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# Library Requirements Document

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## Abstract

This is a small document of requirements which I think is needed for this project. It describes the needed functionality, programs and structures.

The latest version of this document is generated on date 2017-01-07

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## 1. Introduction

Purpose of this project is to store meta information of objects which can be documents, computernames, websites etcetera. This information is stored centrally in a database and used by programs to search for the documents, display info in tables or show relations between other objects.

This list of requirements will show what I like to include in this system. It does not mention if this will be feasible or not. That will come in a later part where things like dependencies will be investigated.

From this document I try to make clear what is needed to build the modules and program and what to build.

## 2. Requirements

### 2.1. General specifications of any object

1. There are two types of information to be stored, A) automatically found data such as ownership, path to document and volumename in case of documents, and B) explicitly provided information like keywords, name and address of owner, project name etcetera.
2. Store, update or delete meta information in the database. This is for automatically retrieved or explicitly provided information.
3. Search meta information using exact match or regular expressions on any part of the meta information.
4. Displaying output from searches by commandline program or by webpage in a browser.
5. Actions can be started using mimetypes also stored as metadata.
6. Mimetypes are an important type of description method to show what can be done with the document. The list can also be used to start native applications to process a particular document. According

to their mimetype of the document it mostly has also a proper suffix such as *.txt* or *.html* . See also [MIMETYPES] .

A few examples are

- *text/plain*: This is simple text format mostly created with simple text editors.
  - *audio/mpeg3*: A type of audio file with document suffix of *mp3* .
7. General meta information to store. Besides the list below, users must be capable to add new metadata attributes.
    - *name*: Name of the object
    - *description*: Description of the object
    - *author*: A set of data like name and surname, address and email etc.
    - *datetime*: Date and time of retrieval, date and time of modification or current date and time.
    - *object-type*: Type of object such as document, directory or url.
    - *keys*: A list of keywords under which the object can be catagorized.
  - 8.
  - 9.

## 2.2. Document objects

1. This system will not manage documents. It will manage metadata about the documents. Location of the document is stored as part of this information. It is however nice when it can detect duplicates when another document is entered by the user. This duplication can be caused by backups or archives.
2. A document can be found on the local disk, externally connected disk, other computers and network devices such as network attached storage (NAS), media stores or on web servers.
3. As a side effect of locating documents on e.g. external servers, these documents can be stored on disk for offline use.
4. Document meta information to store.
  - *full-name*: Complete and absolute path to the document
  - *file-name*: Name of document object
  - *extension*: Extension of the document. This is empty for directory documents.
  - *accessed*: Date and time of last access.
  - *modified*: Date and time of last modification.
  - *changed*: Date and time of last change.
  - *size*: Size of document.
  - :
  - :
  - :

## 2.3. Website information

1. A file on a disk is pointed to by a name and path and a drive when working on windows. There are other ways to get to a document like using a unified resource locator (URL).
2. Protocols are used to get to the document before processing it. E.g. the *http* protocol is used to get a webpage from a site on the network and *file* is used often to get a document from the local filesystem. See also [MIMETYPES] .

The following list is a series of protocols which might be supported.

- *file*: Protocol to get documents from a filesystem.
  - *http* and *https*: Protocols to get webpage documents from a web server.
  - *ftp*: File transfer protocol.
3. Web meta information to store.
    - *uri*: Url, uri or iri

## 2.4. Other information

Other information besides meta information can be imported such as agendas and contact information.

1. Contact information can be imported from vcard files. This data can also be linked to other meta items.
2. Relations between objects are stored in the database using directions of Topic Maps (TM). Import and export are done via XML as XTM or encapsulated in RDF .
3. Web Ontology Language (OWL). Relations defined above with TM can be tested using a reasoner reading this ontology information. The rules for this language can be imported and exported as OWL/XML documents or as RDF.

## 3. Implementation

This software package should come with several modules and programs to suit several ways of accessing the data. There is also an issue of making the software platform independent so everyone can be happy with it.

- *The programming language* The first item to think about is the choice of programming language. A scripting language would be a proper choice because these languages have a higher level of coding and will access the underlying system in a platform independent way. The language I want to choose is perl6. Yes, the still unfinished perl version. I am very confident that the language gets its first release this year(2015) and wanted to learn about the language by doing this project.

The second approach is to use a browser to do the work. There we can use *html5* , *css3* and *javascript* and libraries. There is also a server side scripting which can be any of *perl6* , *perl 5* or *javascript* by means of (*nodejs*) . There are also a great many javascript modules which can be used.

- *The storage method* Because the information items on one object can be different than on the other a hiërargycal database would be the choice. MongoDB is a dayabase for which there is support from javascript as well as perl6.
- *Storage* The name of the database and the names of the collections

## 4. Dependencies

The program will be depending on several modules and programs. That is only logical because we do not want to reinvent the wheel(s) again do we? We only try not to select those software which will bind it to some platform as explained above.

- *perl6*: The followup version of perl 5.\*. The program is not yet completely finished but will be soon (2015-01). This program is a interpreter/compiler which can compile the script into some interme-diary
- *perl6*: The followup version of perl 5.\*. The program is not yet completely finished but will be soon (2015-01).

## 5. State of affairs

A list of programs and web pages created and made available for use. While the project is still in a pristene state there presumable are several bugs left behind. Also things in the database and programs might change when other ideas arrive. Below there is a list of what has been made. For documentation see library [file:///home/marcel/Languages/Perl6/Projects/Library/doc/library.pdf].

1. The mongo database is *Library*: with several collections.
    - *object\_metadata*: Collection to store meta information of any object found.
    - *mimetypes*: Collection to store mimetype information. This can be connected to the object-type.
- install-mimetypes.pl6 is program to install mimetype information from a certain website [http://www.freeformatter.com/mime-types-list.html].

store-file-metadata.pl6 is a program to insert or modify metadata of files and directories in the database.

## 5.1. Priorities

# Bibliography

[MIMETYPES] *A list of all mimetypes*. <http://www.sitepoint.com/web-foundations/mime-types-complete-list/>