic resources as well as other resources. The National Library is responsible for the National Bibliography and due to that, the cataloging tasks and routines are important.

Elementary school libraries need a simple interface with fewer features than university libraries. Elementary school libraries, and some of the other libraries, are mostly one-person libraries, and that person has many other duties than working with the library system. One important aspect of their duties is linking items to a particular bibliographic record so simple work process is essential.

To grasp the extent of the Consortium, the following table shows key figures, i.e. circulation, numbers of titles, items and patrons for three to four libraries within each library type. The libraries were selected to show one big, one medium and one small library in each group. The National and University Library is shown especially since it is the biggest library in the country. As the name applies it serves both as the National Library and the library for the University of Iceland.

1.2.1.   Key Figures for Selected Libraries by Type

Library type	Library	Titles	Items	Circulation	Patrons
University	National and University Library of Iceland				
	– University collections	375,381	508,491	85,104	13,572
	– National collections	184,302	401,257	4,417	
	Listaháskólinn	42,523	60,430	8,497	1,423
	Háskólinn á Bifröst	13,635	20,746	2,359	682
	Háskólinn á Hólum	2,600	3.521	205	209
Public					
	Reykjavík City Library[1] (all branches)	120,000[2]	433,027	623,284	19,563
	Bókasafn Hafnarfjarðar	78,386	140,172	204,571	13,586[3]
	Bókasafn Mosfellsbæjar	30,382	44,004	67,118	2,267
	Bókasafn Bolungarvíkur	13,267	14,895	7,011	208
Elementary Schools					
	Langholtsskóli	10,027	29,971	19,112	889
	Breiðagerðisskóli	5,974	10,800	6,183	501
	Fellaskóli	1,974	2,187	1,023	135
Secondary Schools					
	Menntaskólinn við Hamrahlíð	12,817	17,006	11,894	1,375
	Fjölbrautarskóli Suðurlands	15,099	19,211	2,083	1,085

	Menntaskólinn á Egilsstöðum	6,280	7,629	284	170
Special Libraries					
	Stofnun Árna Magnússonar	33,532	47,318	1,343	85
	Veðurstofan	6,991	8,946	169	132
	Héraðsdómur Reykjavíkur	1,482	2,102	91	61

1. Numbers are based on statistical information for the year 2016.
2. Reykjavík City Library has 6 branches. The number of titles is an estimate in order to avoid that each title is counted more than once because every branch library has similar collections.
3. Bókasafn Hafnarfjarðar has a lending cooperation with 2 other municipalities. A core component in that cooperation is a common patron file which explains the high number of patrons in a municipality with 28,000 inhabitants.

A complete list of Gegnir's member libraries can be found on:
https://landskerfi.is/um-okkur/bokasofnin

1.3.   Libraries

Libraries in Iceland are as diverse as they are many and it is not reasonable to provide a comprehensive description of all the libraries. In order to get an insight into the library spectrum, a short overview over some selected libraries, groups of libraries and library cooperation can be found below.

1.3.1.   National and University Library of Iceland

The National and University Library of Iceland (NULI) serves both as a university library for the University of Iceland and as a national library. There are ca 1 million items cataloged in the current library system. The library is open to everyone but the biggest single user group are university students.

NULI is responsible for legal deposit for all print, music and digital born material published in Iceland. It is necessary that the library system supports a good workflow to manage the legal deposit material, both physical and digital.

NULI is responsible for the National Bibliography and quality management in the union catalog. National bibliographic data must be easily identified in the union catalog and harvested automatically into a web-based National Bibliography. The National Bibliography should be published directly from the library system with adequate alerts when records do not meet the quality criteria.

An important property of the union catalog for the scholarly community is that it serves as a database for Icelandic journal articles and book chapters, as well as for individual songs and musical pieces. Almost one third of the bibliographic records are analytical descriptions and it is important that the library system handles them adequately.

NULI manages several repositories that are searchable in the discovery platform **leitir.is**, see more on the section on **leitir.is**. A selected portion of the material in those

repositories is also cataloged into the library system. It is mandatory to have a cataloging gateway for inserting new records into those repositories and thus utilize the authority control files built into the library system.

As a university library, NULI is the biggest academic library in Iceland with an extensive collection of foreign literature, both in print and digital. Digital material and especially packages, should be easily managed in the database and the discovery service.

NULI has a large manuscript collection, private archive collections and various types of materials that are not legal deposit, such as interviews, stories, music and performances. This material is available through several websites and it would be very useful to have a cataloging gateway for inserting new records into those databases and websites and thus utilize the authority control files built into the library system.

Management of acquisitions and the purchase process of different kind of materials such as books, journals and music must be easy and efficient, regardless of format. Also the process for gifts.

NULI has an extensive collection of digitized and born digital material. It must be easy for the user to connect to those collections through bibliographic records.

Easily managed statistics in every part of the library system is mandatory.

1.3.2. Reykjavik City Library

The Reykjavík City Library has six branches throughout Reykjavik as well as a bookmobile. It is the second biggest library in the country. The library services have been changing from traditional circulating services to a high emphasis on self-services both on the web and by utilizing self-service devices. As a public place, library events and event management have become one of its main responsibilities. It would be feasible to integrate an event management tool with the library system.

The e-book library, **Rafbókasafnið**, is based on the OverDrive platform. It is a cooperative project between the Consortium of Icelandic Libraries and the Reykjavík City Library. The purpose is to offer an easy access to e-books and audio books to all public libraries in Iceland. The access control is based on the patron information in the library system. It would be practical for our patrons to integrate circulation statistics and circulation history from OverDrive into the library system.

1.3.3. Amtbókasafnið - The Municipal Library of Akureyri

Amtsbókasafnið is the Municipal Library of Akureyri. Akureyri is the biggest town outside of the Reykjavík area. Besides usual public library services, the library serves as a legal deposit for Icelandic printed materials. The legal deposit section is managed separately where the material is made available through in-house lending to a special reading room. Currently the library is split into two sections since opening hours, circulation rules, etc. are very different for those two sections.

1.3.4.   Elementary School Libraries

All elementary school libraries have similar needs. Simplicity in the use is the most important aspect in a new library system for them. Workflows must be simple and all tasks easy to perform. The elementary schools do not use all aspects of the library system. They use the circulation module but without fines and fees. They link their items to a bibliographic record, but they rarely create catalog records themselves. Most elementary school libraries encourage the children to service themselves by using simple processes. The schools are too small to have self-service devices, but it would be valuable if the library system could offer some kind of a simple and accessible self-circulation option.

1.3.5.   Combined Libraries

It is common in small municipalities that school- and public libraries are combined. The needs of these two organizations can be quite different and it can be complicated to accommodate this in the same library configuration. For example, school libraries do not have fines and fees, but the public libraries charge for overdue items and most of them do charge an annual fee for a library card or for the permission to use the library.

Over time libraries may be merged for various reasons, this means it must be possible for the Consortium to merge libraries in the library system.

The System must also provide a process to move items in bulk between libraries.

1.3.6.   Library Cooperation

Libraries cooperate on various levels; the most common is a formal cooperation agreement on lending. This means that patrons need to have borrowing privileges in all the respective libraries. One way of achieving this is to have a shared patron database for all the libraries that share the cooperation. Another way is to give all patrons in library 1 a permission to borrow in library 2 and vice versa if there are only two libraries involved. It is fundamental to have flexibility in the library system to enable cooperation between libraries, on the basis of circulation, items, as well as privileges of staff and patrons. Please describe.

1.4.   Nationwide Access to Electronic Databases, E-journals and University Library Subscriptions

Iceland is in a rather unique situation when it comes to subscriptions and access to electronic databases and electronic journals.

1.4.1.   Nationwide Access

All inhabitants in the country have access to electronic data included in an agreement that the Nationwide Access (**Landsaðgangur**) has entered into. This access is open through the portal **hvar.is**. This Nationwide Access means that each individual in Iceland can access and use the data in the agreement, provided that they use an Icelandic internet service provider.
The Nationwide Access includes large AI databases, such as Web of Science and Scopus, as well as full text databases such as ProQuest and EBSCOhost from a variety of publishers.

This Nationwide Access includes subscriptions to some major publishers of science journal, for example Elsevier, Wiley-Blackwell, Springer, SAGE, etc. In total there are approximately 5,000 journal titles in the Nationwide Access, which include subscriptions on science, engineering and medicine.

This Nationwide Access is unique in the world where it serves a whole nation.

1.4.2. Other Subscriptions

University libraries and research libraries also negotiate access to databases and e-journals, either by themselves or in co-operation with other libraries. Electronic material within such agreements are only available to patrons of these libraries. These subscriptions are extensive in scope and are very changeable due to pricing and to which subject area of science and technology are of main interest to Icelandic researchers at each point in time.

1.5. Characteristics of the National Library System

The national library system has been shaped by its libraries and their cooperation. For quality purposes a consortium of this size needs to set rules for managing and securing the data. The number of libraries and the high number of items is a determining factor that affects most workflows. Patrons that use the search / discovery system have to adjust to these facts. Below is a short overview of the distinctive characteristics in the library system.

1.5.1. Bibliographic Records and Items

The characteristics of the libraries in the Consortium are reflected in the data and its usage. The Consortium has adapted to an unorthodox usage and handling of both items and bibliographic records. Among those are the number of items attached to each bibliographic record, unusual items and record formats and furthermore there are restrictions on cataloging into the system and a limited number of authorized catalogers.

1.5.2. Cataloging

Traditionally, a strict control has been set on cataloging in order to maintain a high quality of the bibliographic data. One of the measures that has been taken is to restrict the cataloging privileges to library staff that have a university degree in library and information science and have attended a three days course in cataloging into the current library system. Currently there are approximately 180 catalogers with valid cataloging privileges. Most libraries do not have any staff members with cataloging privileges.

1.5.3. Gegnir Cataloguing Council

Two committees were established by the Consortium when Gegnir was initiated in order to ensure the quality of the bibliographic data. They are Skráningaráð Gegnis (e. Gegnir Cataloguing Council) and Efnisorðaráð Gegnis (e. Subject Heading Council). These committees are composed of experts appointed by the member libraries. The role of the Cataloguing Council is to control all registrations of bibliographic records in Gegnir. Gegnir's Subject Heading Council is a forum for controlled subject headings. Since all cataloging is done into a single bibliographic database, it is important to have clear rules that ensure the quality and consistency of all the bibliographic records. This arrangement presumes that the member libraries own the

records that have been cataloged into the library system and that they are responsible for their quality.

1.5.4. The Cataloger's Manual

One of the tools at cataloger's disposal is the cataloger's manual (Handbók skrásetjara) that describes bibliographic cataloging in Gegnir, https://hask.landsbokasafn.is. The foundation for cataloging is the MARC21 format for bibliographic data. Since 2016 the RDA cataloging rules apply. The manual includes the Cataloguing h Council´s interpretation on how to apply the format and rules as well as agreements on special Icelandic exemptions from the main rules. The manual is intended to promote well-founded and consistent working methods amongst catalogers in different libraries and thus insure the quality of the bibliographic data. The manual is managed by NULI.

1.5.5. Non-Traditional Material

There is a need, especially in school libraries, to circulate non-traditional library materials, such as iPads, ear-plugs, etc., in order to keep track of these materials and to be able to claim them. The diversity of the libraries within the Consortium and the fact that the majority of the member libraries do not have cataloging privileges, has also created a need for making bibliographic records for non-bibliographic items.

1.5.6. Items

The high number of items connected to each bibliographic record is unique to the Consortium. Most public and school libraries have similar collections due to the fact that Iceland is a homogeneous society and Icelandic is a small language with limited number of publications every year. This has resulted in a large number of items up to 5,000 – 10,000 items can be linked to the same bibliographic record. Lately there has been a trend to create a new bibliographic record for every starting year for the most popular journals in order to limit the problems that are associated with handling this large number of items connected to the same bibliographic record.

1.5.7. Patrons

The national library system serves everyone in Iceland and all residents and establishments in Iceland are potential patrons in one or more libraries. This includes: small children, students on all school levels, professor, teachers, staff at special libraries and institutions as well as the general public. The same individual can have different privileges in different libraries. As an example, the same individual can be a student in a university, a staff member in a secondary school and a general patron in the local public library. This individual has different rights and privileges in each library.

The privilege which a patron has in a library is defined by a patron status. Each library type uses a specific set of patron statuses. Schools, for example, use a variety of patron statuses but public libraries define different privileges for the variety of their patrons. The library system needs to take into consideration the wide spectrum / diversity of patrons.

Information on patrons and passwords is stored in special Aleph file. External systems like **leitir.is**, **rafbokasafnid**.is and ELIB authenticate patrons against the Aleph database. See Chapter 4.16.2 on Current Data Scheme.

1.5.8. Interlibrary loans in Iceland

The workflows that libraries use in order to lend books among themselves can vary from a completely automated process to a simple communication through phone or email. The main workflows are:

- Automated workflow ISO-ILL
  - The Aleph system has an integrated ISO-ILL module that all the university libraries and some larger public libraries use. The workflow enables seamless communication between partner libraries.
- Semi-automated workflow
  - One library (ISO-ILL library) uses the integrated ILL module and another library (NON-ISO library) within the Consortium does not use the integrated ILL module.
    - The ISO-ILL library receives a request from a NON-ISO library by various methods, e.g. phone, e-mail, etc. The request is put manually into the ILL module and is processed unilaterally in the system from that point onwards. The NON-ISO library lends the material to their patrons outside the system.
- Non-automated workflow
  - ILL requests between two NON-ISO libraries are handled semi-manually. The lending library uses the circulation module to loan the item to the requesting library. The requesting library loans the material to their patrons outside the system.
- Communication to libraries outside the Consortium (to libraries in other countries)
  - The request from the patron comes to Aleph through **leitir.is**. The Icelandic requesting library orders ILL materials by various methods and this is handled in the system by a semi-automated workflow.

1.5.9. Acquisitions in Libraries in Iceland

The libraries acquire their material by diverse methods. Some libraries order items from various vendors. Other libraries cooperate with their local vendor / bookstore that regularly delivers new titles to the library and the library can then choose from and then buy those from the vendor / bookstore.

The Aleph system has an integrated acquisition module that the university libraries and a few of the larger public libraries use. They do not use EDI, or other automated ways, to communicate with vendors. External systems are used for ordering. The biggest libraries start the acquisitions process in the library system at the time of ordering and keep track of the whole process within the system. Other libraries only start the acquisitions process in the system when the material arrives. Their purpose for using the acquisition module is to keep track of funds and allocations.

1.6. National Search and Discovery Platform for Libraries, Museums and Photographic Collections

The national search and discovery platform for Iceland is called www.leitir.is. It is used for Icelandic libraries, museums, photographic- and other collections. It is intended as a one-stop shop for cultural institutions in Iceland.

The software in use for the platform is Primo from Ex Libris. The installation of Primo is a local one. The Primo Central Index (PCI) is integrated into the solution as is the bX Article Recommender service.

Information from vendor Ex Libris on Primo, PCI and bX:

- http://www.exlibrisgroup.com/category/PrimoOverview
- http://www.exlibrisgroup.com/category/PrimoCentral
- http://www.exlibrisgroup.com/category/bXUsageBasedServices

When **leitir.is** was opened it was decided to close-down the old Aleph OPAC and provide access to the Aleph catalog through a special view in Primo
https://leitir.is/primo_library/libweb/action/search.do?menuitem=0&vid=GEGNIR

A variety of external data sources is integrated into **leitir.is** in addition to a near to real-time integration with the Aleph catalog, circulation and other modules and Primo Central Index mentioned before such as:

- Gegnir – Catalog and library system for Icelandic libraries, https://leitir.is/primo_library/libweb/action/search.do?menuitem=0&vid=GEGNIR
- Sarpur– cultural-historical database for museums and photographic collections in Iceland, http://sarpur.is/
- National Access to hvar.is and university subscriptions – Foreign electronic academic papers and books, http://hvar.is/
- Primo Central Index.
- Skemman – Student theses and academic publications by Icelandic universities, https://skemman.is/
- Opin vísindi - institutional repository for peer reviewed articles published in open access by universities in Iceland, https://opinvisindi.is/
- Timarit.is – Digitized newspapers and periodicals from Iceland, Faroe Islands and Greenland, http://timarit.is
- Áttavitinn – LibGuide site at the National and University Library.
- Hirsla – Landspítali University Hospital research archive, htttp://hirsla.lsh.is/lsh/
- Akranes Museum of Photography, http://ljosmyndasafn.akranes.is/
- Reykjavík Museum of Photography, http://borgarsogusafn.is/is/ljosmyndasafn-reykjavikur/
- Nordic House e-books, https://nordenshus.elib.se/
- Rafbókasafnið - An e-book and audiobook library platform shared by various public libraries in Gegnir, https://rafbokasafnid.overdrive.com/
- Rafhlaðan - A digital archive for long time preservation of the National and University Library of Iceland.

Harvesting method is in general OAI and source format: DC, XML, MARC21 or WebCrawler.

1.7.   Sarpur Cultural-Historical System for Museums

Consortium of Icelandic Libraries runs the museum system Sarpur by a contract with Sarpur Management Company (Rekstrarfélag Sarps). Sarpur is an Icelandic collective cultural history collection management system built upon MS SQL database. More than 50 different museums use Sarpur and the museums are of various types e.g. the National Museum of Iceland, art museums, folk museums, place name museum, photography museums, industrial museums and maritime museums.

Sarpur has a back-end and a front-end part. The back-end system is used by museum staff to register and manage their collections. That means, for instance, managing object locations, conservation, exhibitions, loans and orders for images from the public. The front-end system is the website http://sarpur.is/ which is open to the public and where the museums can publish and present their collections. Now there are over 1.2 million registered artifacts, photographs, art works, historic sites, houses, drawings, documents, archaeological material, books, coins and intangible cultural material such as site names and material from ethnological collections. Material published on http://sarpur.is/ can also be found through https://leitir.is.
There are three tables in Sarpur which are the backbone of the system. The name registry, the place registry and the subject table, which contains the structured vocabularies of Sarpur. Those three tables are what all the different accession types of the system have in common. They were put in place to standardize entry into the system.

2. General Requirements

2.1. Library Standards

It is essential that the System supports industry standards and protocols, where relevant. It is also necessary to have a mechanism to convert from one data format to another.

2.1.1. Internet Communication

The System SHALL adhere to the following internet standards:
- HTTP
- HTTPS
- SOAP
- TCP/IP

The System SHOULD adhere to the following standard:
- REST

2.1.2. Information Resource Description and Retrieval

The System SHALL adhere at the time of installation to the following standards/protocols:
- MARC21
- MARCXML
- RDA (Resource Description and Access)
- UNICODE UTF8
- Dublin Core
- IFLA LRM (Library Reference Model)
- Z39.50
- SICI (Z39.56)
- OAI-PMH
- OpenURL
- ISO 10160/10161
- ISO 18626:2017

The System SHOULD adhere to the following standards/protocols:
- BIBFRAME
- JSON-LD
- SRU/SRW
- OpenSearch
- UNICODE UTF16

It would be preferable if the System should support these additional standards:
- TEI / xml (Text Encoding Initiative)
- ONIX for Books (Online Information Exchange)
- CRIS (Current Research Information Systems)
- OPDS (Open Publication Distribution System)
- MODS (Metadata Object Description Schema)
- METS (Metadata Encoding and Transmission Standard)
- PREMIS (Preservation Metadata: Implementation Strategies)

- SWORD (for Digital Repository Data Exchange)
- SUSHI (Standardized Usage Statistics Harvesting Initiative)
- COUNTER
- OAI-ORE

2.1.3. Standards Regarding Self-service Devices

- The System SHALL provide multiple options for services and APIs for users self-service. In addition, the System SHALL support special library devices designed for self-services. The System SHALL fully comply with SIP2/SIP3 standards in order to deliver precise and correct messages from the System to the Patron.
- The System SHALL fully comply with NCIP (NISO Circulation Interchange Protocol ANSI/NISO Z39.83-1-2008 Version 2.01).
- Services and API's SHOULD be available via HTTP(S) and respond with XML or JSON.

2.1.4. Standards Regarding User Interface

The solution SHALL comply with at least the:
- W3C Web Content Accessibility Guidelines Version 2.0 Level AA (WCAG 2.0 standard) for accessibility requirements.

2.1.5. Barcode Standards

The System SHALL support the following barcode standards:
- Code 39
- EAN 13
- EAN 128
- RFID

The System SHOULD support the following barcode standards:
- QR code

2.1.6. User Data

The System SHALL support the following standards for user data exchange:
- XML
- RDF (Resource Description Framework)
- JSON

The System SHOULD support the following standards for user data exchange:
- SHIBBOLETH

2.1.7. Authentication

The System SHOULD adhere to the following standard regarding authentication:
- OAUTH 2.0
- LDAP
- SAML

2.2. Laws and Regulations

In the event that the text of this *Invitation to Tender* documents conflicts with Icelandic laws or regulations, the Icelandic law or regulation **SHALL** prevail. Special attention needs to be given to the following Icelandic Acts:

1. The Public Procurement Act no. 120/2016[1].
2. The Sale of Goods Act no 50/2000[2].
3. [The Information Act no. 140/2012](#)[3].
4. The Icelandic Standard ÍST 32:1995 - Conditions of call for tender and contracts for data processing systems.
5. Icelandic law no. 77/2000 on the treatment of personal information regarding access control.
6. EU 2016/679 or equivalent Icelandic law[4].
7. Data Processing Authority Regulation 299/2001.
8. Icelandic law 73/1972 on rights to access and use. Purchaser's own data.

Any and all contracts entered into as a result of this *Invitation to Tender* are subject to Icelandic laws and jurisdiction. Disputes arising out of this Tender will be referred to the District Court of Reykjavik, Iceland (Héraðsdómur Reykjavíkur) if the contracting parties cannot resolve the dispute between themselves.

2.3. Vendor Related Requirements

The Vendor SHALL fulfill the following requirements regarding his/her standing and operations:

- The Vendor SHALL be an established company and have at least two-year experience in this field (i.e., the field of providing and installing library systems to customers).
- The Vendor SHOULD have a gender quota in the board at ratio 60/40.
- The Vendor's minimum turnover SHALL be at least 4 million EUR in the year 2016.
- The Vendor SHOULD have an environmental policy and comply with ISO 14001:2015 - https://www.iso.org/standard/60857.html.
- The Vendor SHALL have at least three installed systems in use of similar size and complexity as the Purchasers system and at least one such installation in Europe.
- The Vendor SHALL have a quality system installed and in use.
- The Vendor SHALL have an active service department with at least five employees available for service purposes.
- The Vendor SHALL have a Help desk in place, accessible by the Purchaser via phone or software request (ticket system), as well as email, during Icelandic office hours.
- Minimum capability for service requirements:
  - Service hours: SHALL be Icelandic office hours.

---

[1] https://www.rikiskaup.is/english/icelandic-law/

[2] http://eng.atvinnuvegaraduneyti.is/laws-and-regulations/nr/nr/7413

[3] http://eng.forsaetisraduneyti.is/acts-of-law/nr/7971

[4] The EU 2016/679 regulation will take effect on May 25th 2018, or equivalent Icelandic law put forth by Alþingi, the Icelandic parliament, before that date.

- - Response time for service requests: Classification of service requests shall be given within 2 hours, from the time they were initiated. Work on service requests with high priority SHALL begin within 2 hours, with medium priority, within 6 hours.
  - Ticket system for service requests: Available for Purchasers.
  - Purchaser has access to service orders, their status and progress, via ticked system.
- The Vendor SHALL include a draft of a Service-level agreement (SLA) with his bid, which must adhere to the Purchaser's SLA requirements, see section 2.5.4.
- The System SHALL be under constant development and new versions introduced regularly (at least one version per year excluding patches, bug fixes and minor version changes).
- The Vendor SHALL provide a forum where user suggestions and wishes have a defined channel, and show that such a forum is in place and how it has operated in the past.
- The Vendor SHALL use an agile development method in system development supporting development sandboxes or a similar methodology which SHALL be stated in his bid and supported with links to technical reference material.
- The Vendor SHALL provide a detailed roadmap for the system, demonstrating in detail his/her plans for a minimum of three years (i.e. 2019 – 2021).
- The Purchaser reserves his/her rights to accept a part of more than one Bidders bid, i.e., potentially acquire one or more system units from another bidder than will be chosen as the main contractor. The Vendor SHALL permit such combinations.
- The Purchaser will accept a combined bid from two (or more) Vendors. In such cases one Vendor SHALL be the primary Vendor/contractor.

2.4.   Project Related Requirements

The Vendor shall provide a detailed project plan with his/her bid. It SHALL be divided into sub-projects containing at least the following tasks:

- Further requirement gathering regarding system setup and use at the Purchaser.
- System adaption to Purchaser's needs and requirements.
- System testing.
- System integration to various other systems and services.
- Authentication and log in process.
- System installation.
- Data migration (see chapter 4.16 regarding requirements for the data migration process).
- Acceptance testing.

For each task, the project plan SHALL show the following:

- The start of each task/sub-task.
- The duration of each task/sub-task.
- Expected participation of both Vendor and Purchaser.
- Required resources.

The project plan should be interactive, for the Purchaser to adjust and review.

The project manager SHOULD have a university education and/or professional qualification suitable for the project. The project manager SHALL also have a relevant experience with projects of this size and complexity.

There SHOULD be a project team member with data migration experience from the Aleph system.

2.5. Service Requirements

2.5.1. Service and Help Desk

The Consortium of Icelandic Libraries will take all support inquiries from libraries and institutions that it services. If problems arise the consortium will first try to solve the problem in house, if the problem needs to be addressed by the Vendor, then the Consortium will contact the vendor. Only the Consortium will be allowed to report problems or submit tickets to the Vendor. You can see how the support will be in the graph below:
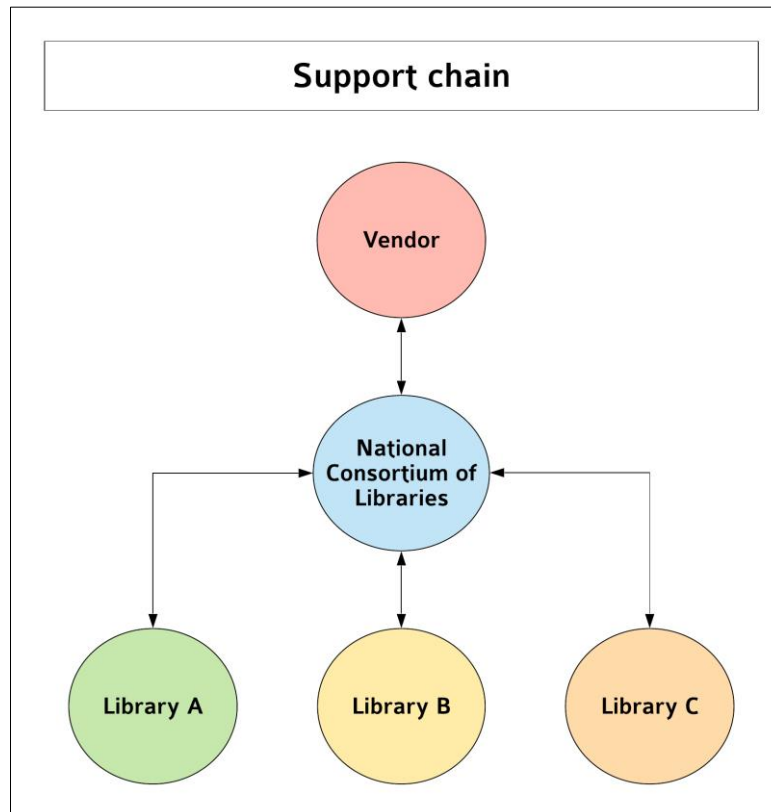
2.5.2. Training and User Support

The following requirements SHALL be in place.

In-depth educational courses and training at the Purchaser's (on site) for users and other necessary personnel SHALL be provided by the Tenderer and SHALL be included in the Tender. The training cost SHALL be broken down by course type. The Vendor SHALL supply training courses at management level at Purchasers

Libraries, for librarians, and for potential Purchaser's trainers.

Training and documentation, for assisting Purchaser in creating custom reports and outputs, SHALL be included in the Tender.
The Purchaser may request a training session to be repeated at a later date, user training in particular, in which case the price for the additional training session SHALL not be higher than for the original training session.

A description of the available user education and training plan, before and after installation, SHALL be included in the Tender, including information on the content of courses and seminars. This description should be as detailed as possible.

User support and support personnel from Vendor SHALL be available every Icelandic working day. In addition the vendor SHALL have a 24/7 standby technical emergency service, and all cost SHALL be included in the Tender.

2.5.3.   Technical Service Support

Information on where and how the Purchaser can get technical service support and assistance SHALL be included in the Tender. Technical support and contact person(s) SHALL be available every Icelandic working day, as well as providing 24/7 standby emergency service. All cost SHALL be included in the Tender.

2.5.4.   Co-operative Maintenance- and Service Contract (Partnership)

This requirement only apply to locally hosted solutions: An 8-year co-operative maintenance- and service contract (SLA) on an annual basis, SHALL be included in the Tender but tendered separately on the Tender sheet, with option of extending two times for two years each time, so the total project time is 12 years. The Purchaser SHALL have the option of terminating the maintenance- and service contract, with a 6 months' notice.

The Purchaser´s service staff SHALL take all support requests and communication from users. Support from Vendor SHALL be as follows.
- Access to 1st and 2nd level support for Purchaser during Icelandic working hours and 2nd level support 24/7 as a standby emergency service. Such access SHALL be via phone, email and/or ticket system.
- The Vendor SHALL describe which ticket system is in place. The purchaser shall have access to monitor and update service requests in the vendor's ticketing system.
- 24/7 standby emergency service access to 2nd level support for users via Purchaser's service organization.
- A maximum of 2-hour response time for "acute problems".
- A maximum of 4-hour response time for "serious problems".
- Provision and implementation of patches, minor and major upgrades to the system. The Vendor SHALL state if the system downtime is needed to install patches, minor and/or major upgrades.
- Regular (monthly) system status review reports.

The cost of yearly extension SHALL be provided on the Tender-sheet.

2.5.5.   Proposed Service Level Agreement

The Purchaser and the vendor/manufacturer SHALL, after signing the Agreement of the main contract, agree on a service level agreement which SHALL include software maintenance, support, fault reporting and bug fixing. The Agreement SHALL include coverage of the following areas with separate price for each optional part of the service agreement:

General
- What are the prerequisites for an SLA (e.g. training for customer's system administrator)?
- What support channels are supported (Telephone, email, remote support…)?
- What are the priority classification / response times for support requests?
- Describe the offered support levels (1st line support, 2nd line support etc.).
- What are the hourly rates in case of on-site support? Describe how other related costs are calculated (travel costs etc.)

Maintenance
- What is included in the maintenance?
- What are the major maintenance tasks included in the SLA?
- What is the estimated duration of each major maintenance task, such as software updates (major and minor)?
- Does the SLA include real-time monitoring of the System and preventive maintenance?
- Note that service windows need to be agreed with the Purchaser.

Service Management
- Does the SLA include regular system status review meetings?

Customer's role
- What are the responsibilities of the Purchaser regarding the SLA?

2.6.   Performance requirements

When referring to performance requirements, all timing operations SHALL be done in an optimal environment, where the system is operating in the environment recommended by the Vendor or in the Vendor's cloud based environment.
The performance SHALL always be measured at 14:00 and at 23:00 on the first Thursday each month. (Time refers to Icelandic local time).

Before the performance checks are run (automatically), a „ping" check, from the testing workstation to the application server is performed 10 times, and the average „Ping" time is subtracted from the measured performance times in the test.

The table below demonstrates average ping times from Reykjavik to various cities in the world.

	Amsterdam	✖	Copenhagen	✖	Dublin	✖	London	✖
Reykjavik ✖	● 41.941ms		● 50.181ms		● 55.391ms		● 40.073ms	

About

The WonderNetwork Global Statistics data is generated with unix command line tool ping, executing 30 pings from source (lefthand column) to destination (table header), displaying the *average*. Cells showing the average deviation of those pings are highlighted in green if they are within 10% of the *lowest average ping*, yellow if they are within 20% and so on. Deviations are judged based on an ideal value being within 10% of 1% of that run's average ping time (green).

The test SHALL run automatically on the predefined times.

The Purchaser has defined the following performance requirements to the system and the Vendor SHALL implement functionality so these actions can be timed automatically.

- To search for a bibliographic record with a minimum of 5000 items attached, via any identifier SHALL not exceed 15 sec.
- To change a view (going from one "display screen" to another SHALL not exceed 1 sec.
- To loan an item attached to a bibliographic record with a minimum of 5000 items attached SHALL not exceed 3 sec.
- To print a loan receipt for a patron with a minimum of 30 loans SHALL not exceed 2 sec.
- To search for a patron with a minimum of 30 loans SHALL not exceed 2 sec.
- To save a new item to a bibliographic record with a minimum of 5000 items attached SHALL not exceed 3 sec.
- The overall performance of the System SHALL not change more than 25% if measured when 300 users are logged onto the System.
- The Vendor SHALL accept a penalty clause in the SLA agreement, where monthly service fees can be reduced by up to 30% if performance measures are not met in the previous month.
- The system SHALL support at least 250 concurrent users.
- The system license SHALL be for an unlimited number and concurrent users.

3. Requirements

Detailed requirements and specification for the System, its environment, users, structure and architecture are defined in this chapter. Requirements regarding functionality are to be found in chapter 4.

3.1. Users and User Groups

The heterogeneous nature of our libraries/institutions calls for highly detailed and flexible facilities to define user privileges (privileges/access rights). User privileges should be multifaceted and multileveled.

3.1.1. System Manager (Central)

The library system manager SHALL have access to the following functionality:
- The role of a system manager SHALL be defined, where the system manager oversees central configuration of the System's constants, access controls, user access rights, user groups. S/he should also define and maintain the System's rules, wizards, workflow definitions and other central system's parameters.
- The system manager shall be able to make bulk configuration changes at consortium level in one action for all or a subset of libraries/institutions.
- Certain rights SHOULD be possible to delegate to Library System Managers (LSM).
- The system manager SHALL have access to the following functionality:
  - Definition of users and user groups.
    - Such definitions SHOULD be possible to delegate to LSM.
  - Definition of user rights.
    - Such definitions SHOULD be possible to delegate to LSM.
  - Perform monitoring of operations regarding System's use.
  - Reviews change history.

3.1.2. Library System Manager (Local)

Staff users SHALL have access to the following functionalities:
- Definition of users and user groups.
- Definition of user rights.
- Libraries need to be able to define workflows for daily activities and assign staff to parts of the workflows. Describe tools that can assist with defining workflows and workflow processes.
- Configuration of library/institution parameters.
- Performing system jobs (e.g. running of reports and statistics).

3.1.3. Staff Users

The library system manager SHALL have access to the following functionalities:
- It should be possible to allocate user privileges according to the hierarchic structural units of the library system (institution groups, individual institutions, branch libraries, collections) and by workflows and processes within those units.
- It should be possible to restrict the privileges of a single user to certain structural units of the library system (e.g. s/he can be assigned to certain places of service) or to certain workflow processes (e.g. s/he can perform specific

processes across different workflows, such as acquisitions, cataloging, circulation, etc.).

3.1.4. Patrons

The library system manager SHALL have access to the following functionality:

- Patron should be assigned to certain places of service (institution groups, individual institutions, branch libraries) but not limited to one place in particular.
- Patron should be assigned a certain role with the possibility of different roles within different system units (institution groups, individual institutions, branch libraries). The user identifiers must be unique and based on the Icelandic national identification number.

The single user privileges can be restricted depending on the structural hierarchy of the library. For instance a patron can borrow at a certain place of service.

3.2. System Architecture

3.2.1. Scalability and Flexibility

The selected platform SHOULD be scalable so as to accommodate The Consortium of Icelandic Libraries. The Platform SHALL allow for additions of new libraries by making changes to systems configuration or systems parameters.

It SHOULD be flexible enough to facilitate a library to deliver specified local borrowing and interlibrary loan arrangements and to customize the staff- and public-interface functionality and appearance of the System as required.

3.2.2. Data and System Hosting

The Consortium of Icelandic Libraries places considerable value on the user data which it holds and, in keeping with Government policy, prefers that in a cloud-based system all user data reside in a specified hosted cloud environment, preferably under the management of an Icelandic public sector body.

It SHOULD be possible to host/use the System in a cloud based environment.

If the system will be hosted in Iceland, detailed technical information about public sector hosting will be made available to the successful Supplier. The Vendor SHALL describe in detail the requirements his system makes to the hosting environment.

The System will either be hosted by the Vendor or at an Icelandic site, specializing in hosting of large systems. If the System is hosted in Iceland, strict requirements will be made to the hosting company. It SHALL adhere to standards such as ÍST 27001 and SHALL provide for an environment and services of sufficient quality to ensure that the System and its operations adhere to EU 2016/679.

If the system will be hosted by the Vendor, it SHALL be in the EEA and the same requirements regarding adherence to standards such as the ISO 27001 and EU 2016/679 are made to the Vendor.

The Purchaser welcomes both classical three tier architecture solutions where a Vendor provides a System running under the Purchasers control, and solutions based on cloud based "Software as a Service" (SaaS) architecture. The Purchaser will also consider offers where an essential part of the system is offered as SaaS.

If the System is hosted by the Vendor in a cloud based environment, it SHALL adhere to the following requirements:
- The Vendor SHALL provide a secure method of maintaining safety and security of personal and/or confidential data.
- Strict access control / authorization mechanisms SHALL be in place
- Full segregation of data from other users.
- The Vendor SHALL have in place procedures to maximize availability of software & services and minimize unplanned downtime, as the Purchaser requires system availability to be 99.9%.
- The Vendor SHALL allow for planned and unplanned audits from the Purchaser and/or associated affiliates.
- The Vendor SHALL describe his redundancy plans in detail.
- The Vendor SHALL describe his emergency plans in detail.
- The Vendor SHALL describe his control over his data & physical tech infrastructure with regard to Legal jurisdiction, local laws may influence access & security.
- The Purchaser SHALL be the recognized owner of all data in his databases and have access to such data in accordance with Icelandic law no. 73/1972 on rights to access and use Purchaser's own data.
- The Purchaser SHALL have direct access to backups and/or mirrored data.
- The Vendor SHALL have protection for DoS (a denial-of-service) and DDoS (a distributed-denial-of service) attacks and other cyber-attacks, in place.
- If the users' passwords are stored in the cloud they SHALL only be stored via a recognized, certified hashing algorithm.
- If external methodology regarding storage of passwords in cloud bases systems is used, all costs SHALL be included in the Vendors bid.
- The Vendor SHALL describe his Identity & Access Management (IAM) for his cloud based system.
- The System SHALL undergo a stringent performance test during the procurement process and such test SHALL be a part of acceptance test. During the System's operations, the performance tests will be repeated regularly and the System SHALL maintain the initial performance level.
- The Purchaser's data SHALL be hosted in the European Economic Area.

3.2.3.   Open Standards

Both the Consortium of Icelandic Libraries and the Icelandic Government are committed to supporting the aims and principles of Open Data, Standards and Access. The replacing library management system should therefore be fully compliant with all aspects of Open Data, Open Access and Open Standards wherever possible. It should be noted that the degree of support for these principles will be a major factor in determining the selection of a supplier and products and platforms will be vigorously examined in this regard. Therefore the tenderer must list all such standards his solution supports.

3.2.4. Browser-Based and Cross-Platform

The System SHOULD ideally be fully browser-based and preferably be capable of providing full functionality to library staff through any internet-connected desktop, laptop, or tablet computer, irrespective of the device's operating system or browser. The System should also provide services to the public via any internet-connected desktop, laptop, tablet, or smartphone device, irrespective of the device's operating system or browser. Any restrictions in terms of browser support, web access speed limitations or in terms of device operating systems should be clearly identified by Tenderers.

3.2.5. Client Interface

The System SHOULD support local clients for staff members, staff members, system managers and other users that participate in the operations of the System itself.

The clients SHOULD be manageable, so that they can be installed and upgraded via an automatic process in a simple and effective manner.

3.3. System Setup

The key factor in this complex consortium environment is the initial system setup. All processes and services rely on the setup and it will be an indicator of success for the whole system.

The current Consortium setup is:
- One shared bibliographic database that everyone catalogs into.
- One authority database.
- One holdings database.
- One shared patron database.
- 12 administrative databases with item, circulation, acquisitions, etc.

The graph below shows the basic Consortium setup and the interaction between the different bodies. There are 12 administrative libraries that contain the libraries that belong to this administrative unit. Each administrative library can contain from one to almost one hundred sub-libraries. The administrative libraries contain all information, rules and regulations for each library and sub-library in the unit.

Current System Setup
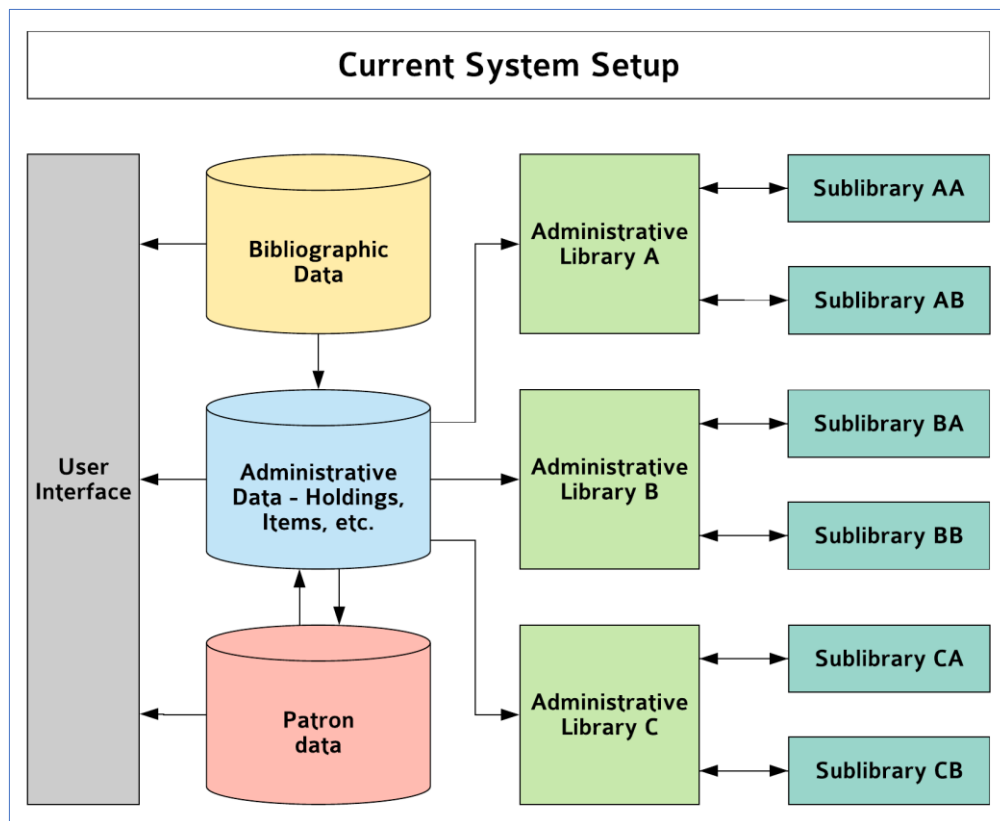
The Vendor SHALL provide a detailed description of the proposed system setup for the Consortium and its libraries based on the vison below.

Our vision for the national consortium setup is:
- A single shared metadata/bibliographic database.
- A single shared authority database.
- A shared patron database, hierarchical from the national level to local library level.
- A scalability to serve approx. 300 different libraries in a consortium setup where each library can be independent, and privacy of patrons is ensured, according to laws and regulations.

Administrative access shall be provided at the consortium level and a restricted administration access at the library level.

3.3.1.   The Bibliographic Data

The bibliographic section of the system should hold a bibliographic database supported by an authority database. The selected Vendor shall indicate whether the holdings data is unique to each library or shared. The graph below describes a vision for the bibliographic, holdings and items data based within the current setup. The authority database contains data on personal names, Icelandic subject headings, corporate names and uniform titles.
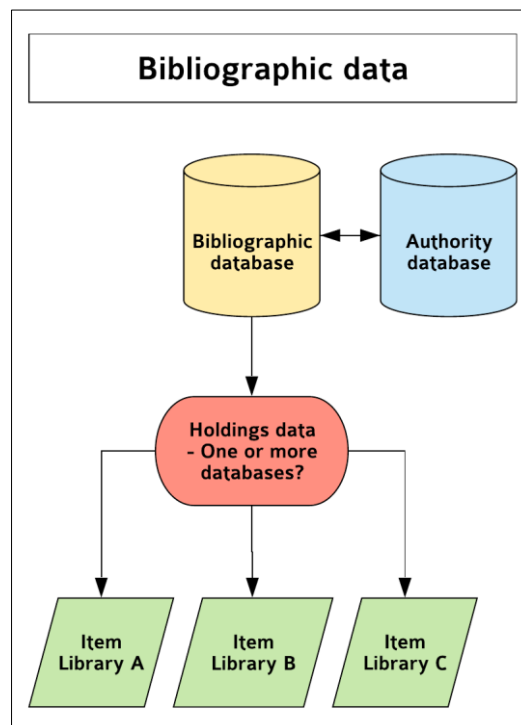
3.3.2. Patron Information

It is a general agreement amongst the libraries that the current setup of patron information is inadequate. The patron data is divided into global and local data. Global information is information from the National Registry and contains other contact information and a lot of system-wide parameters, while local information describes the privileges that a patron has in a particular library. It is a requirement, that every library can have control over their patron information either in a separate patron file for each library or by other means. The graph below explains a preferred setup for the patron information. The source of the patron data is the Icelandic National Registry, as every resident is a potential patron in the libraries. Please describe the proposed solution in order to meet these requirements.

The information should be accessible in real time or can be loaded into the patron file. The libraries can fetch information on new patrons into their own files when adding a new patron.
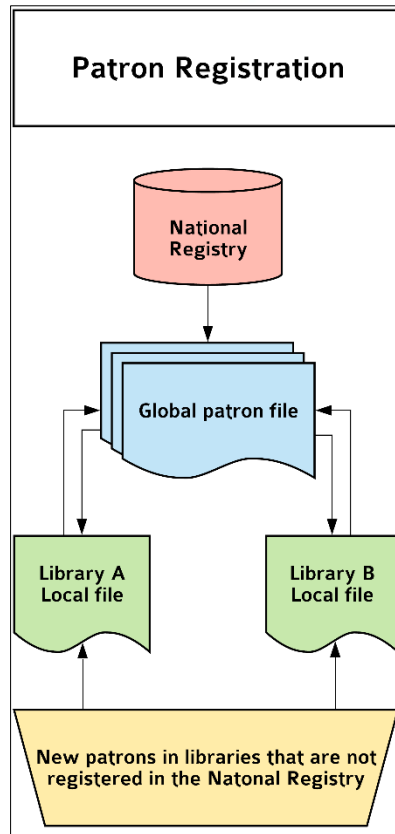
3.3.3. Independent Libraries

It is a requirement that each library is independent regarding patrons, circulation rules and data. However, it is essential that the system setup has the flexibility to incorporate wide cooperation between libraries. The graph below shows a broad idea on patrons and circulation.
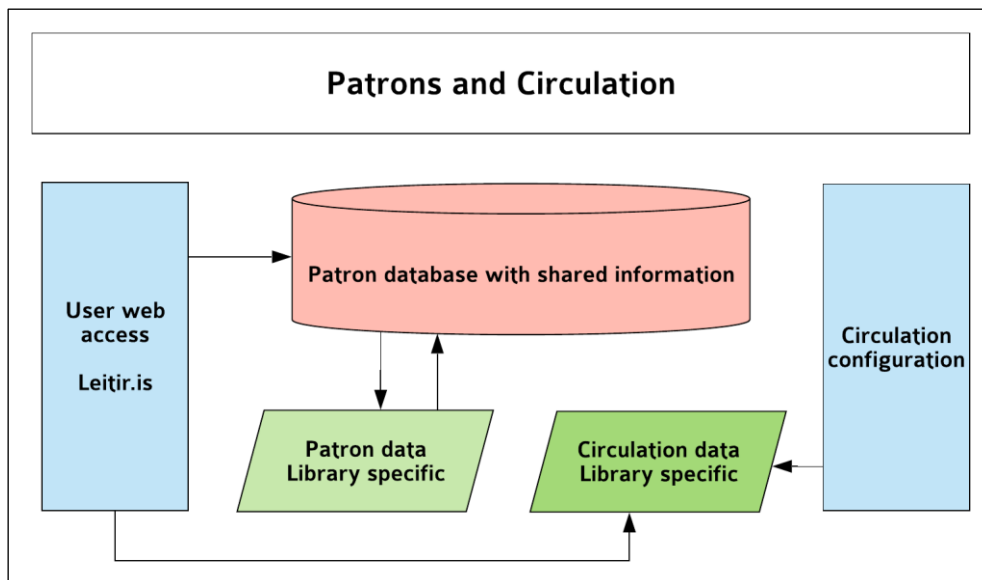
3.4.   Technical Requirements

3.4.1.   The Present System Setup

The current library system is Aleph version 22. The basic structure of the database units is one bibliographic database, one authority database, one holdings database, 12 administrative units, as well as interlibrary loan, course reading and a system-wide administration. Each database unit can have many-to-many links to the other database units. The database runs under Oracle **RDBMS**. See detailed description of the setup in chapter 4.16 – Data migration.

3.4.2.   General Technical Requirements

If the tendered system is a Client/Server based system it SHALL fulfil the following requirements.

- The client section of the System SHALL support running on either Windows 7 (or later), or Red Hat Enterprise Linux 6 (and later).
- The System SHALL support 64-bit version of the operating system.
- The client operating system SHALL be patchable without the intervention or approval of the System manufacturer/vendor and without affecting the support status of the System.
- The client operating system SHALL be able to use anti malware software which automatically updates its self without affecting the support status of the System.
- The client operating system SHALL be able to use firewall and packet inspecting software without affecting the support status of the System.
- If the client section of the System is web-based it SHALL fully support Microsoft Internet Explorer version 11 and later, and the latest version of Google Chrome.
- If the client section of the System is web-based it SHOULD support the latest version of Mozilla Firefox.
- If the client section of the System is web-based it SHOULD support the latest version of Safari.
- If the client portion of the System is based on Microsoft Windows, then it SHALL NOT require the installation of any portion of the Microsoft Office Suite for any required functionalities.
- If the client portion of the System is based on Microsoft Windows, then it SHALL NOT require embedded use of Microsoft Internet Explorer for any of its functionalities.
- If the client portion of the System is based on Microsoft Windows, then it SHALL NOT require the installation of any ActiveX component for any of its functionalities.
- If the client portion of the System is based on Microsoft Windows, then it SHALL NOT require the usage of Microsoft Silverlight for any of its functionalities.
- If the client portion of the System is based on Microsoft Windows, then it SHALL NOT require the usage of Adobe Flash for any of its functionalities.
- If the client portion of the system uses Java it SHALL work with the latest version of Oracle Java and not depend on any minor version of the Java binary (for example 1.6.3). This does not apply if Java comes bundled with the

System and does not modify existing Java client installations. The default Java installation on the systems is updated regularly.

3.4.3. Printing and scanning

- It SHALL be possible to designate the printer or other output device on which reports are produced.
- It SHALL be possible to use printers, scanners and barcode scanners installed directly in the operating System.
- The System SHOULD be capable of printing to a locally attached printer.
- Locally connected printers, scanners and barcode scanners SHOULD either be connected directly to a user's computer or connected directly to the user's local network.

3.4.4. Implementation Documentation

- All API's SHALL be fully documented.
- Technical administration and installation manuals SHALL be provided.

3.4.5. Architecture

- The System architecture SHALL be a so-called client/server or network/server Cloud based solution
- To accommodate flexibility and minimize network load, the System architecture SHOULD have a so-called multi-tier architecture (2-tier and 3-tier).
- If the System is 3-tier, then the middle tier SHALL run on a separate server from the database server.

3.4.6. Requirements for Technical Environment Regarding Servers

If the system will be locally hosted is SHALL fulfil the following requirements.

- The System SHALL use TCP/IPv4 protocols for all communications among workstations and between client workstations and the server(s) and SHALL NOT require specific TCP/IP brand(s) or implementations on client workstations.
- The server portion of the System SHALL support running on either or both Microsoft Windows 2008 R2 or Red Hat Enterprise Linux 6 and later. The System SHALL support 64bit versions of the operating System.
- If the server portion of the System is based on Microsoft Windows, it SHOULD be Windows Server 2008 R2 Logo Program for Software (http://msdn.microsoft.com/en-us/library/windows/desktop/dd744769(v=vs.85).aspx) and successfully adhere to all policies of that program where applicable.
- The server portion of the System SHALL support running on virtualized hardware (VMWare vSphere 5.1) unless the vendor can demonstrate that doing so would negatively affect performance so much as to be unacceptable.
- The software solution SHALL NOT require administration rights on servers.
- The System SHOULD support either or both fail-over clustering (Microsoft Clustering Services or Red Hat High Availability Suite) or active / active distribution of services (for example load balanced web servers).

- If the server portion of the System uses Java it SHALL work with the latest version of Oracle Java and not depend on any minor version of the Java binary (for example 1.6.3). This does not apply if Java comes bundled with the System and does not modify existing Java paths. The default Java installation on Systems SHALL be updated regularly.
- The server operating System SHALL be patchable without the intervention or approval of the system vendor and without affecting the support status of the System.
- User printing SHALL NOT depend on any system server but, instead be sent directly from the client to the print servers.
- The server operating system SHALL be able to use anti malware software which automatically updates itself without affecting the support status of the System.

3.4.7. Database Requirements

- If the System uses an external data base system, it SHALL be relational (RDBMS) and SHALL be one of the following systems:
  - PostgreSQL
  - MS SQL (enterprise)
  - Oracle
- The System SHOULD use a database server separate from any application server.
- Data SHOULD be kept in a database optimized for long-time storage and flexible retrieval.
- The System SHOULD be able to coexist with other database systems hosted on the same database server.
- The System SHOULD not store LOB data within the database.

3.4.8. Security/Access

- It SHALL be possible to control user security and authorizations.
- The System SHOULD support the authorization mechanism of Microsoft Active Directory.
- The encryption of passwords SHOULD take place in the client.
- If the System stores passwords, they SHALL be encrypted.
- It SHALL be possible to create individual users as well as groups of users.
- It SHALL be possible to allow different access rights to the database and the different modules to groups as well as individual users.
- The vendor SHALL describe how the access rights are built in different modules.
- A detailed description of the authentication functions and access level functions SHALL be provided.
- Access SHALL be controlled in such a way that each user will have a user name and password to the System.
- All actions by a user in the System SHALL be registered in a centralized log file, so that it is possible to trace who has done what within the System, and when.
- The System SHOULD be able to lock a software client after a configurable amount of idle time.

- The System SHOULD provide an API for user management or a documented way of managing users and their privileges programmatically via a 3rd party solution.

3.4.9. Access Management

- The System SHALL support usernames of at least 8 characters.
- The System SHALL support passwords of a minimum of 8 characters.
- Passwords SHALL allow the possibility of mixing characters, numbers and special characters together.
- User access SHALL be locked if attempts to log on to the system fail several times in a row. The exact number of failures SHALL be configurable.
- The following information about the user SHOULD be at least registered:
  - Full name (up to at least 32 characters).
  - National ID number.
- It SHALL be possible to disable a user from using the System.
- The user SHOULD be offered to change his/her password when s/he is logged on to the System for the first time.
- User access SHOULD have a defined start date and expiry date such that the user cannot use the System before the start date or after the expiry date.
- It SHOULD be possible to grant user access without expiration.
- It SHOULD be possible for administrators to change usernames.

3.4.10. Operations, Backup and Recovery

- The System SHALL be able to provide recovery of all data at any point in time, when it becomes necessary, to ensure that no data is ever unrecoverable.
- The System SHALL keep a transaction database.
- The System SHALL make use of database settings and/or programing tools to minimize, and to report on, database errors such as data inconsistency and database locking due to simultaneous updates.
- The System SHALL have a facility for automatically stopping and starting the online System at specified times.
- The System SHALL include fully automatic routines for restarting the System after a major system crash. The necessary reconstruction of databases and indexes SHALL be carried out and database integrity preserved.
- The System SHALL NOT lose more than one transaction per active connection during a major system crash.
- The System SHALL be able to restart in an automatic fashion (automatic recovery) in case of a major system crash.

3.4.11. Testing Environment

The Purchaser will operate a special testing environment to test changes to the system configuration, to host his/her own software development, to facilitate integrations with external systems and to implement and test new vendor software releases.

- The environment must be a replica of the consortia production environment and contain a copy of the customer real-time database.
- The Vendor SHALL describe how the testing environment will be updated, both software and data and the frequency of such updates.

- The Vendor SHALL also describe if there are any specific requirements made by him/her, for such an environment.

3.4.12. Software Support

- The Vendor SHALL provide an option for contacting a qualified and knowledgeable technical support. The Vendor SHALL provide telephone and email support, in addition to access to a ticket system.
- Purchaser SHALL get in advance a detailed work plan and backup plan for all works and tasks that needs to be done.

3.4.13. Various System Requirements

- The design SHOULD aim to have low bandwidth requirements.
- Information SHOULD be available on the disk storage which the system needs in the beginning and estimated growth per year.

3.5. Requirements Regarding the Personal Data Act

The System should ensure that the Purchaser conforms to EU Regulation No. 2016/679 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data as regards the library system, in particular Articles 5, 25 and 32. The Vendor should furthermore ensure that it fulfills the Regulation's requirements that are applicable to the Vendor.

The structure of the System SHALL allow each library to process only Personal Data in the course of performing user agreements entered into between the relevant library and the Data Subject and should not allow a library to process Personal Data collected by other libraries.

The System SHALL provide functionality to fulfill the following personal data protection requirements:

- It SHALL be possible to encrypt certain personal information and store it in the Systems database.
- The System shall have an intrusion lockdown mechanism, so that it will shut down on a particular user if s/he gives incorrect log in information five times in a row. Such a lockdown SHALL be configurable with regard to the period the lockdown is in place, and how many illegal attempts are allowed.
- In general, the System SHALL be set up in such a way that a data subject must give an informed consent on all personal data storage operation. The default for such a requirement SHALL be "NO".
- To provide a data subject (via a request to a qualified Purchasers staff member) with information on whether or not personal data concerning the data subject is being processed in the library database. A copy of the personal data undergoing processing in a commonly used electronic form should be provided and the following information:
  - The purposes of the processing.
  - The categories of personal data.
  - Information on who has accessed personal data regarding the data subject.
  - The envisaged storage-period.

- o The right to request from the controller rectification, erasure or restriction of processing.
- o The right to lodge a complaint with a supervisory authority.
- o The source of the information, if not collected directly from the data subject
- o The existence of automated decision-making, including profiling.
- o To erase all personal data on the data subject in the Purchaser's database as allowed by pertinent Icelandic laws and regulations.
- o To restrict the processing of personal data on the data subject in the Purchaser's database as allowed by pertinent Icelandic laws and regulations.
- o To transmit personal data on a data subject in the Purchaser's database, which s/he has provided to a controller, in a structured, commonly used and machine-readable format to the data subject for the purpose of transmitting the data to another controller as allowed by pertinent Icelandic laws and regulations. Where technically feasible, the data subject may request the personal data to be transmitted directly to another controller.
- o Personal data, regarding data subjects, their use of the System, user history and other information defined as "personal information" shall not be accessible by general users, except the data subject himself/herself.

As previously stated, the System SHALL support an access mechanism where users are given unique usernames and passwords. Requirements regarding access control are defined in chapters 3.1 and 3.4.10.

- All modifications to user names, passwords, user rights SHALL be logged and SHALL create an audit trail which can be reviewed by system managers or users with same level of access rights.
- The System SHALL provide functionality to review all user accounts, their grouping and use.

3.6. User Interface

The Consortium of Icelandic Libraries is, as stated before, a publicly owned service and due to this fact all our services must be available to all Icelanders. Below are guidelines for the user interface:

- The user interface for both patrons and employees should be visually appealing and simple.
    - o Ability to create a kid's friendly version of the interface, with customized results.
- User interface must adhere to the WCAG 2.0 standard.
- The interface must take into consideration the needs of the blind and visually impaired and have the ability to use and incorporate a screen reader, screen magnification, color blindness mode and more.
- The interface must have a scalable text configuration.
- Speed is of the utmost importance; the user interface must be calibrated to keep delays to a bare minimum.

- Social media connections should be possible.
- The interface should have a coherent look:
  - Computer browser.
  - Phone/Tablet browser.
  - Computer program.
  - Phone/Tablet application.
- It should be visible how to change between languages, for example between Icelandic, English, Polish and Danish.
- Easy and simple logging into the System and logging off.
  - Visible who is logged into the System.

Employee Specific User Interface

The user interface for employees must adhere to the same standards as set out before, but also the following list:
- Possibility to configuring the employees' dashboard in regard to their workflow, for example the following items:
  - Saved searches.
  - Bookmark frequently used sites or places with in the program.
  - Simple navigation system.
  - Contents of claiming/purchasing
- Shortcuts, for example printing, searching, registering new patrons, taking payments and more.

3.6.1.   Multi Lingual Support

The Icelandic language will be the primary language, but the system SHALL offer a multi-language user interface.

Upon delivery the program SHALL offer an Icelandic and English interface. The program SHOULD have the ability to add support and translation for other languages, i.e. Danish, Polish and more.

Here below is a list of requirements the System must have:
- Icelandic SHALL be the primary language of the System.
- All views and commands SHALL be in Icelandic.
- System and error notifications SHALL be in Icelandic.
- The System SHALL provide comprehensive support for Icelandic with regard to character handling, sorting, name conventions, and presentation of dates.
- The System upgrades SHOULD not affect the translation of the System.
- The Consortium SHALL provide the translations and support for Icelandic, but the provider must input it into the program/system.
- Updates of the System SHALL not require a re-translation of the user interface.
- The quality of the Icelandic interface SHALL be ensured by using a native Icelander to assist with translation, i.e., Google-translate or similar methodology SHALL not be accepted.
- The Icelandic interface SHALL be throughout the System, i.e., when a staff member or other users have begun using an Icelandic interface, it SHALL be retained throughout their work session.

- The language of system messages, error messages and other communication between the System and users, SHOULD be in Icelandic.
- Multilanguage capability: an interface that can be partially or fully reset to other languages and shifted at any time by the user.

3.7.   Character Set and National Language Support

It is essential that the System supports special Icelandic characters and writing conventions, as well as being capable of sorting according to the Icelandic alphabet. Here are the main concerns:

- The System shall support Unicode (ISO/IEC 10646)
    - It shall store the accented characters in a pre-combined version, if it exists.
    - It shall support the use of a virtual keyboard to select and enter characters not available on the equipment of input.
    - It shall support identical display of characters on all interfaces of the System.
    - Here is more information:
        - Unicode: (https://www.unicode.org/versions/Unicode10.0.0/)
        - LC MARC21: https://www.loc.gov/marc/specifications/speccharintro.html
- The System shall support all aspects of Icelandic standard ÍST 130:2004 Information Technology - Icelandic Requirements.
- The System must support Icelandic collation sequence (sorting/filing) according to ÍST 130:2004.
    - http://www.stadlar.is/verslun/p-25561-st-1302004.aspx

3.7.1.   Sorting/Filing According to Icelandic Conventions

The System must support the display and filing of Icelandic personal names according to Icelandic filing rules. This applies to all types of records and all modules wherever names are displayed.

Icelandic names are never inverted, and the order of name elements is never changed. The sorting sequence is as follows: first given name, surname, second given name:

> **Examples**:
> Alexander Alfreðsson
> Alexander Jóhannesson
> Alexander A. Jónsson
> Alexander Alfreð Jónsson
> Alexander B. Jónsson

In the current library system, a special MARC subfield $1 and $7 were assigned to accommodate the name parts as see below.

Name fields 100/600/700 first indicator 4	Parts of name
1st filing element	($a) First / Given name
3rd filing element	($7) Second given name
2nd filing element	($1) Patronymic / Surname

The solution in the current system is only shown for information.
- Describe how this specialty will be addressed so that both sorting and display will meet the requirements described above.

3.8. Authentication and Automatic Log In

The Icelandic Identification Number (ID No.) is a unique identifier for each person and organization in Iceland. The ID No. can be uniquely linked to an electronic identification mechanism (rafræn skilríki) and/or a unique key (ÍSLYKILL) via island.is.

The patron SHALL register onto the library system and receive a unique username and password. The user SHALL be able to log into the System using their username, electronic ID (rafræn skilríki) or ÍSLYKILL.

Users that have been uniquely registered into one of the following systems, SHALL be able to log into the System via automatic log in (ALI) mechanism as described in the requirements below:

Systems that users SHALL be able to apply automatic log in via API from:
- Ugla
- Mentor
- Inna
- MySchool
- Canvas
- Moodle

The System SHALL fulfil the following requirements:
- The System SHALL support automatic log in mechanism as it is the general aim of the Purchaser.
- General authentication: In general, the System SHOULD be "opened" by a request from another (supported) system being used by the general user, which has already authenticated the general user.
- The current scope of the user in the requesting system SHALL be imported via the user logon into the System. Possibly by a parametric URL push.
- Predefined authentication: If the System is initiated from the Purchasers internal webpage, the user SHALL be automatically authenticated.
- Transactions regarding user authentication: It SHOULD be possible to integrate the System so it can receive transactions from other systems to define users and/or notify of deactivated users.
- Electronic ID authentication: Certain user-classes or predefined users SHOULD be able to access the System via an Icelandic electronic ID authentication.

- If a user in a system from the list above (i.e. a system that has the rights to authenticate a user in the System) has no longer access rights to that System, it should notify the library system and the library system will deny access to such a user. However, potential fines and outstanding books on loan SHALL be registered and the library management SHOULD be notified.
- Foreign users, temporarily staying in Iceland, SHOULD be assigned a temporary system ID No.
- The System SHOULD be able to send a "lookup" request to the student-systems listed above, where the systems in question are queried if a Patron of the library system is a valid student at the school in question. The System SHOULD be able to receive an answer from the queried system. Such communication SHOULD be made via parametric URL push.

Patron Login

Username & Password	→	Library System	↔	Student System A
Island.is	→		↔	Student System B
Facebook/Google/Microsoft	→		↔	Student System C
Electronic ID	→		↔	Student System D
Íslykill	→		↔	Student System E
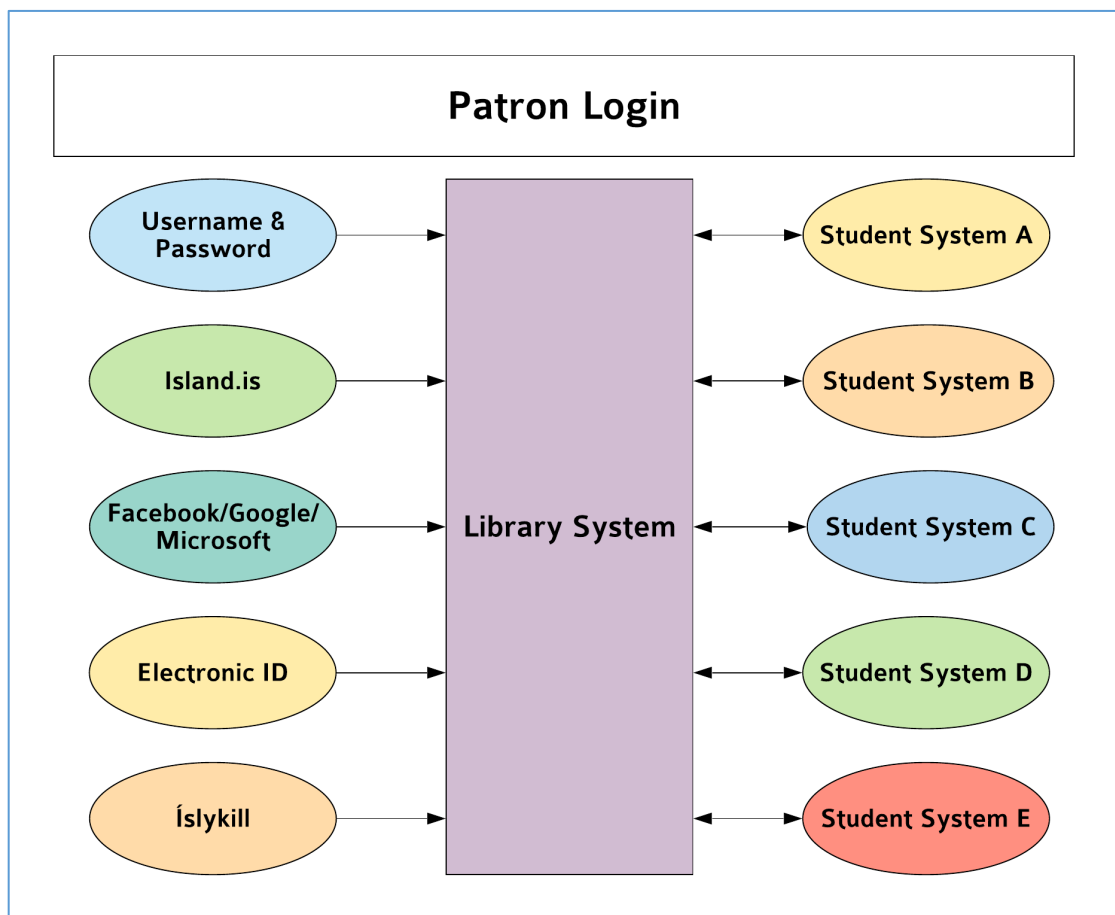
4. Fundamental Requirements Regarding Loans, Patrons, Metadata and Management of materials.

4.1. Patron Information

In Iceland the National Registry is the foundation of the patron file of all the libraries in the Consortium. The patron file in the Gegnir-system is updated once a month from the National Registry. The patron information is divided into global and local information. The global information is shared by all the libraries and is downloaded from the National Registry. This information includes name, National Identification Number, gender and legal address. Patron identification numbers (Patron IDs) are also shared as global information. Each patron uses only one library-card which subsequently is linked to one or more libraries. Local information should be owned by each library, but is now shared among the libraries, for example telephone numbers, email addresses, etc. It is required that each library has control of the local information of their patrons.

The global patron information should be shared within the System so that the basic information on each patron is accessible for all the libraries. The graph below describes the ideal structure for the patron information.
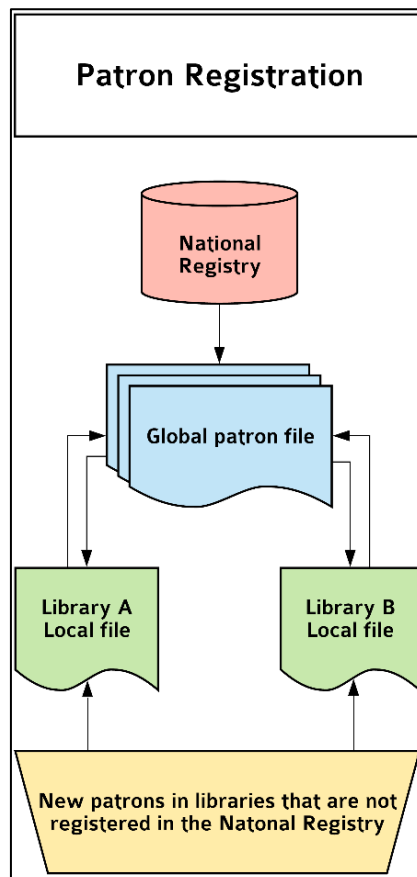
National Registry

The ideal setup for the patron information is to have the National Registry as the main source of patron information. It should be directly connected to the library systems global patron file. The National Registry should be directly accessible from the System so that each time a new patron is registered at the library the patron file will access the National Registry and get the relevant information on that particular individual. The other option is to load the National Registry to the library systems patron file on a regular basis.

The Global Patron File

The global patron file includes both the information from the National Registry, and information on patrons that are not (yet) in the National Registry but have been registered in a library's local file. These patrons can be either individuals or organizations.

Libraries / Local Patron Files

Information that is unique to each library should be stored on the library level. This information can be email, telephone number, name of guardian / parent, student information such as class and so on.

New patron in library

New patrons in a library that are not registered in the National Registry should be linked or loaded into the global patron file for Consortium use to prevent duplicate entries, but obviously not loaded to the National Registry.

4.1.1.   Shared / Global Patron Information

Global patron information is information from the National Registry plus a library card number and a PIN / password. The card number and PIN / password are stored in the global patron file and are created for the patron at the first library where the patron becomes a member. The information is subsequently reused / updated by other libraries used by the patron.

Preferred System setup:
- It is necessary to have a direct link between the global patron information and the National Registry or to offer frequent and automatic updates.
- Each library fetches its patrons from the global patron file and gives them privileges in their particular library.

Requirements:
- New or replacement library cards should be attached to the existing patron´s global details.
- It should be possible to register multiple types of IDs for each patron.
- The System should be able to generate both unique Patron IDs and accept IDs from an externally derived source.
- The System should allow self-registration online.
- The System should be able to generate a PIN / password automatically or to accept an externally derived PIN / password.
- It should be possible to create/edit patron´s records manually in addition to importing them.

- It should be possible to lock certain fields in individual patron records from updates from the National Registry, e.g. name and gender.
- It should be possible to associate family member records - e.g. where legal guardians are registered as guarantors for a child.
- The System should provide the ability to establish different types of users and set circulation parameters for each type of users.
- The System should provide an automatic change of a patron category / user type based on age.
- It should be possible to retrieve patron's records by name and various IDs such as library card number, patron ID, National Identification Number.
- It should be possible to retrieve patron's records by various information such address, telephone and email address.
- General staff members should not have the permission to erase global information about a patron.

4.1.2.   Local Patron Information

Local patron information is information about the patron which is only used in a particular library. This information is, among other things, email address, communication history, telephone number, circulation data and financial charges.

Below are the requirements concerning the patrons' information and loans:
- The libraries should not be able to see local patron information of other libraries, including loan information.
- It should not be possible to change patron information / privileges in other libraries, such as the validity period of library-cards.
- Libraries should not need to adjust their workflow and rules to the workflow of other libraries.
- Each library is in control of their patrons. It is important to keep in mind that an individual can have different patron privileges in different libraries.
- Local information, such as email addresses, extra addresses (such as an office address and the address of university staff), shall be kept by each library and each library must keep control of its information.
- It should be possible to either upload pictures of patrons or link to pictures in external systems, e.g. student systems.

4.1.3.   Communication with Patrons

Easy and seamless communication from the library to the patrons and vice versa is essential in the new library system. These are the main issues regarding communications with patrons:

- Each library can predefine which communication channels are available to patrons.
- The patron should be able to determine their favorite channel of communication, i.e. email, SMS, through student systems etc.
  - That the patron can indicate on "My Account" how s/he wishes to communicate with the library.
  - The staff member can register how the patron wishes to communicate with the library.

- Local email information
  - Patrons should be able to choose what email addresses the library uses when it sends messages through email, if the patron has more than one email address registered and should be able to control which email address is used and when. For example, the patron may wish to use university email address in communication with the university library and a private email address when communicating with the public library.
  - It is necessary to have sufficient space for multiple and very long email addresses.
- It should be possible to manually send messages to patrons from the System because of specific occurrences, such as when keys were forgotten.
- Message history from the System is preserved for some time in the System.
  - Staff members must be able to look up the history of communication with the patron.

4.1.4.   Log in / Identification of Patrons
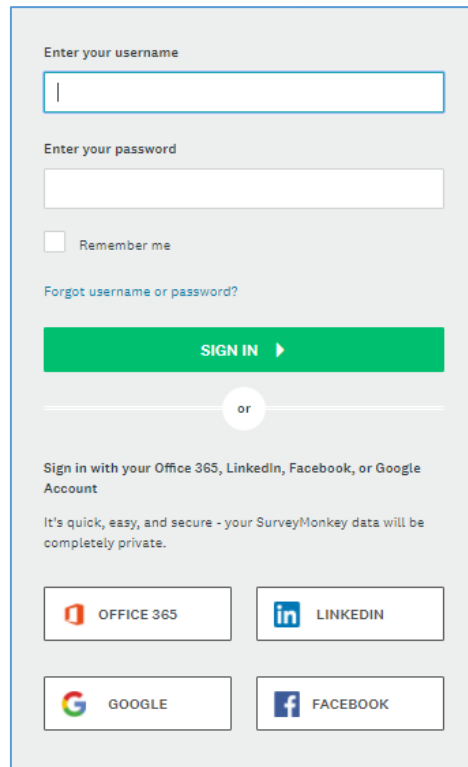
Today, the log in of patrons is limited to **leitir.is**. The requirements are that the patron can authenticate himself/herself from other systems in order to log in via automatic log in, see section 3.8.

There is a need to improve the automatic and independent approach for the patron when registering and also to add different services such as linking to payment portals.

From the spring of 2018, new Personal Data Act (EU 2016/679) will be introduced. The System must take into consideration those changes. In particular it will be necessary to consider the identification of children that do not have access to registration through other systems.

Today log in is based on the user name and password from the library system. It is also important that the patrons can authenticate through other means. Different authentication systems are in use in the community and it is necessary that the library system can use authentication from other systems, for example:

- Island.is
- Rafræn skilríki (*e. electronic identification)*
- Islykill
- Skilriki.is
- Student registrations
- European identification
- Social media and other services, see examples from the image below:
  - Google
  - Facebook
  - Office 365

- It must be possible to log in with a traditional user-name and password without linking to other services.
  - In particular this is valid for the log in of children.
- The System should regularly remind logged in patrons to verify their personal information.

Links to student systems
It must be possible to register into the System through "automatic log in" (see sections 3.8 and 5.4). The prerequisite is that the patron is logged into a student system and thereby is given access to all services that the library provides, such as **leitir.is**, **rafbokasafnid.is**, the special subscriptions of journals, etc.

It is necessary to provide an integration with most of the student systems and provide seamless services between those and the library system. A list of all the systems the library system needs to be integrated with, is given in section 5.1:

Links to other library services
When a patron is logged in on one of the following services s/he should automatically be logged in for the others with "automatic log in".
- leitir.is
- rafbokasafnid.is
- Elib
- Special subscriptions of the universities

Patron registration on website
An individual must be able to register as a new patron in a library of choice, given that the library has allowed for online registration:

- For the user to register as a patron of a library, the most feasible way is to use **Island.is** authentication**,** in order that a fake patron is not registered. Such identification is limited to individuals registered in the National Registry.
- The registration of a patron without electronic identification must offer protection against registration of fake persons. Examples of such protection:
  - Actions that cannot be circumvented, such as providing an email address, or by other means.
  - User must confirm email address by clicking a link in the confirmation email.
- A link to a payment portal is a prerequisite so that a patron can pay the fee for the library card.

4.2. Circulation

The number of libraries in the present Consortium are about 300 and they are as different as they are many. Circulation rules reflect the difference of the libraries, they can be very simple or incredibly complex. The system setup for groups of libraries makes it possible for libraries to have circulation cooperation which creates flexibility in their services to patrons, but it can, at the same time, create collision between libraries.

4.2.1. Loans and Returns

Circulation tasks must be clear and simple. The System should have the capacity to manage all types of library material e.g. books, serials, CDs, DVDs, electronic resources, digital materials, artifacts, archival material, etc. Here are the main issues regarding lending and returning:

- The System should support the creation and modification of individual circulation parameters for each library.
- The system should support the management of shared circulation parameters for multiple groups of libraries. This will be managed on consortium level. Please describe your solution.
- It should be possible to enter the unique item identifier via barcode reader, RFID scanner or manual input.
- No patron data should be required for returns.
- It should be possible to override the calculated due date at the point of loan/renewal, subject to patron and item checks.
- It should be possible to backdate return dates for items deposited in book drops.
- The System should permit a status of 'claimed returned' to be added to an item allowing it to remain associated with the patron whilst suppressing notices and fines.
- The System should permit a status of 'lost' to be added to an item allowing it to remain associated with the patron while suppressing notices and fines.
- The System should alert staff if a 'lost' item is loaned or returned.
- It should be possible to flag items as 'damaged' and advice staff and patrons on loan and return.
- It should be possible to flag items as comprising multiple elements, e.g. triple CD packs, and alert staff/users on loan and return to ensure sets are complete.
- The System should:

- o Allow the bulk renewal of all or selected items on loan.
- o Prevent the renewal of reserved or recalled items, and items over the renewal limit.
- o Print or send receipts for items loaned, returned or renewed.
- o Allow renewal of items still on loan from the 'return' screen. Linking to the patron's account should be direct, not requiring a patron card or a patron search.
- o Allow for renewal of unseen items via:
  - ▪ telephone
  - ▪ self-service device
  - ▪ web interface
- o Provide direct access to the patron's record for personal details, contact information, loans, fines and reservations details, from loan, return or renewal functions.
- o Provide direct access to the full item record, including reservation information, from the patron's loan record.

4.2.2.   Fines and Charges

The System should support fines and fees for items, based on circulation policies defined by the library. This includes both overdue fines and lost item fees, which may be automatically applied after an item is overdue for a library-defined period of time.

- • The System should:
  - o Show full details for each fine or charge.
  - o Accumulate fines and charges for payment in a single transaction
  - o Allow for payment to be accepted:
    - ▪ In the return function.
    - ▪ By direct access to the fine payment screen from the return function.
    - ▪ By direct access to the fine payment screen from the patron record.
  - o Allow payment in full or part against any individual charge.
  - o Allow payment in full or part against all charges.
  - o Allow staff to waive all or some fines/charges. The reason for the waiver should be recorded.
- • It should be possible to defer payment.
- • It should be possible to issue receipts of fines/charges paid.
- • The System should include cash management functions to enable reconciliation of income received by the System with amounts recorded on tills.
- • It should be possible to set a default replacement cost for lost books, where cost was not specified on item record.
- • It should be possible to set processing/administration fees.
- • Financial history should be retrievable for a library-defined period.
- • It should be possible to handle other charges, including:
  - o Membership charges / annual fees.
  - o Reservation charges.
  - o Loan charges.
  - o Fee for booking a room, locker / etc.

o   Manual charges such as library sales.
- It should be possible to transfer financial transactions to financial systems.
- The System should allow refunds to be made and recorded.

4.2.3.   Alerts from the System

Information provision with a traditional loan and return must be effective and avoid time-consuming search for normal information such as:

- When borrowing: That the loan screen shows immediately what the patron has already on loan, not only a list of what is being checked out now.
- When returning: That the list of the patron's borrowed items is demonstrated as a whole, and then the list is shortened while the items are returned.
- At the beginning of the loan process when the patron has been identified, alerts must immediately be displayed of any discrepancies on the library card, such as reserved material, expired library card, unpaid fees, limit to borrowed items, etc. It is not acceptable that such notifications come later in the process, such as when an item is scanned.
- The staff member must be able to override error messages as appropriate.
- Alerts from the System must be both visual and audible.

  The present situation:
  - *The library card is scanned but the staff member does not see the information about the status of the card, such as that the card has expired.*
  - *A window for unpaid fees shows immediately, but it can contain fines from other libraries. Also, the sum of the accruing fines of material which has not been returned or renewed, is lacking.*
  - *Information on that a card has expired shows when an effort is made to lend a book to the patron.*
    - *This can lead to a situation such as: A staff member claims a fine for returned items, and then if s/he wants to borrow other material, s/he must be charged again for the renewal of the library card.*

  Possible solutions*:*
  - *When a patron is identified with the system (e.g. card is scanned), it should be immediately possible to see if the patron's library card has expired.*
  - *If a library card has expired, if the patron has unpaid fines or something else is wrong, an alert should appear as soon as the patron record appears on the screen. This is pertinent about loans at the circulation desk, in self-service devices and interlibrary loans.*

In our Consortia environment it is essential to have special alerts when an action affects another library in the consortium. Here are examples:

- Alerts should appear from the System when appropriate. It is important that it shows what the alert is about, such as fines, an expired library card, a reserved book, or a book that is returned to a wrong library.
- The alerts must be seen and heard from the circulation desk as well as from the self-service devices.
- It would be good if alert-windows show up if there is a change made in the patrons' information which might affect other libraries.

4.2.4. Circulation Setup

Circulation rules must be flexible and different between libraries. It is very different whether libraries use fines, allow reservations or renewals, etc. Here are the main issues regarding the circulation policies.

- The System should allow authorized staff to modify all parameters relating to circulation policies with immediate effect.
- It should be possible to set circulation policies, fines, renewals and reservations according to a variety of definitions, such as:
  - Loan period of an item.
  - The item's material type.
  - The item's location / collection.
  - The privileges of the patron.
- It should be possible to set a different maximum of accrued fines for each patron in each particular library.
- It should be possible to set a maximum fine for each item.
- It should be possible to set fees for reservations, loans and annual fees.
- The System should provide automatic blocks/alerts on patrons, including for:
  - Expired library card.
  - Outstanding fines/fees.
  - Overdue/recalled items.
  - Borrowing over entitlement.
- The System should allow authorized staff to input manual blocks with an explanatory message.
- Staff should be able to override any patron or item block.
- The System should show the status of items, e.g. reserved, awaiting pick-up, at all times to both staff and end users.
- The System should maintain a circulation history for both items and patrons, retrievable for a library-defined period.
- The System should allow the circulation of un-cataloged items by recording brief information at the point of a loan, using library-defined defaults for loan control. Items should be automatically caught upon return to allow full details to be added.
- The System should alert staff to return items to their 'home' branch and manage the transit of such items, showing their current status at all times.
- The System should provide policies to control patrons' access to digital material, either through the management of the reference linking tool or the circulation policies.

4.2.5. Short Loan

Short loan periods are needed in the reading room at the National and University Library and for the material on reading lists in the universities. Here are the issues regarding the short loan periods:

- The System should allow for short loan periods to be set, including both hourly and overnight loans.
- Hourly loans should cater for both rolling hourly periods, e.g. items due back four hours after loan, and fixed times.
- It should be possible to set specific parameters for short loan items, to include:

o Loan periods.
o Loan entitlements.
o Renewal periods.
o Renewal limits.
o Reservations.
o Fine rates.
o Notice production.

4.2.6. Loan Renewal

It should be possible to renew materials both from the circulation desk and self-service devices as well as from the web (**leitir.is**).

- Staff should be able to renew items for the patron from the library system staff interface.
- Staff should be able to select one, many or all items to renew simultaneously.
- The patron can choose which items are to be renewed.
- The patron can renew in one log in all the material on loan in different libraries.

4.2.7. Reservations

The following reservation possibilities must be available:

- The system shall support reservation services.
- The patron can reserve material through the web.
- The patron can pay on the web for services in case there is a cost.
- The patron should be able to request that the reserved material is delivered to another library if the setup permits.
- Libraries can set a maximum number of reservation for each patron.
- The System should automatically generate notices to users when requested items are available. This notice may be in the form of an email, an SMS or push notification and should be generated in real time.
- The System should allow for maximum flexibility in determining policies for reservations:
  o The general rule should be that reservations should be made on "like items". The definition on what constitutes "like items" should be configurable on library basis. Describe the algorithm behind "like items".
  o Reservations on a specific item should be allowed for staff only.
  o Allow status monitoring of requested items.
  o Allow grouping of locations to satisfy reservations.
  o Allow/disallow reservations on items on order.
  o Allow/disallow available items (i.e. on shelf) to be reserved.
  o Automatically notify staff if a reservation has been made on available items.
  o Allow staff to record 'not found' status against reservation request.
  o Allow for reservation requests to be routed between sites if items are currently available at more than one site.
  o Allow for a default pick-up site / home library to be specified which can be changed if required by staff and patrons.
  o Alert staff when a reserved item is returned from loan and notify the requester that the item is awaiting pick-up.

- o Alert staff/end users if a reservation is awaiting pick-up, whenever the patron record is accessed.
  - o Allow for reservations to be cancelled automatically on expiration.
  - o Allow for reservations to be cancelled manually by staff, with explanation.
  - o Allow for unfilled reservations to be cancelled by patron.
- Authorized staff should be able to change the order of the reservation queue.
- It should be possible to set an expiry date for uncollected reservations, with automatic notification to staff (to remove from reserve shelf).
- It should be possible to set an expiry date for unfilled reservations, with automatic notification to end users.

4.2.8. Automatic Notices and Email

Flexibility in sending and modifying / creating notices is essential for individual libraries in the Consortium.

- Larger libraries need to be independent in managing their notices.
- Text and format of notices should be library defined.
- The System should support the transmission of notices via a range of formats such as:
  - o Print
  - o Email
  - o SMS
  - o Social media
  - o Telephone call from staff
  - o App: push notification
  - o Popup when a patron logs in to the web interface as well as to integrated services like student systems.
- The library should be capable of using more than one method to notify patrons, but the patrons should be able to define which method(s) they prefer.
- The guarantor (for children) should receive a copy of the notifications.
- The System should be able to send the following notification types, based on library defined policies:
  - o Due dates approaching.
  - o Loan period has ended.
  - o A reminder of former notices.
  - o The material you reserved is available at your library.
  - o A list of material on loan.
- Each library must be able to send email from the system concerning activities, opening hours and the like, i.e., mailing which is not triggered by the System.
- The patrons' database of each library should be used as a mailing list.
- The System should be capable of flagging repeated failed texts/emails to the same phone number/email address. The System should generate reports on an ongoing basis after several successive failed notices.

4.2.9. Opening Hours of Individual Libraries

Library closing around special holidays and summer vacations are as different as the libraries are many. It is important that the System can be set up in such a manner that the return dates are not linked to these closed days. It is very important that the authorized staff can control the closed days for its particular library.

It is necessary that:
- That a library can set up its own closed days, without intervention of the central system office.
- It is necessary that the return dates for material on loan can be updated whenever changes occur in closed days.
- The System should allow the creation of library-defined grace periods.
- The System should maintain a calendar of closed dates for each location.
- All circulation and ILL transactions including due dates, fines, recalls and reservations awaiting pick-up should skip closed days.

4.2.10.   External Loans (by Mail)

External loans are when a patron of a library wishes to have books sent to his/her home by mail, as an example if they live in the country side and do not have the possibility to visit the library but are active users of that library.

Present status:
The patron sends a request through email to the library with information on the books which are to be sent. Furthermore, s/he sends the National Id. Number and address where the books are to be sent. The staff member of the library answers the mail and informs the patron about costs. The staff member finds the books, checks them out on the Id. Number of the patron, adjusts the return date considering the time it takes the postal services to deliver and prepares the items for postal delivery. The difficulty with this method is:

- *The communication of the library and the patron are entirely outside the library system.*
- *The patron sends the personal information through e- mail.*
- *The patron requests books without receiving information on the actual cost for the shipment.*
- *Due dates are adjusted manually and frequently there is a discrepancy between staff members.*

The System should offer the following possibilities:
- A patron requests an external loan through the web (**leitir.is**) in a similar manner as if requesting an interlibrary loan.
- External loans should be tied to definite zip-codes or patron status, in such a way that the library does not need to handle requests from people that can pick up the items themselves.
- Information on costs/loan arrangements should be visible to the patron and need to be agreed to before the request is completed.
- Before the request is submitted, the patron needs to confirm the address.
- A staff member receives a notification through the System about a request for an external loan, finds the items, agrees to the loan and mails the items.

4.2.11.   Service for the Housebound

The System should support services for housebound patrons including:
- Creation of profiles of housebound patrons to enable staff to make selections for the patrons.
- Authorized staff members should have access to the patron's circulation history in order to avoid selecting the same title more than once.

- Generation of a list to pick up the material from the shelves.

4.2.12. Back-up Circulation Function

In the event of system or network failure, there should be a back-up circulation function capable of handling all loan and return transactions without disruption to services.

- Recovery of transactions should be possible as soon as the system is back online.
- Offline transactions should be processed in the correct sequence to prevent errors.
- Outstanding reservations on recovered offline return transactions should be reported.
- Uploading of offline transactions should generate alerts in the same way as during online operation.

The back-up circulation function should be capable of uploading and processing transactions from multiple locations simultaneously.

4.3. Patron's Self-Service

In order to perform all necessary library functions patrons should be able to utilize self-check devices, services via Web or mobile interface as with an app. The requirements in the table in section 4.3 of the requirements document describes our demands. Here is a table that lists the main tasks that need to be achieved through these channels:

Self-service	Device	Web	App
Registration of a new patron		X	X
Renewal of a library card	X	X	X
Payment of fines and fees, such as for registration, library card renewals and other services, please describe	X	X	X
Payment methods required: Online, bank transfer, credit card and point-of-sale transaction system	X	X	X
Requesting a new password		X	X
See and update personal information, including contact details and PIN / password	X	X	X
See library card ID and expiry date	X	X	X
See outstanding loans	X	X	X
Renew loans	X	X	X
See loans from external sources including e-books and audiobooks	X	X	X

See fines and fees	X	X	X
See information for hold reservation and ILL requests	X	X	X
Cancel requests and reservations	X	X	X
See patron history, e.g. loan history, payment history, request history		X	X
Search and save searches		X	X
Connect from reading lists / saved searches to reference tools, e.g. EndNote, RefWorks, BibTeX, RIS, etc.		X	X
Loan (physical items)	X		X
Return (physical items)	X		
Loan and return eBooks and audiobooks from external sources		X	X
Place reservations request		X	X
Place ILL requests and view progress		X	X
Place purchasing suggestions (patron driven acquisition)		X	X
Reserve a reading room and other facilities		X	X
A topic alert, RSS feed		X	X
Various services, e.g. photocopy/scanning request		X	X

4.3.1.   Self Service Devices

Self-services devices are used in the larger libraries. Currently the main concern is the lack of precise alerts and receipts, which is due to certain properties of the SIP2 communication between the machines and the library system. Icelandic libraries do not currently use sorting machines, only simple devices. Here are the main issues regarding self-service devices.

- Self-service must be simple to use and easily accessible for patrons.
- The System must fully support all parameters of the SIP2 protocol, and SIP3 when formally issued.
- Show the main information about the patron when a card is scanned, such as loans, debts, etc.
- It is important that messages to the patron appear immediately if the library card is rejected and why.

- That a printout or a message shows immediately if a reserved book is returned.
- Reserved books are earmarked immediately for the next patron, not that it is necessary to "return them again" at the circulation desk as is now the case.
- That the System should stop returns from other libraries and that an alert is visible to the patron.
- "Please turn to the service desk" message should appear if there is an error.

Loan Receipt from a Self-Service Device
Today the situation is such that loan information that is printed out of the self-service device contains information from all libraries of the patron, and the library of each item is not indicated. It should be possible to see from which library each item is when the patron receives a receipt from a self-service device.

The patron should be able to choose whether the loan receipt contains all libraries or only the particular library where the patron is currently at. The latter should be the default value. The consortium setup must take this into account.

Integration of Self-Service Devices and Payment Portals
It is necessary to integrate the self-service devices to payment portals in such a way that the patrons can do as much as possible themselves, see the table above.

Loan Renewal in Self-Service Device
The patron must be able to renew his/her material himself/herself in the self-service device on the web, and through an app. The patron must be able to choose which items s/he wishes to renew, whether s/he renews items in one particular library or in all libraries where s/he has loans.

Simple Self-Service for Smaller Libraries
Most special and elementary school libraries are too small to operate self-service devices on their premises. It is however essential that the library system offers some kind of simple and accessible self-lending option for those libraries.

4.3.2. Circulation through an App

The System should support or include an app with a circulation function. The patrons should be able to perform all necessary circulation tasks within the app and get notices from the System. Here are the main issues:

- It should be possible to borrow an item by scanning its barcode into the app.
- It should be possible to borrow an item which is already on loan by another patron, given that the current patron agrees.
  - Move items between friends without having to go to the library.
- Returns should not be a part of the library app.
- The app should show the barcode of the library card. The patrons can in this manner scan the barcode in the self-service device or can show it to the staff member on the circulation desk.

The circulation function of the app could possibly serve as a self-service option for those libraries that cannot operate self-service devices.

4.4. Students' System

In Iceland there are several types of students' system. The main systems are Canvas, and Ugla for the universities, Mentor for elementary schools and Inna for secondary schools.

A requirement is that a new library system can link to the student's system (and vice versa) through a single sign-on identification (see description of the automatic log in process and related requirements, in section 3.8). This way the students can register into Mentor / Inna / Ugla and from there link to their library and see the circulation status and other things.

The System SHOULD be able to integrate the following services via the student's system:

- Log in.
- Search.
- Notifications and letters.
- Reservations.
- Overdue notices.
- Notifications from library.
- My Pages.
- That the patron can define on My Pages how s/he wants to be in communications with the library.

4.4.1. To Fetch the Student's Record Directly from the Student's System

It SHOULD be possible to fetch students' records directly from Mentor / Inna / Ugla / Canvas / MySchool to download it into the library system or offer automated upload and in that way facilitate to activate many students' privileges at the same time.

> *Explanation:*
> *Today the process is such that a school library contacts the students' registration of the school and is given an excel-document which does not fully comply with the requirements of the library system for it to be imported directly. The library, therefore, must adjusts the document, send it to the Consortium that needs to adjust the document even further before being able to import it into the system and activate the users in the correct library. This process needs to be simplified in order to increase automation.*

Updates from student system may not override global / shared patron information.

4.4.2. Look-up Link between Systems

There must be a link between the students' systems and the library system so that it is possible to look up individual students in the pertinent students' system and activate the patron manually in the school library. This way it is possible to confirm that the patron is a student and to facilitate to activate the individual as a patron of the library system. A description of this requirement is given in section 3.8.

4.4.3. Course Reading and Reading lists

Course reading and/or reading list functionality should be part of the library system. Reading lists are essential in the universities but could also be helpful in both secondary schools and elementary schools.

The main points:
- That it is possible to create a list of courses which are in the course reading library.
- That it is easy to change the location and loan period of printed material in a shelf for each course.
- The location of the item needs to be clear from the first screen.
- The students should be able to register into the course reserve library through the students' system and leitir.is through an "automatic log in".
- Reading lists of courses, both for printed material and electronic, should be accessible in the search and discovery platform as well as in the student system.
- Signed-in students should only see the reading lists of their own courses.
- An integration must be available between the teacher´s reading list/course catalog and the library system.
- Integration with other systems / websites, such as Áttavitinn (LibGuide) is preferred.

4.5. Search and Search Results in a Library System and Search & Discovery Platform

Search and results are two of the most important parts of all library services. The System must provide flexible and efficient search capabilities, both in the library system for the staff users, as well as in the search & discovery system for the patrons and the public (leitir.is).

A robust search capability is essential in a new library system. The table below lists various search and sort options that have been identified by the member libraries, both in the library system and the search & discovery portal (leitir.is).

Search / Results	Library system	Search and discovery system
The System shall be able to act as a gateway to all resources on offer in and through libraries: e.g. books, e-books, audio-visual formats, community information, networked electronic resources; and integrate links to externally held resources such as web sites.	X	X
The solution must provide browse search for the catalog materials for: subject headings, title, and author.	X	X
CCL search or turbo search should be available through staff-access.	X	
Analytical records/ authority records must be shown attached to the main record.	X	X

Landskerfi bókasafna

• The nature of the links should be well visible. • The nature of the relationships defined in the authority file should be visible in the search / discovery interface, f. ex. related or "see also" relationships and broader/narrower relationships.		
The System should show the users varied relationships between RDA entities, both information from a bibliographical database and an authority file.	X	X
Suppliers are requested to provide full details of the indexing capabilities of their resources.	X	X
The System must offer good display of holding-information and items, where availability, location and holding-information is clear and visible.	X	X
Records coming from different sources such as Dublin Core and MARC21 must be coordinated so duplicates of records are not displayed in the search results of the discovery portal.		X
The System must offer flexibility in controls of FRBRization / deduplication. Examples of the problems of today: • Now language has no value with the results that titles that are the same in different languages are classified as one and the same work. • When searching for a piece of music and a particular performer, the system mixes the records even though the performers are not the same. The user must be able to link a music piece and the performer in such a manner that the retrieval only shows those cases with the appropriate performer and the work and leaves out records where the same piece is performed by somebody else.	X	X
It should be possible to suppress individual bibliographic records and items from display to the public.		X
It should be possible to suppress certain categories of material from display to the public (e.g. no copies available for loan/request or certain locations such as off-site storage).		X
When a search is limited to one library, each library should be able to set a default in its search results, depending on the needs of its patrons. • As an example, in elementary schools the results would be limited to material in Icelandic and of those, material for children would be listed at the top.	X	X
When a search is limited to one library, it is necessary that the search is not limited to physical items. Results should include analytical records and electronic material which have no physical items in the library.	X	X
If a search is limited to a library and its collection / location, the search should be limited to that particular library, even if a collection / location with the same name / code exists in other libraries.	X	X
The sorting of search results:	X	X

• The patron / staff member must be able to control how the results are shown. • Some users prefer to have the most recent material at the top, others want to have the oldest material at the top. Still other patrons wish to have the results sorted alphabetically. It is necessary that the users can save their preferences.		
The libraries have an unusual amount of items for each title. It is therefore necessary for patrons and staff to have control of the sorting order in the items-list. • That it is possible to arrange the items-list according to various information in the items, such as by library collections or circulation controls. • Default sorting of items/collections/library branches are linked to the home-library. The home-library is the library which the user (staff or patron) defines as the library which is to show up at the top of the items list. • Groups of libraries must be able to define the sorting of the items-list for their particular library, which will then be a default sorting if the user has not defined the home-library. As an example, Bókasafn Árborgar in Selfoss should appear above the Bókasafn Árborgar in Eyrarbakki, although the alphabetical order indicates otherwise. This is pertinent for both staff – and patron interface.	X	X
It should be possible to link two or more searches together. • It should be possible to isolate a search to a particular individual by starting to browse to find the correct person and then continue with word-search to make an exhaustive search on this individual.	X	X
The System should provide the ability to search for recently added stock in a library and the Consortium.	X	X
The System should provide the facility for users to compile and save their own reading lists / searches.	X	X
It should be possible to display help, including examples, on search screens.	X	X
The System should offer "Did you mean" in the search interface, offer suggestions deducted from what the user starts typing. These suggestions should be based on what is available in the database, similar to Google. Please describe.	X	X
The System should support searching using variant spellings. Please describe.	X	X
It should be possible to search and retrieve bibliographic and authority records by following criteria: • By bibliographic format (Aleph FMT) • By record type (Aleph TYP) • By link fields + values (Aleph LKR) • By LDR + values • By one or more marc fields, including control fields, present in records.	X	

• By one or more marc fields not present in records (missing fields) • By one or more subfields present or not present • By first and second indicators, present or not present in specific marc fields • By values in specific marc fields, including control fields (text strings or codes) • By values not present in specific marc fields (text strings or codes) • By staff generated flags for datasets or lists (not necessarily in marc fields) • By administrative metadata such as user name, cataloging level, date created/imported/edited, etc. • Any combination of these criteria *As an example, to retrieve records where field 100 4 in an authority record contains subfields q or b*		

4.6.   Interlibrary Loans

Today the workflow for interlibrary loans is very complicated, see further description in the Introduction Chapter no. 1.5.8. It is necessary to simplify all processes in such a way that smaller libraries can make full use of the interlibrary loan module of the system. Preferably, the patron does not need to make much distinction between reservations and interlibrary loans within the system. Please submit a detailed description of all ILL functions.

4.6.1.   An Interlibrary Loan Request by a Patron

ILL requests must be easy and transparent for patrons. There should be as little difference as possible between an ILL request and a reservation request.

System Requirements:
- Interlibrary loans need to be part of the solution.
- The patron needs to be informed that this service is provided at a cost.
- The System must accommodate different library payment scales. Information on costs and loan arrangements must be shown to the patron and should be accepted by the patron before sending the request.
- Overdue fines because of ILL should be comparable to fines for traditional loans from the same library and be based on the same system setup.
- The due date of ILL should be well visible to both staff and patrons.
- A patron should be able to request a renewal of ILL in a simple manner.
- From the patron's point of view it is feasible that there is not much distinction between ILL and reservations. As an example:
   - In Denmark this is solved with one button called: "Status & Reservations" later in the process the patron choses the pick-up method (Pickup location) where one of the alternatives is interlibrary loans (ILL).
- Interlibrary loan within a consortium:

o The process should be the same as with reservations, but the patron must be informed about fees related to the ILL.
- Interlibrary loan outside a consortium:
  o A request for a loan of material that is not available within the Consortium. The patron must fill out a form with the most important information on the item requested. The request is subsequently handled within the library system at the service library of the patron.

4.6.2. Communications

Seamless communication is essential. Communications and information provision between cooperative libraries on the one hand and between a library and its patron on the other hand need to be clear and seamless.
- Communication between cooperative libraries within a consortium.
  o Notifications, status and the like should be updated automatically.
  o It should also be possible to send manual notifications from the System.
- Communication with other libraries:
  o Custom-made letters for each and every library that can be sent with borrowed/returned books. It should be possible to add notes to the text of standard letters.
- Communication with patrons:
  o It should be possible to send notification to patrons through the interlibrary loan module. This is both pertinent about automatic notifications as well as manual, a reminding letter if an item is not picked up, or if a request on renewal has been accepted or refused.

4.6.3. A Shared Database on Suppliers

It is a key requirement that the libraries in the consortium can have a shared database on suppliers. The idea is similar to that of the patron database, i.e., that there is one shared database on suppliers, but each library can fetch its suppliers into its special database, see graph on next page. It is necessary to be able to make distinction between different suppliers, within or without the consortium.
- Icelandic libraries – within a consortium.
- Icelandic libraries – outside a consortium.
- Foreign suppliers – outside a consortium.

4.6.4. A Special Database on Suppliers

A special database on suppliers is a list of chosen cooperative libraries linked to each interlibrary loan library, along with special information on the suppliers. The main points are:
- That it is possible to select libraries from the shared database, and download into a special database as needed by each and every library.
- Passwords. It should be possible to register information on those libraries that have been chosen, such as passwords and more, so that it's possible to have access to this information in one place.
- It must be possible to define the order of preference of the cooperative libraries.

Suppliers – Interlibrary Loans

Shared Database on Suppliers

Library A
Special Suppliers Database

Library B
Special Suppliers Database

Library C
Special Suppliers Database
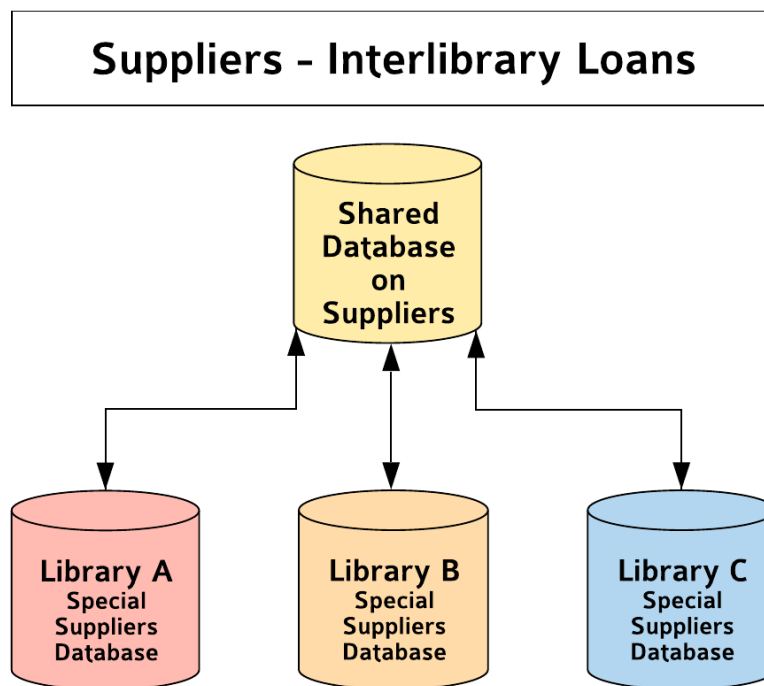
4.6.5. Information Provider

Interlibrary loan requests from other information providers such as link-systems, article collections and Google Scholar must come with all the necessary information into the interlibrary loan module. This covers standard information, but the minimum information is the following:

- Patron information such as the patron´s ID and email.
- Bibliographic information such as article title, journal, author's name, year, volume, pages and ISSN.

4.7. Management

Management of resources refers to acquisition, contract management, access to electronic material and its activation. Furthermore, it deals with the use of the material and statistics. Acquisitions must be minded, book-keeping, links to the financial system, to records management, to suppliers, besides journal subscriptions, claims, reception of material, processing and care of items. The main rule is that the management of resources is done on the individual library level.

The acquisition section of the system must streamline and simplify library workflows for managing orders, claims, receiving, activation of electronic resources, invoices, vendors and vendor accounts, etc. These transactions should be automated. Integration with acquisitions and financial modules is desirable.

General points concerning management are:

- Good integration needs to be in place for other sections of the library system such as with circulation, interlibrary loans, cataloging and item control.
- The library environment for the staff must be transparent and effective.
- It is necessary to provide some type of "My pages", or a to-do list.

- The management of resources must be simple, effective and transparent, independent of the form of the resources.
- The acquisition module must be able to handle all library material, independent of form. It must be possible to handle both physical and electronic materials, such as books, journals, sound recordings, music, photographs, moving pictures and interactive material.
- It must be possible to jump from one activity to other with one click of the mouse, without losing what has already been done, although the information has not been saved.
- The system should accommodate different metadata formats, such as Dublin Core, MARC-records, publication form of journals, etc.
- The system should provide possibilities to link to and fetch records from:
    o The company registry of the Directorate of Internal Revenue (Ríkisskattstjóri).
    o The National Registry (if the vendor is an individual).
    o Real-time exchange rates from a bank.
- It should be possible to link to the most common records management systems such as GoPro, One-Systems, and Core-Data.

4.7.1.   Acquisitions

It is expected that all purchases and other ways of accession will be supported in the library system, both from domestic and international vendors:
- The System should permit the acquisition of books, non-books, multimedia and digital materials.
- All acquisition functions should be fully integrated order to invoice, subscription to item etc.
- Audit trails should be maintained for all stages of the process.
- The format and content of acquisition notices should be library-definable.
- The System should allow for information to be corrected and amended at all stages, including 'undo' operations.
- It should be possible to display 'on order' records to patrons and to selectively allow/disallow reservations to be placed.
- It should be possible to read barcodes, RFID tags, QR codes or SICI codes in items to facilitate acquisitions processing.
- The System should support the import of bibliographic data from vendors and other record supply agencies.
- It is important to keep track of items through the complete workflow.
    o It is necessary that the System can support a workflow in which it is possible to set flags to control the time spent on the total process of an acquisition from order until it is available to the user.
    o The System should notify, e.g. after 30-60 days, if an item is stuck in the process. This can be done through notifications or through special services.

4.7.2.   Finances and Funds

Not all libraries use funds and those that do, use them in various ways. Some libraries use a single fund while others, like NULI, have a complex system of funds to accommodate their needs.

- That the System can deal with the fact that a library works with many funds.
- That it is possible to set up "Favorite" on those funds that are mostly in use.
- That it is easy to fetch information on the status of the funds in a simple and a graphic form.
- That the System can forward or combine information directly to the financial system of the institution.
- Value Added Tax (VAT) varies depending on the form of the material. It must be possible to define the VAT depending on the type of material, a paper copy vs. electronic copy of a book.
- It must also be possible to insert the total cost of an item in the cases where VAT is included in the item price on the invoice. Then the total VAT is calculated for the invoice as a whole.

4.7.3.   Vendors

The basic setup should be one shared vendor file with the possibility to add local information for individual libraries as shown below.
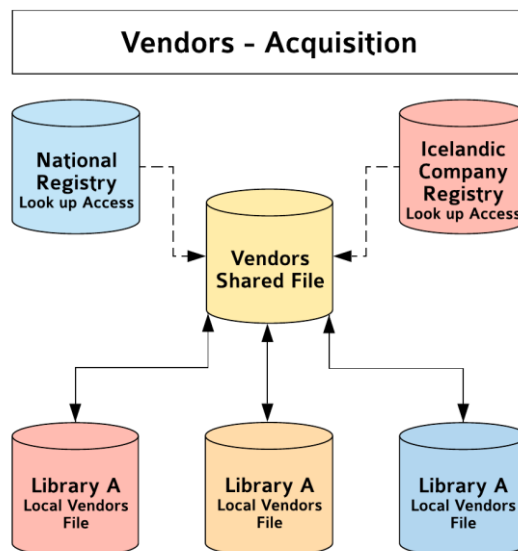
The main requirements concerning a common vendors' file are:
- One common, central file for vendors, both Icelandic and foreign.
- The System should provide the ability to maintain accounts for single vendors.
- A link to the company registry of the Directorate of Internal Revenue (Ríkisskattstjóri)
- A link to the National Registry (if the supplier is an individual).
- The System should provide the ability to maintain multiple physical and email addresses for a single vendor, with the potential to tie these addresses to individual accounts.
- If the information in the central file change, such as addresses or email addresses they should be automatically updated with individual libraries.

The main requirements concerning a special vendors' file are:

- That each library can fetch its vendors from a common file and save them locally.
- That there are possibilities for each library to add vendors into their local file.
- The System should offer the ability to maintain discount- and delivery information in the vendor-record in the local file.
- That staff members can flag their "favorite" vendors.
- That communication with vendors can be stored within the system.
- That letters/communications can be directly saved into the records management system.
- That the System sends an alert when a contract is about to expire,
  - The requirements are defined when the contract is saved in the system.
- That there is a possibility to provide standard letters/notifications to vendors that take into account different material and types of libraries.
- That is easy to adjust letters/notifications for each library/department.

4.7.4.   Orders

The System should support the following:

- Purchasing workflows:
  - Physical item orders.
  - Electronic resources orders (package or single-title).
  - Electronic subscriptions (package or single-title).
  - Patron demand driven acquisitions (PDA/DDA) for both hard copy and electronic resources.
- The System should facilitate Consortium-based purchasing.
- Allow defaults to be set when creating orders, e.g. default vendor, fund, currency or location.
- It should be possible to process multi-part or standing orders where multiple parts for a single order need to be received, invoiced and cataloged separately.
- It should be possible to process gifts.
- It should be possible to process exchanges.
- Order records should be accessible by:
  - Bibliographic data elements.
  - Order number.
  - Order date.
  - Vendor details.
  - Status.
  - Type.
- It should be possible to access the following data/functions directly from the order record:
  - Full bibliographic record.
  - Invoicing procedure and payment details.
  - Prediction pattern.
  - Vendor record.
- The System should allow for multiple copies of all types of materials including subscriptions to be ordered for different locations and from different funds.

- It should be possible to flag subscription orders either to renew automatically or to alert staff before manual renewal is due.
- The System should support the ability to evaluate existing electronic resource subscriptions and make recommendations for renewal or cancellation based on:
    - Usage levels.
    - Cost.
    - Changes in licensing arrangements.
    - Changes in package contents.
    - The system should preferably support the setting up of RSS feeds for newly acquired items.
- Once orders have been placed, funds should be allocated immediately. Any subsequent amendments to price information should automatically update commitments.
- The System should allow acquisition requests.
- Acquisition requests arriving through the library's web should go directly into the system.
- Completion of acquisition requests.
    - An acquisition request is earmarked to defined staff members for ratification.
    - Information on approved orders and acquisitions are saved in the system.
    - When an acquisition request is approved/disapproved, the person requesting it is sent a standard notification from the system.
    - Orders and acquisitions that are not realized need to be cancelled within a time-frame that each library determines.
    - If an acquisition request is disapproved, the request is transferred into the "request disapproved" folder and is stored there.
    - The System must notify the patron if the requested material is available in the library.
- It must be possible to set up a profile for pre-selection of acquisitions.
- Approved selection items should generate orders that have the potential to be automatically ordered if they pass library-defined criteria.
- Library-defined criteria, such as incomplete order lines or prices above a threshold, should flag purchases for staff review.
- The System should support the prioritization of purchase requests for or from users, by:
    - Limiting which users may place requests.
    - Allowing staff mediation in the approval/rejection of purchase requests.
    - Automating the ordering of requested purchases based on library-defined rules.

4.7.5.   Receiving/Accessions

It should be easy and as automated as possible to receive new acquisitions.
- The System should allow physical items to be received from both approved purchase orders and invoices.
- The System should allow for the receipt of the following item types:
    - Single-title monographs.

- ○ Serial monographs.
- ○ Issues of serials.
- ○ Other media.
- The System should be able to automatically create new item records when items are received.
  - ○ It should be easy to create multiple copies per title.
  - ○ It should be easy to change the number of copies within the order.
- The System should notify staff when a volume or issue of a series has not arrived after a predefined interval and allow for claiming of missed items.
- It should be possible to record the receipt of items for which there is no order form.
- It should have statistics on received material.

4.7.6. Claiming and Cancellations

The System should:
- It must be possible to send a claim from the System, based on a pre-defined date for orders, subscriptions, predictions or the like.
- Amendments of the delivery date should automatically reset the claims cycle.
- It must be possible to send claims both manually and automatically.
- It should be possible to control which items / issues shall be claimed.
- It should be possible to cancel claimed items if necessary.
- It must be possible to create reports on material that has not arrived.
- It must be possible to limit the reports according to type of acquisitions, e.g. subscriptions, gifts, exchange or legal deposits.
- The System should allow authorized staff to transfer an order to another vendor.
- Gifts must not be claimed.

4.7.7. Invoices

It is important to be able to integrate the library system with external systems in order to get financial information into the library system and vice versa. Electronic resources are mostly bought on national and consortium levels. These purchases should be connected to a special payment model since they are financed by outside organizations and not by the libraries.

It is necessary to link directly the payment / handling of invoices for electronic material to the following:
- A payment model for National Access.
- A payment model for consortia of universities and research institutions.

Furthermore, all invoices, independent of type of material, need to be linked to the valid exchange rates.

The System should fulfill:
- It should be possible to process invoices before receipt, at the time of receipt or at a later date.
- The System should be able to process:
  - ○ Credit notes.

- o Pro-forma invoices.
- o Subscription invoices.
- o Discounts.
- o On-approval payments.
- o Fund transfers.
- o Handling charges.
- Invoice records should include the following elements:
  - o Vendor details.
  - o Invoice number.
  - o Purchase order number.
  - o Invoice date.
  - o Invoice total.
  - o Discount amount.
  - o Delivery/postage and packing charges.
  - o VAT.
  - o Servicing charges.
  - o Link to orders covered by invoice.
  - o Free text note field.

4.7.8. Contracts for Electronic Materials

The System must manage contracts for electronic materials and keep track of all communications between vendors and libraries.

Definitions of the following are necessary:
- The individuals responsible for each contract.
- The supervisors responsible for access to material by contracts.
- Time-frame – The System should alert when a contract is about to expire.
  - o As an example, x months before the final date of the contract the supervisor receives a notification for contract renewal or cancellation.
- It should be possible to define the type of access and users in the system itself, for example IP numbers, passwords, etc.
- If the same material is purchased from more than one vendor, the system must be able to deal with the combination of records, to avoid that the same material shows up in many records through **leitir.is**.

4.7.9. Activation of Electronic Materials

The System should:
- Allow for automatic activation of approved purchases for electronic packages and titles.
- Notify staff when an electronic package or a title has been activated.
- Support automatic downloading of bibliographic records when an electronic package or title is activated.
- Indicate if there is a need to import/export additional data in order to support the e-resources' lifecycle.

4.7.10. Legal Deposit

NULI is responsible for legal deposit in Iceland. The System must be able to support flexible and efficient workflows for managing legal deposit materials such as:

- Legal deposits should be immediately added into the System.
- Electronic legal deposits and their metadata should be integrated directly into the system from the responsible party.
- A library should be able to set a time-frame for cataloging, book-binding and process so that items do not get lost in the work process.

4.7.11.   Gifts

Gifts to libraries in Iceland are very common. Usually they are treated as normal acquisitions but in some cases gifts need to be treated with extra care. The System must be able to comply with the following:

- It should be possible to retrieve material which a particular individual/institution has donated.
- It should be possible to retrieve material that has been defined in a special manner (without barcode, in particular sections of the library, and the like)
- It should be easy to create reports for gift items.
- Gifts must in no way be subjects to claims.

4.7.12.   Journals

The System must be capable of managing subscriptions to journals, independent of their form, in a simple and effective manner, independent of whether the journal is purchased, received through legal deposit, a donation or exchange.

- The System must be capable of managing the whole workflow from the time the subscription is ordered, until the items arrive / the subscription is active, and the item is ready for use. This includes:
    - Claims
    - Spine labels
    - Barcodes
    - Book-binding
    - Weeding
- The System must offer a workflow for journal subscriptions that are purchased in print and online form in such a way that the user can understand the relationship between the different forms.
- It would be feasible that the System would notify when an electronic subscription has been activated by a publisher/vendor.
- Subscriptions should be renewable whether automatically or manually.
- It should not be possible to renew a subscription or prediction pattern if no copies have arrived during the subscription period and no invoice has been processed.
- The management of subscriptions, orders and invoices for journals should be located in the same place within the system.
- The System should be capable of reading barcodes such as the SICI code which comes with journals from suppliers.
- Statistics that is based on orders and subscriptions, such as the number of active journal-subscriptions and received copies, whether they are purchased, arrive as a gift or come through legal deposit.

4.7.13.   Prediction Patterns for Journals

The System must fulfill the following requirements:

- Prediction patterns for printed items are necessary.
- The System must offer multiple choice of built-in prediction patterns both for regular and irregular publications and their captions must be easy to understand.
- Templates for prediction patterns must be accessible in a systematic order so that they are easy to find.
- It should be possible to create private prediction patterns, independent of central/built-in prediction patterns.
- It would be feasible to see from the prediction patterns how it is displayed to the users.
- It would be feasible to have the ability to download prediction patterns provided by a supplier/ publisher into the library system.
- It should be simple to make adjustments to a prediction pattern and change it if needed such as to combine issues, additional issues, supplements and exceptions.
- It should be possible to correct and change the prediction pattern in a simple manner.
- If the publication frequency of a journal changes within the same year, it should be simple to change the journal prediction from the time of the change, without having to delete the whole year.
- It must be possible to control how the issue information / issue description (year, volume, issue) in the predictions appears to the users.
- Changing the arrangement of publication information in the item description should be possible.
- It would be feasible to be able to imitate the information that is shown in the journal issue itself.
- It should not be possible to see the subscriptions or the received issues of another library.
- It should not be possible to see the journal predictions from other libraries or to change information or prediction patterns from another library.
- The System should send claims, both automatically and manually.
- When the System sends a claim automatically, the System must notify about that.
- It would be feasible if the System would notify that a new claim should be sent, if the first claim does not give results within a given time.
- Linking of information on items and holdings in the System and in **leitir.is** should be updated when changes are made.
- A relationship should be between holdings records and journal predictions in such a way that the information given in a holdings record is updated in relation to the prediction pattern and the reception of an issue.
- It must be possible to arrange journal issues according to different criteria, also limit those to a special library/branch in such a way that that one can work with one copy independent of other copies. It would be feasible if issues could be marked prior to internal circulation so that it is possible to keep up with their whereabouts in the process, from arrival to book-binding and until they are shelved.

- It should be possible to link and integrate journal issues into the System, independent of how they arrive, such as without an order/subscription behind it, and print out barcodes and spine labels as appropriate.
- Items that are linked manually, independent of prediction patterns must be independent of their processing situation in such a way that the date of arrival is not shown to the users.
- The processing status and the item status should be independent of each other in such a way that if an item has the status "hidden", the user is not supposed to see it, even though the item-status is "not arrived".

4.8. Electronic Materials/Subscriptions

Iceland has Nationwide Access to electronic journal articles and databases, accessible through **hvar.is.** Individual universities also subscribe to some extra collections. The main points are:

- The Nationwide Access: that the System can cope with all the management aspects of the contracts made through the Nationwide Access, such as storing the contracts, management of access, payment models, creation of invoices, etc.
- Special subscriptions and special acquisitions, that the System can cope with all management of special subscriptions, such as storing the contracts, management of access, payment models, creation of invoices, etc.
- The System should allow for the input of URLs, URNs, DOIs and other URIs in bibliographic records for electronic location and access information.
- Automatic provision of information of holdings and embargo.
- An automatic process for importing MARC-records and other metadata.
    - The System must have a built-in module to process standard MARC21 records.
- The System should support reference linking such as OpenURL or similar.
- The System should be able to compare electronic packages:
    - To compare packages in the library system such as ProQuest and EBSCOHost.
    - To compare packages in the library system to a package offer.
- It should be possible to use the following items for comparative purposes
    - Titles
    - Price
    - Holdings
    - Invoices vs. offer

4.9. Items and Holdings

Metadata for items and holding information is essential information which must be included in the system. Our current system has great flexibility in registering this kind of data.

Handling of items in the Consortium has some special characteristics. Due to the high number of libraries and items in the Consortium, the system must be able to process and index items efficiently. Most of the libraries have only one staff member and in many cases the staff has no formal library training. It is therefore essential that workflows in handling items are simple and do not need special skills.

4.9.1. Holding Information

The system should offer the possibility to link holding records to bibliographic records.

- In the holding records it should be possible to include both standard information and local notes.
- It is important that the libraries can have some control in how the holding information are displayed.

4.9.2. Item Description

An item needs to be at least described with the following elements:

- Barcode and/or unique identification number.
- Type of material such as books, maps, sound recordings, ephemera, etc.
- Shelf-location / call number / spine label:
  - It is necessary to have two location fields in order to indicate a temporary location.
  - That it is possible to set the System in such a manner that it creates an automatic call number made from the classification number/selected fields for each library.
  - That it is possible to input a call number manually.
- Library collections / location: The System should offer a flexible and controllable choice on different collections / locations within a library.
- Each library should be able to control and define their collections themselves without the assistance of the central office.
- Circulation period / item status.
- A field for description and multiple comments for an item.
- Identify school subject and /or school year, e.g. material is suitable for 5th class / middle school.
- The system must be able to identify each volume in a multi-volume work in order to control the item list within the same title and facilitate reservations when many volumes are linked to one bibliographic record.
- The system must be able to identify volumes and issues of journals.
- All descriptive fields / metadata of items should be searchable.

Other requirements:

- The number of items linked to each bibliographic record should not be limited.
- It must be simple to retrieve lists and reports built on metadata of items.

4.9.3. Item Management

Here are the concerns regarding handling of items:

- Linking items to a bibliographic record must be very simple.
- All staff members must have privileges to link items to a bibliographic record, without having privileges to edit bibliographic records.
- A staff member must, in a simple manner, be able to set automatic values within fields to save work when inserting repetitive information, such as the name of the library, location, form of material and the like.
  - It is important that it is easy to change these automatic values.
- It should be simple to duplicate an item record to add a new item.
  - It is necessary that all fields (except barcode) are duplicated into the new item record and that it is simple to change individual fields later.

- That is possible to duplicate an item-record from another library.
- That it is possible to see the number of items per title in each library.
- That it is easy to see a list of all items in a library of each title, along with the main item- and circulation information.
- That it is possible to change information for many items at the same time, such as moving them between library collections or changing the circulation parameters.
  - By inserting parameters into a "change-window" and subsequently scan a large bunch of items.
  - By a systems services where a list of identification number is inserted.
- It should be possible to hide items upon a request from a library, in such a way that they do not show up through **leitir.is.**
- It should be possible to mark items as lost and / or deleted.
- The system should give a warning when the last item of a title in the Consortium is deleted.

4.9.4.   Class Sets

School libraries can have a set of items per title for every student in each class. These sets of items must be identified for each class, since the library may have more than one set (e.g. 3 classes equals 3 sets per title). The items within sets need to be identified with a number because each student has been allocated a special number.

- Class sets must be identified in the item information
- Example:
  - A student in class A has been allocated the number 14 and will thus have items no. 14 of one title as well as item no. 14 of another title, etc. Another student in class B also has the no. 14. This means that the first set of items needs to be identified as A.[no] (for example A.14) but the second set of items should be identified as B.[no.].
    The first student will only use items marked A.14 for all titles and the second student will likewise use B.14
  - The items are then loaned to the students via normal circulation.
- It must be easy to create lists of titles containing class sets of items
- For the class sets the system must be able to:
  - Handle many items in one process.
  - Create and print out barcodes on the sets in a simple manner.

4.9.5.   Item Barcodes

Item barcodes must be unique within the system. In our current setup we have had to assign each library a range of numbers to make sure that the same barcode is unique in the system. Most libraries use a special custom-made solution that assigns a unique barcode to the item and print the barcode, spine-label and a summary of the title information. Following are the main issues regarding the item barcodes:

- Allocation of numbers should be in the System and should be automatic when an item is created.
- That the numbers are unique for the whole Consortium to avoid conflicts if libraries need to be amalgamated or if libraries start circulation cooperation.
  - Item-numbers should be running, it should be possible to identify the starting number for each library.

- o It might be possible to use a prefix for each library or another type of a system to separate the libraries.
- Older forms of numbers from the former systems must be taken into consideration (legacy system).
  - o All numbers in the current system are unique, but they differ in length and construction.

4.9.6. Printing of Barcodes and Item-information

It is necessary to have flexibility in printing barcodes and item-information. Here are the main points.

- It should be possible to print a label for each item with barcode, spine label, and supplement with further information.
- That it should be possible to set up spine labels as befits each library, both as concerns the size of the label and fonts.
- That the set-up and control for the printing of labels is simple.
- That it is possible to print out labels for many items at the same time in a simple manner.
- That is possible to preview the look of the labels.

4.10. Weeding

The System must support collection management tools to make the weeding process efficient.

- The System should support weeding through automated processes such as lists and statistics.
- The System should display a 'last used' column in weeding to help identify little used or lost items.
- Holding records:
  - o An automatic process is needed to weed out holding records when all the items (printed or electronic) in the library have been deleted.
  - o It must be possible to automatically delete all links associated to the holding records, so the patron receives correct information through **leitir.is**

4.11. Acquisition Statistics

The System must be able to generate reports based on funds, invoices, items etc. As a minimum, it should include bibliographic-, item- and acquisitions information.
All statistics and lists must be simple and at the same time offer a variety of possibilities and graphical presentation. As an example:

- By type of material.
- By new acquisitions.
- By publication year.
- By acquisition year / date
- By subject field.
- By funds.
- By order number.
- By invoice.

4.12. Links to Other Websites

The system must offer the option of sharing materials in the library system and from external websites:

- It is necessary to integrate book-covers to records and subjects.
- The System must integrate with member libraries homepages
- It is important to be able to use the material/metadata which is created in the library system in other website and services:
    - In Literature Web, bokmenntir.is (https://bokmenntaborgin.is/en/literature-web).
    - In TinyCat from LibraryThing.
- The library system should be able to integrate information from other webs in order to enrich the records:
    - Various metadata from Bókatíðindi (information from Icelandic publishers on annual publications)
    - bokmenntir.is

4.13. Metadata

The metadata management component needs to fulfil the present needs of the catalogers, as well as to take into consideration future needs, with open access and the use of developing metadata standards and formats. Integration and/or sharing of bibliographic information from other systems is a prerequisite for the efficiency of the management of metadata. It is necessary to support the automatic process of metadata, name authority control, and other factors related to the management of bibliographic information. It is essential that metadata control in the broad spectrum will be supported in the new system.

4.13.1. Bibliographic Control

The required setup is one bibliographic database into which all the libraries catalog. Quality control is an essential component of the system. It must be easy to apply fixed routines to sets of data as well as to individual records. It should be possible to work with different metadata formats. There must be a control mechanism that enables flexibility in punctuation within records. Here are the main issues regarding bibliographic control:

- Individual records
    - It must be simple and easy to create, edit, work with and fix (normalize) records in an automatic manner.
    - It must be simple for a cataloger to fetch records from both library catalogs and other databases.
    - Through the System is should be easy to search for records, download them, fix them (normalize them), continue working with them and then save them.
    - The cataloger must be able to fetch records from other databases whether originally in MARC-format or another metadata-format.

- Packages of records / multiple records
    - It should be simple and easy to select, edit and fix (normalize) packages of records in an automatic manner.

- o The criteria for selection of records to be included in a batch load should be flexible.
  - o It should be simple for a cataloger to fetch a package or load multiple records from both library catalogs and other databases, such as information from publishers.
  - o Through the system is should be easy to search for records, download them, fix them (normalize them), continue working with them and then save them.
  - o The cataloger must be able to fetch records from other databases whether originally in MARC-format or another metadata-format.
  - o Privileges to work on large packages of records should be adjustable for a particular user name.

- Macro editor. It should be possible to link the System to a macro editor, such as MarcEdit, to process the records outside the System and subsequently download them to the System.

- The alphabet
  - o The System should support special Icelandic needs for alphabetization, search and discovery.
  - o The System should support different scripts and alphabets. It should be simple to input letters which are not a part of the Icelandic/English alphabet. Preferably it should be possible for individual catalogers to control which symbols or alphabets are preferred.

- Punctuation
  - o It is necessary to have good control of punctuation when records are downloaded into the System.
  - o It should be possible to control if a record or a set of records are downloaded with ISBD punctuation or not, if so marked.
  - o It should be possible to control the System in such a way that it inputs ISBD punctuation if the record is so marked.

- Validation of bibliographic and authority records
  - o It should be possible to define certain fields as authority controlled fields in bibliographic records.
  - o It should be possible to define certain fields as mandatory or core fields.
  - o A bibliographic record must not be saved if the information in the authority-controlled fields (e.g. authors, uniform titles, corporations/conferences, controlled vocabularies, etc.) has not been verified.
  - o A bibliographic record must not be saved if information in the mandatory fields has not been verified or is missing, and an alert should appear.
  - o If a record contains fields with values that are not permitted it should not be saved and alerts should appear.
  - o The system manager at the consortium must be able to centrally define permitted values for specific fields and the minimum requirements for a valid record.

- Locking bibliographic records
    - It should be possible to lock bibliographic records against changes
    - It should be possible to lock specific fields in bibliographic records against changes

4.13.2. Cataloging Interface

The System should offer a simple user friendly interface for cataloging. The System must offer a simple and transparent interface for different metadata formats. It should be possible to select an interface which is in normal language (terms) instead of only MARC/Dublin Core/BIBFRAME (tags). Here are the main topics:

- It should be easy to create new records from scratch (original cataloging).
- It should be easy to create a template for both original cataloging and to update existing records or add fields to them.
- Centrally configured templates should be available for all users of the System for different types of material.
- The cataloger should, in a simple manner, be able to copy records.
- Creating new records by copying should not be format specific, i.e. a record for a printed book could be copied and edited and then saved as a record for an electronic book.
- It must be easy to transfer items from one bibliographic record to another.
- It must be easy to merge records.
- Pop-up windows / drop-down lists should be available where fixed or standard vocabulary lists are needed.
- It should be possible to undo actions or changes in records the cataloger is working on in the cataloging interface.
- The System should be equipped with an autocomplete function for fields specified by the system manager at the consortium.
- The system manager should be able to configure automatic creation of specific note fields and their content in records that contain specific codes or text strings in other field, e.g. automatic creation of a specific text string in field 546 if the record contains a specified text string in field 240.
- It should be possible to use the keyboard for all/most operations to limit the use of the mouse. The System must offer short-cut keys for all of the most common operations in cataloging.
- The System should enable catalogers to configure their own short-cut keys for less common operations in cataloging.
- The cataloger should be able to see immediately how the record appears to the patrons.
- It must be possible to mark records that need further checking / reviewing.
- It should be possible to create a record and save it without displaying it in the search/discovery portal.
- The System must be able to manage and display various relationships between parallel records, such as "continuation in", or "continuation from" or other relationships defined by RDA cataloging guidelines/LRM.
- Catalogers should be able to save drafts of records without entering them into the library catalog.
- The System should offer some built-in support.

- o The built in System-help should provide assistance on how to use the system.
- o The System should also offer a flexible way of linking to cataloging aids, such as to RDA toolkit and/or the Icelandic Catalogers Handbook
- o The cataloger should be able to configure what type of support is available.

4.13.3. Analytical Cataloging

Almost 1/3 of the records in the bibliographic database are analytical records. They are journal articles, book chapters, individual sound recordings/tracks on CDs, etc. An important piece of history is that all journal articles have a special non-standard format „GR".

In order to group or distinguish between different types of analytical records the consortium has created special "TYP" fields that are in the Aleph system. It is important to keep this identification in a new system.

It is extremely important to have flexibility in linking and displaying all analytical records:

- The System needs to be able to handle a high number of analytical records (several thousands) linked to a mother records.
- It must be possible to create analytical records for all materials and all record formats.
- It must be easy to create analytical records in a variety of ways, such as to derive „child" records from a „mother" record, using a preconfigured template or by creating a new record from scratch.
- All relationships must be reciprocal.
- The relationship between the mother record and the child record needs to be obvious whether the patron is looking at the mother record or the child record.
- It should be possible to link an analytical record (child) to many mothers, independent of record format.
- It should be possible to link records which belong together, such as individual works which are published on a web and belong together, but do not have a real "mother" to be cataloged and linked to. This scenario is especially valid for conference proceedings, where several resources share a common origin, but there is no single identifiable container for these resources.
- In the search interface, the user must be able to limit the search to only child records of a certain mother record, such as to limit the search to articles in a particular journal.
- It should be possible to catalog images or supplementary material as separate records and link those to a bibliographic record, such as a comprehensive list of picture material in travel-books or art-works. These records can be derived/analytical records.
  - o As an example, a painting by Rembrandt can show up in many books.
- In addition to using analytical descriptions in bibliographic records to describe contained in/container of relationships, we also need to be able to link from bibliographic records (i.e. 7XX fields) to authority records for works and expressions to describe these relationships. The System should be able to manage both types of descriptions. Vendors should describe their solution

4.13.4. Non-Traditional Material

It has to be possible to catalog material containing untraditional formats. There is a tradition to catalog various tools and objects that are needed in school environment, like iPods, PC computers, headphones, etc. It is also common to catalog unpublished material like pamphlets, artifacts, etc. There is a twofold reason for this, one is preservation of unpublished material and the other is making use of the circulation module in order to keep track of usage.

The System must be able to handle multiple formats and nature of the material:
- The System must be able to handle all non-traditional material which is now cataloged in Gegnir, such as ephemera, which are SE records, collective entries which are BK records, objects and tools which are TK records, book-art, photographs and art works.
- It should be possible to catalog streaming and recordings on the web without saving them in our deposit repositories.

4.13.5. Authority File

The authority file is the heart of the quality control in cataloging. It is a requirement that the library system has a strong and flexible built-in authority control. The linking between the authority data and the bibliographic data must be displayed in the search and discovery interface. The authority file must be fully integrated with the current RDA requirements. Please describe.

These are the main issues:
- The system manager must be able to control how the authority file updates the bibliographic database.
- The cataloger should be able to manage whether changes in individual authority records should automatically update the bibliographic database or not.
- It should be easy to control who adds new records to the authority file, who can change them and delete them, i.e., that the user privileges are flexible and easy to control.
- It should be easy to create new records from scratch.
- It should be easy to create templates for authority records
- The cataloger should easily be able to use a bibliographic record to create a derived authority record and save it in the authority database.
- It should be possible to input central record-templates for different types of authority records.
- A cataloger should be able to copy authority records in a simple manner
- It should be possible to work on many records at the same time.
- Authority records can be locked against changes.
- Catalogers working in the bibliographic database should be able to use locked authority records.
- It should be easy to mark authority records with different statuses depending on the stage in the cataloging process.
- Catalogers should be able to create a provisional authority record either by creating a new provisional record in the authority database or by saving an unauthorized heading in a bibliographic record. The system should provide a

built-in workflow for this function. It should also be possible to control with user privileges who has permission to validate provisional records.

- The System must be able to handle and display all "see" and "see also" relationships, f.ex. authorized, related and variant name forms.
- The System must be able to handle multiple connections between names in the authority file. As an example, when an individual performs or writes under different identities which are all valid, it should be possible to show the relationship between those names/identities both in the search and discovery interface and in the staff interface.
- It must be possible to retrieve unauthorized headings from the bibliographic database.
- It should be possible to display all bibliographic records that link to a particular heading both in the search and discovery interface and in the staff interface.
- Authorized name forms for publishers and vendors must be accessible in the acquisition module.
- The System must have a thesaurus function; must be able to define various relationships for topical and geographic names/terms, at a minimum: broader, narrower, related and equivalent terms, as well as scope notes, source notes, etc.
- Changes in one authority record must automatically update all related authority records. F.ex. if a preferred term X is changed into term Y, all records for narrower, broader or related terms should update X to Y.
- The System must be able to manage authority records for all entities which are defined in RDA, BIBFRAME and LRM. As a minimum it must support the following entities:
  - Person, Corporate Body and Family.
  - Works and expressions.
  - Places.
  - Subject terms.
- In the authority file is must be possible to save records for entities which are not in the bibliographic database.
- The System must be able to handle various relationships between entities, such as works and expressions, and when a work of art is a continuation of another.
- The authority file should be able to handle records in MARC21.
- It must be easy to import and export records in the most common metadata formats (metadata conversion – uploader and downloader).
  - Data exchange protocols and formats for import and export should be supported.
- It should be possible to import/load individual authority records and packages directly from external databases, library systems and services, such as Casalini Libri, OCLC and VIAF.
- It must be possible to link to open databases and import data from there, as an example:
  - If a new geographical term is formed, we wish to be able to fetch data for the same entity through web services to the database of Landmælingar Íslands (the National Land Service of Iceland).
  - For new authority records for persons and corporate bodies, we wish to be able to import data from the National Registry.

- o For subject headings: as an example, the Library of Congress Subject Headings, FAST (Faceted Application of Subject Terminology), word-banks and dictionaries of special terms.
- The Consortium is a VIAF member and there must be a smooth integration between the library system and VIAF.
- It must be possible to extract reports and lists according to different criteria. F.ex. all female Icelandic authors born before 1900, all subject headings added to the file in a particular year, all works by a particular author, all expressions of a particular work.
- External systems should be able to access the authority file. The National and University Library has a few repositories and it is preferable to use the authority file when cataloging into those systems.

4.13.6.   Quality Control

In order to maintain a high quality bibliographic database, the system has to fulfill a few fundamental requirements. Those are: a test environment that is a full replica of the production environment, the possibility to view and restore different versions of a cataloging record, the possibility to find records by cataloger and flexibility in staff privileges. These are the main issues:

- Testing environment
    - o The System should offer a testing environment, which is easily accessible.
    - o The test environment must be a full replica of the production environment.
    - o The same processes and possibilities should be there as are in the production system.
    - o A distinctive look which is different from the production system. Staff should not be confused by the two environments.
    - o It needs to be usable for teaching and training. If there is a limit on concurrent users, please describe.
    - o It needs to be available for experimental activities such as fixing individual records and packages of records.

- Version Control - it should be possible to see different versions of the bibliographic records.
    - o In a large consortium / union catalog, it is especially important to have exact information on who makes changes to the records, when it was done, and what was changed (who/when/what). We want to be able to extract former versions of records in order to see what has been changed, it is not enough only to save the time-stamp and user-name of the person making the changes.
    - o The System needs to save the history of changes made to bibliographical records, it should not overwrite a record with the changes, but rather save the new version for each change which might then be restorable.

- The work log of a cataloger, i.e., records which are saved by a particular cataloger, must be retrievable by username.

- o Privileges to change records into older versions need to be limited to a smaller group than to all catalogers. See Flexible user privileges.

- Flexible user privileges.
    - o The System should allow for several types of user permission or levels of cataloging in both the bibliographic and authority databases. This should be configurable by the system manager.
    - o It is important to be able to control user privileges to edit particular fields/areas and record types. Individual users often need to have only privileges to change certain fields, such as the subject headings, holdings, local information, or to add items without the need to change other bibliographic information.

- Mechanical/system changes to the data
    - o It must be possible to make changes to the data, based on different services or batch jobs available in the System.
    - o For Icelandic material it should be possible to use information about broken URL links to create new links in the records, linking instead to local repositories.

4.13.7. Statistics and Reports Linked to Bibliographic Cataloging

It is necessary to retrieve various reports and lists to facilitate quality control in the bibliographical database and the authority file: Here are the main points.

- Reports on numbers for the System as a whole, on the bases of libraries or library departments for limited parts of the data.
    - o What is available in the System.
    - o How much was added on yearly bases of original cataloged material and imported material, individual records or packages.
    - o What was deleted from the System.
    - o Averages and differences between years.
    - o Statistics and averages of cataloged material of different formats, languages, by countries of publications, user groups, etc.
- Statistics / reports for electronic material are requested.
- It is important to be able to retrieve information on records for physical resources which have no physical items attached, f.ex. excluding analytical and electronic resources.
- In legal deposit it is important to be able to create a list of gaps (items and resources missing from the collection) for all formats.
- Reports on catalogers that work in the system, such as how many catalogers are active during a certain period.
- Reports on deficient records i.e:
    - o Broken links in electronic data. The System should preferably be able to identify the reason for broken links.
    - o It should be possible to extract information on individual library basis.
- Reports on duplicated values, such as system number due to copying of records, ISBN, ISSN, ISMN etc.
- It should be possible to retrieve a list of items based on certain fields in the item record, such as a description or a note.

- It should be possible to retrieve statistical information about items by as many criteria as possible in the item record (circulation set up, library department, material format, process-status, etc.).
- It must be possible to select different formats for lists, f.ex. html / excel / csv / text / word.
- It must be possible to define various criteria for setup and sorting of reports/lists, f.ex. alphabetical or chronological.
- Search criteria can be saved/stored in the system for all relevant staff to retrieve updated lists/datasets at any time

4.13.8. Linked Open Data / BIBFRAME

The System should be capable of publishing its bibliographic data onto the semantic web utilizing internationally used standards, schemas and vocabularies.

BIBFRAME is under development but it is essential for the Consortium to follow its development. Please describe your roadmap for BIBFRAME and how it conforms to specification from link
https://www.landskerfi.is/sites/default/files/bibframe_expectations_for_ils_tenders.pdf.

- It is necessary that the vendor supplies a conversion tool for converting Marc data to BIBFRAME upon the delivery of the library system

These are the requirements for **future development, please describe your timeframe for supporting the following:**
- The System must be able to update BIBFRAME datasets from new/changed MARC records.
- The System must be able to catalog in MARC with BIBFRAME entities/attributes.
- The System must support original cataloging and copy cataloging in BIBFRAME.

4.13.9. Workflows and Internal Communication

In a big consortium the work processes must be clear in order for it to be possible to share tasks among libraries and individuals. Here are the main points:
- That it be possible to create workflows and share tasks in the System itself or through links to the task request system.
- A dashboard where the user can control which information is shown.
- User privileges control the interface.
- Tasks can be assigned to individuals directly in the System.
  - It is particularly important for keeping track of material that is not physical (intangible).
- Workflows are not only linked to individual libraries / institutions but can also go across sectors to different libraries in the Consortium.
- It should be possible to send tasks between users, such as if a cataloger finds an error, s/he should be able to send a request to the pertinent party/department/institution and request that the error be checked and corrected. A notification should come from the System when the request has been fulfilled, like is the case in the task request systems which are generally in use today.

- All requests must be visible on the dashboard for a better overview.
- Automatic workflow between the library system and the institutional repositories is necessary, f.ex. alerts will display in the library system when new resources are submitted to the repositories.
- It is mandatory to have a cataloging portal for inserting new records into those repositories and thus utilize the authority control built into the library system.
- The System should offer multiple ways to flag records that need further processing. Vendor should describe.

4.13.10. Digital Repository

The library system shall support integration with a variety of external digital institutional repositories. Additionally, there is a need for a dedicated digital repository at the Consortium, which can serve individual member libraries as well as the Consortium.

- The library system should come with an integrated digital repository that suits the operation of the Consortium and its member libraries.
    - Example of usage: It would be used for storing data used to enrich data in the library system such as images of Icelandic book/DVD/CD covers. Other forms must also be supported.
    - Various digital collections for smaller libraries.
- The digital repository must provide access control such that individual libraries as well as the Consortium can control who gets access to the materials.
- The digital repository must support permanent links for external access.

4.13.11. Cataloging Portal

The current situation is that NULI manages a number of digital repositories which are searchable in the discovery platform **leitir.is**. It must be easy for authors and institutions to input electronic material into digital institutional repositories such as Rafhlaðan (rafhladan.is) and Opin vísindi (opinvisindi.is).

Most contributors register the accompanying metadata; author, title, etc., directly into those repositories where they are stored in Dublin Core format. The drawback of this arrangement is that there is no quality control on the input. The bibliographic information can easily be miscataloged, resulting in wrong entries. Another concern is that a part of the material in the repositories is also cataloged into the library system, resulting in duplicate records. The goal is to create a cataloging portal linked to the library system for adding new records into those repositories, thus utilizing the authority control built into the library system. Please describe possible integration means through APIs and such in order to accomplish this.

Contributing to digital repositories
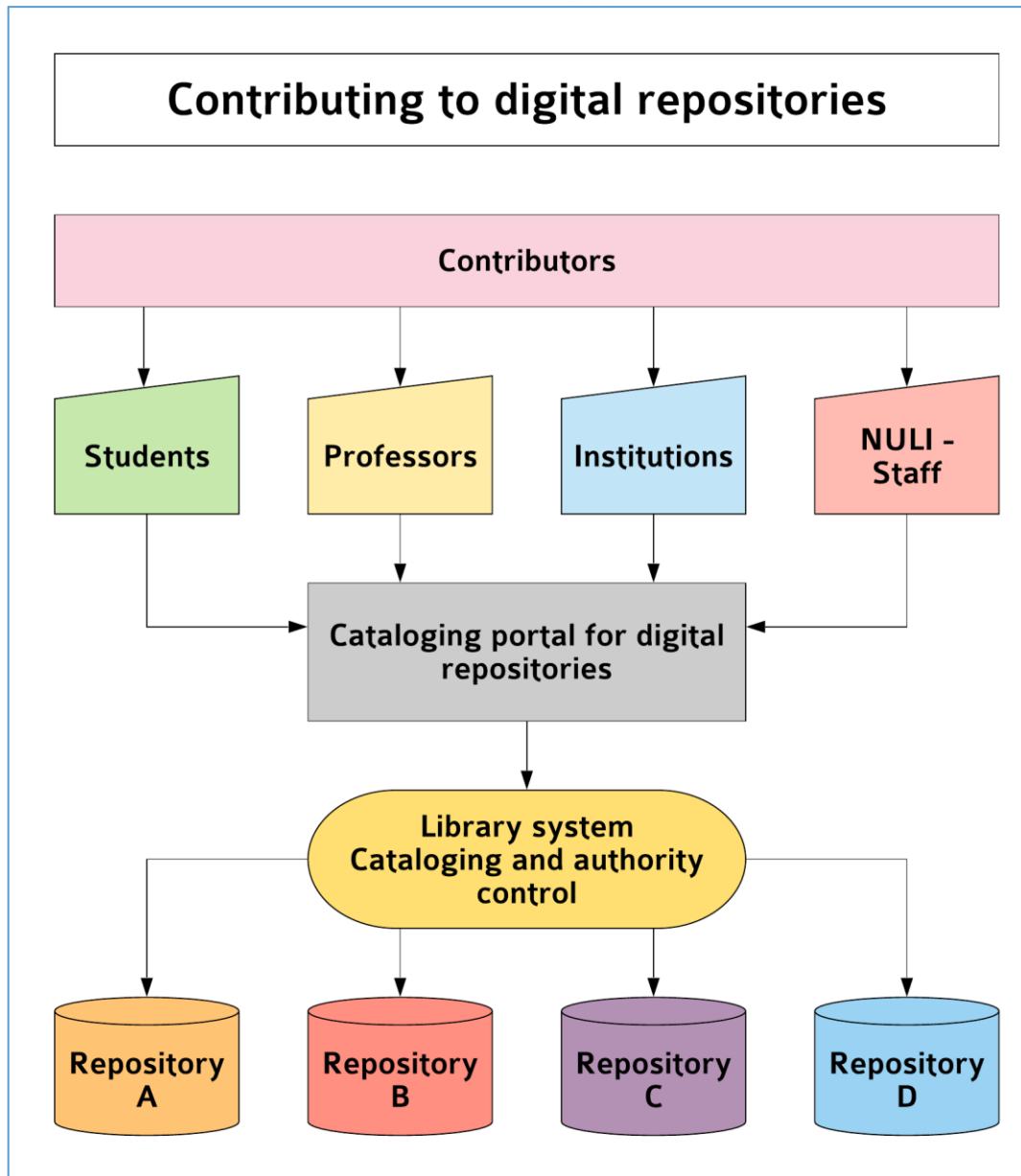
4.14. Statistics and Reports (The System as a Whole)

It is essential to have SQL access for direct integration with external reporting systems or bulk extraction capability for all data, including the bibliographic data. There has to be a possibility to offer both standard and custom-made reports.

- It is also essential that the System can report on the usage of metadata for electronic materials not available in external knowledge bases but only in the System. Please describe.
- It is preferable to be able to report on both physical and electronic material together in the same reports.

4.14.1. Data Warehouse

The Consortium is responsible for collecting statistical information on libraries in Iceland. For this purpose, the Consortium operates its own data warehouse for

processing and generating standard statistical reports for each library, as well as for the entire Consortium based on bibliographic, item, patron and circulation data. For comparison purposes it must to be possible to integrate all the reports existing in the data warehouse into the data structure of the new library system. Reports are generated on monthly and on annual basis for each and every library as well as the whole Consortium.

Currently these reports are generated:
- Items: 15 reports based on different categories like item status, collection, literary form, etc.
- Patrons: 5 different reports based on patron status, patron type, patron address, and patron age, etc.
- Circulation: 12 reports based on patron status, item status, patron address, circulation type, etc.
- Lists over the most popular titles in each library based on the user-group definition in the bibliographic record.
- Bibliographic: Various reports based on codes in the code fields (format, 008, 007) like bibliographic format, language, user groups, country, etc.
- For these reports it is essential to get information on the best practice to integrate them with the library system.

The reports are accessible on the website of Consortium of Icelandic Libraries, https://www.landskerfi.is/tolur-ut-gegni/tolur-ur-gegni. If interested, please contact us at hjalp@landskerfi.is to get access and some help. Notice that the web is solely in Icelandic.

4.14.2. Reporting Tools

The System shall offer a simple reporting tool to create reports online.
- Standardized reports, built in the System.
- Capability to create custom-made reports.
- Reporting capabilities have to be strong in each module of the System. Specific requirements are described in the module specific chapters.
- It is important to display full name in reports instead of various codes and IDs.

It is necessary that libraries can extract reports and lists from the System according to different choices.

Here is a list of important reports and statistical information:
- It must be possible to extract in a simple manner and with strict control what data points are possible to combine, and what needs to be excluded. This should be pertinent for the bibliographic database, authority file, holdings database, item information, and patron information and circulation data.
- It should be possible to move figures/data from the System into lists in a simple manner to continue working with those outside the System.
- It must be possible to transfer reports and statistics into a reader-friendly and printer-friendly lists (excel and word), in order to answer questions directly with readable information, such as how many translations are from French into Icelandic in Gegnir, or the number of records added during the past year without having to go through a lengthy process.
- It is important to be able to extract information about bibliographic records with no physical items attached (electronic or analytical).

- It must be possible to combine / exclude information from different modules of the System: Like acquisitions, cataloging, management, and circulation. *Example: To retrieve a list of books published in Iceland, with no item in Reykholt deposit library of NULI out of a list of items with a particular status*
- Information on acquisitions shall be easily retrievable such as material type, author, title, supplier's code, invoice number, payment costs and date.
- The staff members of libraries must be able to combine and extract figures and reports as needed, without having to turn to the Office of the Consortia.
- It must be possible to save and reuse templates for reports.
- A printable patron list with readable barcodes. This list needs to be filtered according to various criteria.

4.15. Information and Workflow Systems

4.15.1. Customer Relationship and Communication

It would be feasible to have a customer relationship and communication module attached to the System or a part of it. This would be used for all communication between libraries and patrons. Please describe if you have such a module or if you have experience with integration such a tool to the System. Below are some of the issues of importance for our libraries. They shall be suitable for electronic contact and relationship.

An important element of communication is the handling of user feedbacks, questions, requests and responses which all shall be recorded and registered.

Different communication means shall be possible. The patron and the library shall have the possibility to prioritize his or her favorite form of communication: i.e., email, SMS, social media messages, push-based or mobile app communication. All messages and replies are to be logged in the library system.

Some messages are pushed, and patrons `cannot` refuse receiving those. Others are invited and can be suppressed by the patron.

Integration of chat services is desirable such that patrons can send messages to libraries where they are registered. Messages and responses shall be logged.

A mobile app is desirable for the communication of patrons and library.

4.15.2. Library Event and News Management

Libraries stage various events throughout the year and need to be able to communicate those to the public and patrons. It is desirable to that the new library system offers functionalities for content management such as creating and maintaining events, sending out invitations and sharing information on its webpage, discovery platform, social media, mobile apps and via more conventional methods such as emails, SMS and such.
It should be possible for patrons to subscribe/unsubscribe to regular newsletters or news from individual libraries. The newsletters can include information on events taking place at the library, new materials acquired, opening hours etc.

The Office of the Consortium has the need to be able to communicate information on events and news to its member libraries.

4.15.3. Information on Consortia Member Libraries

The System should offer the possibility of storing information on Consortia member libraries such as name, address, website, opening hours, system library code, logo, photo of the library etc. Libraries should be able to maintain this information - other than system library code - themselves. It should be possible to publish this information on webpages, discovery platform, via library app and such via APIs or other means. This should be possible on an individual library basis and for the whole consortium.

4.16. Data Migration

All data from the current system SHALL be migrated into the new system. Complete and accurate data migration is required without loss or corruption of data. It is essential that links between entities of data will be retained.

4.16.1. Data Migration Requirements

The Vendor SHALL confirm that the data migration process will fulfill the following requirements:

- The Vendor SHALL provide a draft of a project plan for the data migration project.
- The project SHALL be defined using the "agile methodology".
  The Vendor SHALL provide detailed information on the following:
    - o Description of their suggested and preferred data migration approach.
    - o Description of their role in the data migration.
    - o Description of the Consortium of Icelandic Libraries' role in the data migration.
- Purchaser foresees an iterated migration process as specified below, in order to ensure data integrity in the process. The Vendor may describe an alternative approach, however such an approach SHALL be fully functionally compatible with the Purchaser's suggestion.
    - o The data migration SHALL be done in at least three phases, that is, the Vendor SHALL define at least three passes (repetitions) of migrations in his project plan, and all work on the migration shall be included in his bid.
    - o Phase 1 The first phase of the migration SHALL be performed in the "test environment", which is required to be a full replica of the production environment, see section 3.4.12 on requirements of the test environment. The data must undergo a thorough testing and amending in the test environment. In the first Phase all databases SHALL be migrated and tested.
    - o Phase 2: A second data load in the test environment SHALL be performed in order to secure a seamless migration to the production environment. It is required to prepare the data for migration which might entail data cleaning, restructuring and presenting it in a suitable format for migration.

o Phase 3: The final data migration to the production environment SHALL be performed in one step.

- After each iteration step, the Purchaser will analyze the migrated data and if the quality of the data migration falls below a predefined criteria, the process SHALL be repeated until the quality of the process meets the criteria. Costs of extra iterations SHALL be included in the bid.
- The Vendor SHALL assist the Purchaser in reviewing the new migration database and compare its contents to the original data.
- The Vendor SHOULD have experience with migration data from Aleph.
- The migration SHOULD include all data in the following section:

Data
Bibliographic records
Authority records
Holding records
Course reading records
Items
Patrons
- Global and local
Circulation data
Circulation history
Circulation rules
Vendor data
Order data
Invoice data
Serial publication and predictions
ILL data
ILL global suppliers' list
Staff user data
Various historical data (i.e. orders, invoices, cataloging)

A detailed description of the data scheme, the databases and configurations is given in section 4.16.3 of the requirement document, and the Vendor SHALL meet the requirements pertaining to that description. In sections 4.16.3-4.16.7 are listed special concerns, but not comprehensive, regarding the above data types.

The Vendor SHALL explain if any of the above data is not deemed feasible for migration.

4.16.2. A Description of the Current Data Scheme

The data structure in the Aleph system is as follows:
Each ALEPH site is composed of seven interrelated, yet separate, units: Authority, Bibliographic, Holdings, Administrative, Interlibrary Loan, Course Reading and a system-wide Administration unit. Each database unit can have many-to-many links to the other database units.

The ALEPH database runs under Oracle RDBMS.

Our current system setup is:
- BIB (bibliographic data) - 1 database unit – ICE01.
- AUT (authority data) - 1 database unit – ICE10.
- ADM (administration data) - 12 database units:
  - ICE50 (10 sub-libraries)
  - ICE51 (9 sub-libraries)
  - ICE52 (3 sub-libraries)
  - ICE53 (38 sub-libraries)
  - ICE55 (73 sub-libraries)
  - ICE56 (12-14 active sub-libraries)
  - ICE57 (18-19 active sub-libraries)
  - ICE59 (no active sub-libraries)
  - AUS50 (19 sub-libraries)
  - NOR50 (47 sub-libraries)
  - SUD50 (46-48 active sub-libraries)
  - VES50 (30 sub-libraries)
- HOL (holdings data) - 1 database unit – ICE60.
- ILL (Interlibrary loan data) - 12 database units – ICE40, ICE41 ICE42, ICE43, ICE45, ICE46, ICE47, ICE49, AUS40, NOR40, SUD40, VES40.
- COURSE (course reading data) - 1 database unit – ICE30.
- USR/PW (user / password data) - 1 database unit – ICE00.

4.16.3. Bibliographic Formats

The bibliographic database includes non-standard bibliographic formats. The reason is to be able to distinguish between different physical forms of materials. The formats and the reason why are in the table below:

Bibliographic format	Why?
GR – analytical journal records	Before migrating to the current Aleph system there was a separate library system (Libertas) that was dedicated to cataloging analytical journal records. Since the records were not connected to their mother record it was necessary to give them special bibliographic format. At the time of the migration in 2003 there were approximately 70.000 analytical records in that old system and now there are 200.000 analytical journal records.
HB – audio books	MARC21 does not make a distinction between recorded music and audio books. In order to achieve that the format HB was created.
TK - tools	This format was created in order to accommodate untraditional materials which the libraries keep track of by using the circulation module of the system. This can be I-pads, headphones and all kinds of teaching materials.
MA- manuscripts	Before migrating to the current Aleph system there was a separate library system (Libertas) that was dedicated to cataloging manuscripts. These bibliographic records were given the bibliographic format "MA". Currently there are 16.000 records with the format MA.

At later stages a special Aleph field called TYP has been used to distinguish between different physical and electronic materials. Here is a list:

- Electronic open
- Electronic-subscriptions
- KA = Chapter in a book
- LG = Individual songs in music recordings
- CD = CDs
- SN (tape) = Tape recordings
- NT = Sheet music
- LP = LP recordings (music)
- NR (thesis) = University theses
- Íslendingar = Icelanders
- Ritdómar = critique/book-reviews

The tagging in the special bibliographic formats and the information in the TYP field should be migrated. In the new system it might not be feasible to use the current formats and tags in the TYP field, but it is required that the information will be retained. Notice that the TYP field is created with a special expand when exporting records.

- If it is not feasible to maintain our formats through the data migration, a proposal is needed about how the information can be preserved in the new system.
- The bibliographic formats (field FMT), which are in the Aleph system, fit badly for RDA-cataloging. It would be preferable to have more flexibility in the format, both to catalog non-traditional material which libraries may wish to catalog today, and not to lock material which the libraries might want to catalog in the future. It is difficult to predict about forms of material which is not cataloged now. The system must be flexible.
- Special care needs to be taken about the TK-format (non-bibliographic material). It must be guaranteed that the information in the TK-format is available and that it can be distinguished from other material.

4.16.4. Analytical Records

When migrating analytical records, it is important to retain the links between the analytical record and the mother record. It is essential to keep the information that is in the LKR field in the Aleph system.

- The System must understand the present-day LKR (reciprocal links) arrangement when the data is migrated into the new system and guarantee that all information and relationships in the fields appear in the correct places in the new system and are correctly transferred.
- Analytical records without a main record (mother-record) do not contain LKR-field. There it is the field 773 which needs to be properly transferred.
- Special care must be taken about the GR format. It must be guaranteed that the information contained in the GR format is available and this material can be distinguished from other material.
- Information from the TYP-fields, LG and KA needs to be accessible in search in order to distinguish these records from others with the same title.

4.16.5.   Specific Requirements for Bibliographic Data:

- It is very important that the record-number of each record in the bibliographic database is transferred into the new system along with the record.
- It is very important that the record-number of each record in the authority file is transferred with the record into the new system.
- Icelandic personal names (MARC fields 100/600/700) use 3 subfields (two of those special fields); $a, $1, $7 as described in chapter 3.7.1. Library of Congress has recently allocated subfield $1): $1 - Real World Object URI (R), see https://www.loc.gov/marc/bibliographic/bd100.html. The migration needs to take this into account.

4.16.6.   Items

- It is important to consider metadata of items in Aleph, and make sure that the information is transferred into the new system. Among those are fields such as Description, Item status and Item notes.
- Statistics field when used needs to be preserved with the item records and must be transferred. This information is used to keep together a particular part of the collection, such as gifts: this item came from this party.
- Journal items are in some libraries marked with information about year, volume and number, as if it has been derived from the publication prediction/ journal field.
- A special care must be taken with migration of Class Sets, see chapter 4.9.4.

4.16.7.   Various Requirements

- Holdings: The System must be able to handle all information that is currently in the holding records.
- Holdings for electronic materials must be migrated and displayed.
- ILL: The present database of suppliers (shared database) shall be migrated into the new system.
- Patrons: Local privileges and patron status in individual libraries shall be migrated to a correct library.
    - The same patron status can have different privileges in different libraries.
- Patrons: Address information.
- Patrons: All information in local note fields must be retained.
- Vendor data: all vendor information shall be migrated to a shared vendor file in the new system.
- Order data: All open orders shall be migrated.
- Invoice data: All invoice data shall be migrated.
- Journals: Serials predictions shall be migrated.
- Circulation: Circulation policies shall be migrated.
- Holding and threshold information from SFX must be migrated appropriately.

5. Integration

Modularity, interoperability and integration options are some of the key issues to be considered in the library system. The option of system integrations between the library system and different sub-systems or components enables the libraries to offer value added services to patrons and staff in accordance with the time. In addition there is a key-need to be able to integrate with the search and discovery platform **leitir.is,** cooperative systems such as school systems, external library webpages, to facilitate the use of the System.

There are several forms of integration between the System and other subsystems or system that connects to the Library Management System. See examples below:

a) **Automatic log in**
When the user is logged into a system (such as Mentor – see table in section 5.4) s/he SHALL be able to log into the Library Management System, by selecting a button in Mentor. Since s/he is an authorized Mentor user, s/he automatically logs into the Library Management System, and his/her user name, access rights and school/institution in question, "automatically" appears.
Such integration can be performed via simple push URL operation.

b) **Financial integration**
Financial systems in use at the libraries SHALL be able to connect to the System and send/receive information to/from the System. Such information can be:
- Fines (amount, ID No.)
- Costs (amount, type)

c) **Course list data**
School systems should be able to send course data into the system for the purpose of obtaining reading lists.

5.1. Leitir.is - National Search and Discovery Platform for Libraries, Museums and Photographic Collections

Currently **leitir.is** delivers search results for all Consortium member libraries at all times. This is due to our current system setup in the Aleph library system. In a new library system, search in **leitir.is** should work as follows:
A simple search should deliver search results for all libraries and additional data collections from museums, photo galleries, archives and such in the Consortium as is currently the case (national view). In addition, a user should be able to search within only one particular library of choice and get search results for **only** that library (library view). Thus, the System needs to be able to process a variety of data formats.

Each library must be able to configure its view of the discovery service to present its own logos or branding, customize the color scheme, default scope of search, and scope search and linking according to that library's profile of electronic subscriptions and open access selections.

It is desirable that the discovery platform comes with an embedded CMS system. Furthermore, it is essential that integration of search and discovery services can be easily integrated into a library webpage via API/web services as is described in Chapter 5.3.

It should also be possible to display the search results page in various ways depending on the data being displayed. When the search results have finished loading, there should be a possibility for the user to change the display with the use of simple icons. The choices should be between

- List
- Detailed list
- Icons (images)

The list option should be the default option, but browser cookies should be able to remember the last configuration the user used. Please notice that the accompanying images are only to show the idea, and should not be taken as framework for the finished product.
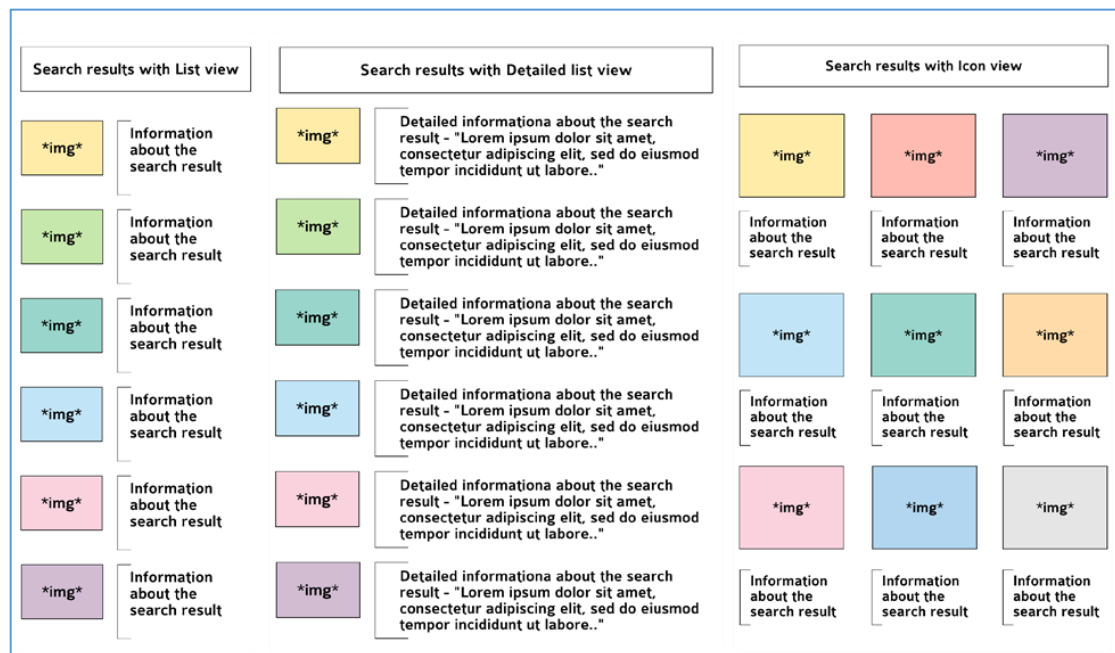
Do not leave the user at a dead end. The solution should provide clear pathways to help connect the user with the resources and context-specific help within the user interface. The System shall recommend subjects or other terminology, alternate titles, spelling corrections for misspelling or variant spellings, fuzzy logic and other ways to help user identify and use alternate search strategies. This must work across all library resources, whether physical or digital (e.g., images, audio and video files) and work on different databases. Please describe your solution.

National Bibliography and Bibliography of Translations from Icelandic
We need to be able to present searchable discovery portals/views for specific data subsets only, such as the National Bibliography and a Bibliography of Translations from Icelandic. Please describe your solution.

Sign-in and authentication

Today log in is based on the user name and password from the current library system. The new library system must support sign-in and authentication methods for the search and discovery platform as described in Chapters 3.8 and 4.1.4.

General Requirements

The proposed ILS must integrate with the discovery platform such that the records created or updated in ILS can be displayed in real-time in the discovery platform.

The solution must support seamless patron-driven workflows initiated from discovery and served by the system including, but not limited to, patron driven acquisition, ILL requests, purchase requests and course reserve material requests.
The discovery solution must support discovery and delivery of all library resource types: physical, electronic and digital, as well as discovery of museum and collection artifacts.

The discovery layer must allow for local library resources to be searched either on their own or combined with other resources.

- The discovery layer should seamlessly integrate with library databases and external resources.
- The system should be capable of connecting to all resources on offer in and through libraries: e.g. audio-visual formats, community information, networked electronic resources, as well as integrate links to externally held resources such as web sites
- Users should be able to borrow eBooks via the online discovery layer.
- It should be possible to display help, including examples, on search screens

Self-service options for patrons are required, see chapter 4.3.

The System should provide:

- Integration with social media.
- Integration with smartphones/tablets/self-service devices etc.
- Support for other languages than English such as Icelandic.
- The ability to personalize access to Web enabled services.
- Support for XML feeds for use in digital displays, widgets, etc.

Provide accurate information. The solution should show users the resources that are available to them and provide accurate information about accessing those that are not immediately available.

The System should include a citation link to request services for a specific article, book, or journal either through the library or as a resource sharing request.

The System should be accessible. The solution should be available to users with disabilities with different levels of experience, universities, research, public libraries, children etc., and with different technology platforms or devices.

The solution must support the ability to display an online resource's license information to end users in the discovery interface.

The System must support interoperation with a reading list management system for the creation, maintenance, and use of course reading lists. Describe how this works.

Describe how the System handles authority records and linked data for authority records (i.e. LC linked data service, FAST (Faceted Application of Subject Terminology), etc.) in the discovery platform.

User Interface and User-System Interaction
An intuitive interface for users to obtain or access resources available to them at their own institutions or other institutions within the consortium is required.

Easy-to-understand tools for using system features from search to fulfillment, including the ability to request, obtain, and access resources.

End-user interface shall be accessible from multiple devices, and subject to periodic, structured evaluation. The solution also should allow libraries and individual library users to integrate external systems and services such as electronic resource vendors, web content management systems, learning management systems, and chat reference.

The user interface must be a scalable solution and to be effectively usable through mobile devices including smartphones and tablets.

Describe how your solution will enable users to access their own accounts in order to view, renew, and track requested or checked-out tangible items from local or Consortia library collections.

Describe how your solution might enable users to set and receive alerts and notifications about the status of specific items or categories of items available to them through an intuitive interface.

Describe how users might interact with the solution through writing tags, recommendations or reviews of sources.

Describe, if there is something like "patron who borrowed this item also borrowed" recommendation (data is collected from all participating libraries – but anonymous to preserve privacy)?

Currently, each institution within the Consortium manages its own electronic resources and frequently these resources are not available to users at other institutions. Similarly, items in digital repositories maybe subject to access restrictions imposed by the creator or the holding institution. How will your solution clearly expose the resources that a user has the right to access and connect users with the appropriate electronic or digital resource, both paid and free? How might this solution differ if a user is on or off-campus?

Describe how your solution integrates with third-party applications and systems such electronic resource vendors, web content management systems, learning management systems and e-learning platforms, etc. Can users get access to different e-resources with single sign-on with EZproxy or others?

Describe how the System will allow course reserve material or "recommended reading lists" to be integrated into campus wide LMES (Learning Management and Evaluation Systems) such as CANVAS, Moodle, Blackboard, etc.

The solution must support exporting citations from records using reference management software. Please list the reference management software supported. Examples: EndNote, Mendeley, RefWorks, Zotero, etc.?

Social Media
Describe how your solution integrates with social media tools and in what way it can enable users to share with others records / data retrieved from the discovery platform. What social media tools are supported?

The System must support interaction and personalization in the form of book reviews, ratings, discussions threads and social tagging including linkage to Facebook, Google+, and Twitter etc.

It shall also be possible for the Consortium or individual libraries to advertise new material, information on events and news to users via social media and track the results and improve outreach with tools like Facebook pixel or similar.

Search, Display of Search Results and Navigation
Vendors are requested to provide full details of the search capabilities of their resource discovery offer with a particular reference to:
- Searching techniques supported.
- Search filtering capabilities.

The System should, as a minimum, provide:
- The capacity to order results of search by various criteria.
- The ability to search for newest editions in a library and a consortium.
- The ability to search for recently added stock in a library and a consortium.
- The ability to display lists of newly acquired items broken down by collection or material type, authors, date and year.
- The facility for users to compile and save their own reading lists.
- The ability to seamlessly search non-standard databases via a variety of means.
- The system should support searching using variant spellings.

The solution must provide browse search for the catalog materials for the following entities:
 a. Subject heading
 b. Title
 c. Author
The discovery solution must deduplicate search results.

Describe how your solution will facilitate both known-item searches and open-ended searches (including authors, titles, subject terms, or other identifying information) using an intuitive interface.

Describe how your solution will facilitate expert searching features for researchers who require more control in formulating search statements and handling results. Can the System allow precision of classification number search? Can it handle multiple controlled vocabularies (e.g. LCSH, MESH, etc.)?

The discovery solution should search across different resource silos, integrate the search results, and present them to the user through an intuitive interface that enable users to share their findings via social media. The System should:

- Provide different levels of display and allow libraries to define which elements are included in each display (including full MARC).
- Allow the user to change the sort order.
- Allow users to view serial holdings, latest and upcoming issue information.
- Support linking from bibliographic records to other electronic information resources both local and remote via URLs, URNs and other URIs.
- Indicate by using icons the format of an item (book, video, manuscript, journal article).
- Display jacket cover images / Amazon / Google / local and other extended data.
- Results should provide a list of previous searches made during the same session.

Describe the solution's algorithm in relevancy sorting of search results, whether and to what extend the solution allows libraries to modify the ranking algorithm and sorting parameters.

See also Chapter 4.5 for more information on search and displaying of search results.

Knowledge base of e-resource collections.
Knowledge base of e-resource collections, including articles, reviews, e-books, etc., combined with central e-license information from commercial and open access providers shall be included in the system.

Index
Describe how the solution supports the Consortium or each individual library in selecting local and external e-resources for indexing in the discovery platform. Describe how the bibliographic data under the proposed shared ILS can be indexed in the discovery platform, particularly in record de-duplication or FRBRization.

Persistent links to everything indexed in the database is required.

Search Engine Tuning
Library catalog databases should be capable of being harvested by search-engine spiders/bots to ensure that library material is discovered by searches run on the search engines.

Describe whether and how the solution allows sitemap generation of individual library's discovery interface for search engine (e.g. Google), instead of all of member libraries in the shared system.

Usage Analysis

It must be easy to monitor the usage of all library- and museum resources, both for the Consortium as a whole as well as for individual libraries. Common analytics tool such as Google Analytics should be supported. Support of marketing tracking tools such as Facebook pixel are desired.

Search Analysis – provide data/search behavior information by users' type is required.

5.2.   Integration with a Local CMS System

An integration with a local library website (Drupal) is required. It is currently used by one library but will spread to others in the future. As of now, it is integrated via Aleph and Primo APIs. The new library system must offer similar APIs in order to ensure that the integration with the local library webpage will work as smoothly as now. The local CMS system is built on the Ding2 concept. Ding2 is a continuation of ding.TING Drupal distribution for libraries as part of the TING concept.

General Requirements

- A provider system must expose an API for the required functionality and data. Examples of protocols used for current integrations:
  - HTTP + JSON/XML
  - SOAP
- It must be possible to consume the API using PHP since that is the programing language used by the library website system.
- The API should use some form of access-control which allows it to be accessed by the Ding2 website and prevents access from outsiders. Examples of currently used authentication methods:
  - Authentication (preferred) e.g., based on username/password or tokens.
  - Restriction by IP.
- The API should be well-documented in regard to functionality and data exposed. Examples of documentation used by current provider systems:
  - OpenAPI
  - SOAP
- The API should provide detailed error information which allows the website to provide sufficient feedback to the user.
- The API should respond fast enough to be called synchronously by the website.

Library System API Requirements

Here we refer to a system responsible for managing patrons, bibliographic records (titles), individual items (copies) and the relationships between these as a library system. When integrated with the library website it provides the following types of information:

- Patron
- Availability

- Loan
- Reservation
- Fines
- Loans history (optional)
- Patron consent (optional)

Patron

It must be possible to authenticate a patron through a given username and a password. The username can also be in the form of a patron number, National Identification Number or other form of textual identification. The password can also be a PIN code.

The authentication API should offer some method for identifying the patron for subsequent requests. It is preferable not to store the authentication credentials for each user within the website system after the log in procedures have been completed.

The authentication API must provide information about whether a patron is blocked i.e., prevented from accessing the library, based on fines, bad behavior or the like if such functionality is supported by the library system.

It must be possible to change the password of a patron using the API.

Availability

It must be possible to determine the availability of a record (not item) given a record ID. Information on availability includes:
- Whether the record is available for loan by a patron.
- Whether the record can be reserved by a patron.
- The total number of items managed by the library organization.
- The distribution of items within the library. This should include the name of the library branch, the location within each branch and shelf information.

Reservation

It must be possible to retrieve the current reservations of records for a patron. For each reservation it must be possible to determine:
- The ID of the reservation.
- The ID of the reserved record as used by the search provider system.
- The date the reservation was initiated by the patron.
- The date the reservation expires and is no longer relevant for the patron if not fulfilled by the library before that date.
- The ID of the branch where the patron would like to pick up the reserved record.
- Text messages for the reservation (if used by the library system).
- The state of the reservation, whether it is ready for pickup or not or if it is an interlibrary reservation.
- If the reservation is not ready for pickup:
  - The situation of the current reservation in the queue of all reservations of the record.
- If the reservation is ready for pickup:
  - The ID of the item ready for pickup.

       o   The deadline for the patron to pick up the reserved item.
- If the reservation is an interlibrary loan and cannot be expected to be available in the local library system:
  - o   Metadata for the record. As a minimum the title of the record should be made available.

With the ID of a record and identification information for a patron, it must be possible to create a reservation of the record for the patron. The reservation may include information such as an expiry period and a requested pickup branch for the reservation. If the reservation is successful, the library system must provide information about a pickup branch and the queue position for the reservation. If the reservation cannot be fulfilled, the library system should provide information to be able to determine if the reason for the failure is caused by library policies.

With the ID of a reservation, it must be possible to update it. This may include changing the expiry period or the pickup branch for the reservation.

With the ID of a reservation it must be possible to delete it without being fulfilled.

With the ID of a branch within the library organization, it must be possible to determine the name of the branch in question.

With the ID of a patron, it should be possible to update default reservation preferences for the patron. Preferences may include a preferred pickup branch for picking up reservations or a default expiry period.

Loans
It must be possible to retrieve information on the current loans of a patron. For each loan it must be possible to determine:
- The ID of the loan.
- The ID of the item borrowed by the patron.
- The ID of the lent record as used by the search system.
- The date the item was borrowed by the patron.
- The date the loan expires.
- Whether the loan can be renewed by the patron.

With one or more loan IDs, it must be possible to renew each of these loans and thus extend its expiry date. For each renewal request, the library system must indicate whether the renewal was successful or not.

The library system may provide additional information about why a renewal request was not successful. Potential causes are library policies or reservations by another patron.

Fines
It must be possible to retrieve a list of fines (or fees) for a patron. For each fine it must be possible to determine:
- An ID for the fine.
- A date when the fine was originated.

- A text message for the fine which should describe the reason for the fine, if it is a fee for overdue return or a reimbursement for a lost item.
- The total amount of money owed.
- The amount of money left to be paid by the patron, in case the fine has been partially paid.
- The type of record for which the fine is created.

A partial payment should be allowed, for the patron to pay a part of a fine in a library, instead of paying the entire fine.

With one or more fine IDs and the identification information for the patron, it must be possible to register each one of these fines as settled. This can be used if the library accepts online payment.

Search
Search Functionality
It must be possible to do a free text search for records in the catalog based on a query string.

It must be possible to search for records in the catalog, matching one or more values (OR or AND correlation) for a specific field. This can also be implemented as facets or indices. At least the following fields must be supported:

- Acquisition date
- Creator
- Category
- Language
- Publication date
- Subject
- Title
- Type

It must be possible to search for records in the catalog based on a query containing multiple joined sub-queries. Results must satisfy all sub-queries (AND correlation).

It must be possible to divide a search result into sub-sets such as by specifying an offset and a number of records requested. Example: Return 10 records starting from number 30.

Records in the search result must be in an order which is meaningful to the query. It should be possible to specify one or more sorting methods when executing a search. Example: Sort results by publication year with the newest records first.

It must be possible to retrieve a record based on the ID of the record. It should be possible to retrieve multiple records in a single request by providing multiple IDs.

It must be possible to exclude records from a search result based on their ID.

It should be possible to retrieve facets and terms for a search result. Each term must include a count of how many records it refers to within the result.

It should be possible to provide suggestions for queries based on a partial query. An example of this is auto completion.

It may be possible to group records within search results into collections e.g. different editions or volumes of a record that are shown as a single search result.

It may be possible to perform a fuzzy search which includes records which do not match the query fully but are still deemed relevant.

It may be possible to retrieve records which are deemed relevant to a specific record e.g. through collaborative filtering.

Record Properties
It must be possible to retrieve data about individual records within the library catalog. In this regard a record is considered a certain title – a book, a CD or other type of an object – although not the individual copies of the record.

It must be possible to retrieve the following properties:
- The ID for a record must be unique and should not change over time.
- Title of the record. A short version of the title may be supported.
- Names of one or more creators of the record.
- Record type e.g. Book or Audio CD.
- Record source.
- ID of the record based on the source. If a record in the search system originates from the library system, this should be the library system ID.

It should be possible to retrieve the following properties:
- An abstract providing a summary.
- One or more subject headings.
- The language of the record.
- URL of the record if it has a digital representation.
- Series name and number of the record.
- Year the record was produced.

It may be possible to retrieve the following properties, if applicable:
- Age of the target audience for the record.
- Target audience for the record.
- A description of physical appearance of the record.
- Size or duration of the record.
- File format, physical medium, or dimensions of the record.
- Genre of the record.
- ISBN of the record. Preferably ISBN-13.
- Name(s) of musicians listed as contributors.
- Pan European Game Information (PEGI) rating for the record.
- Name of the publisher of the record.
- IDs of records which references this record.
- Version/revision of the record.
- IDs of newer records which replace this record.
- IDs of older records which are replaced by this record.
- Information about rights held in and of the record.

- Spatial characteristics of the record.
- Spoken language within the record.
- Record subtitle languages.
- Titles of tracks in this record.
- Record revision name.
- Record which contains this record e.g. a periodical issue containing an article.
- Classification of the record.
- Names of one or more contributors of the record.
- IDs of records which are related.
- Full text version of the record.

It must be possible to retrieve a cover image of a record, either directly from the search system or indirectly through information provided through the search result.

It must be possible to retrieve a list of all record types and sources used in the system.

5.3. Requirements for APIs (Application Programming Interfaces)

- The System must support, enable and encourage local development from an active community of users.
- The System must provide published APIs (Application Programing Interfaces) or Web Services for all system areas to facilitate interoperability with external services.
- The System must provide published APIs or Web Services to support patron's self-service options as listed in Chapter 4.3.
- The APIs shall be well documented in regard to functionality and data exposed. The APIs must be usable for a programmer without any library expert knowledge.
- The API should provide error information for feedback to the user.
- APIs are frequently used by individuals and institutions to fill gaps where local service demands are not met by the solution or provider.
  - Describe all available APIs in the system.
  - Describe documentation available for the APIs.
  - Describe the methods employed to implement APIs / OpenAPI (SOAP, REST, HTTP + JSON/XML).
  - Describe sandbox or test services available to develop and test APIs.
  - Describe policies for the APIs response times and availability.
  - Describe available platform for communication in the user development community.
  - Describe logging of API calls and analytics available for monitoring API calls.
- What are your use policies for the APIs? By use policy we mean terms and conditions under which an API can be used. This could include, but is not limited to, who is eligible to use the API, for what purposes, and whether additional costs would be involved to use the API.

5.4. A List of Systems that will be Integrated with the Library System

As the Purchaser has described in this documents, the System must be integrated with various other systems, portals and webs. The integration level, the purpose and methodology varies, depending on the object to be integrated with. In the following table, the Purchaser puts forth and summarizes a few of the objects, systems and services that connect to the System.

Table I
Integration and Connections

System to be integrated	Comments	Data	Direction
Ugla	Integration regarding automatic log in (ALI)	Status[5] and user information	bidirectional
Canvas	Integration regarding automatic log in (ALI)	Status and user information	bidirectional
MySchool	Integration regarding automatic log in (ALI)	Status and user information	bidirectional
Inna	Integration regarding automatic log in (ALI)	Status and user information	bidirectional
Mentor	Integration regarding automatic log in (ALI)	Status and user information	bidirectional
Moodle	Integration regarding automatic log in (ALI)	Status and user information	bidirectional
Municipal portals	Integration regarding automatic log in (ALI)	Status and user information	bidirectional
Library websites			
Leitir.is, search and discovery platform			
Navision (financials)			
DK financials			
OeBS			
Registers Iceland	Portal (At Registers Iceland	Name and address of a specific ID No.	

---

[5] Is the Patron a student at the school in question

Registry of Firms	Portal (At Icelandic Internal Revenue service)	Name/address of an company via ID No.
Facebook	ALI	
Office 365	ALI	