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Design Requirements for Advanced LIGO Inventory  
Management System

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This is an internal working note  
of the LIGO Project.

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## 1 Introduction

The purpose of this document is to define the requirements for an Inventory Management System for use in the Advanced LIGO Project. It is an initial attempt to try and pull all of the requirements together as discussed via email and phone conference. It does not constitute the final design.

## 2 Requirements

The initial requirements are listed below in numerical order, and are considered as the main points to consider.

1. No paper travelers or other documents; all information on an object to be available electronically.
2. Queries and data input to be possible from anywhere with a connection to the internet, via web browser
3. Protected by password and unique user (allow users to be identified in entries/audit trail)
4. Data backed up at least daily
5. History (audit trail) tracked for changes of database by change, time, user
6. Reasonably sophisticated search tool (Boolean operators, categories, etc.)
7. Capable of handling the quantity of data we anticipate – order of 25,000 inventoried objects (purchased or fabricated – estimated from early version of procurement plan) plus packing, etc., so perhaps 50,000 objects.
8. Capable of dealing with quantities of an object – counting of e.g., bolts or resistors
9. Allows the use of bar codes to track objects, can interface to a bar code reader and printer. Bar codes placed on object or on Ameristat for clean objects, or on shipping container.
10. Unifies all documentation for an object through an optimized mix of inclusion of the data in the database (scan, photo, text, spreadsheet, etc.), and/or through pointing to archives (e.g., DCC) - hypertext links?

### 2.1 Additional requirements

These items are to be considered secondary.

11. One system for all AdL objects (electronic, optical, mechanical); strong preference to adopt one system for all LIGO activities (Operations and Project) so that shipping/receiving/storage can be handled in a consistent way
12. Query output in forms usable by other programs (e.g., spreadsheet and not just text)
13. Database in a non-proprietary known format in case a change is needed in the future
14. Possible to ‘clean’ database – search for duplicates, entries missing information, etc.
15. Allows enforcements of the use of standards (category codes, prefixes/suffixes, descriptions, etc.); simple testing of entries for format

16. Capable of forming 'kits' from elements
17. Portable setup possible of bar scanner and laptop can identify objects, shipping and storage boxes, etc. – everything that can profit from a bar code can be issued one, even if temporary
18. Shipping/packing/storage mode – scan a series of objects packed into a box, push a screen button and have a new bar code emitted for the collection of objects which goes on the box; or, receive a box, scan each item, and sort into bins and onto shelves (which are labeled with bar codes)
19. Scan of bar code updates the database to indicate location of object (scanned by a known user, by bar scan unit located in a specific room at a time and on a date)
20. Unique connection to Caltech procurement (Oracle) database made (a common unique identifier like a PO number, or actual transfer of Oracle data to Inventory System); may place requirements on purchasers and on Procurement tracking system to make a seamless system.
21. Standard queries to be definable and storable for re-use
22. Customizable in-house or via affordable continued outside support to add features.

### **3 Conclusion**

Some of the items listed above may be redundant, but the idea was to try and consolidate what has been initially discussed and put it into a document. This procurement needs to be completed and put into use, but until we can provide a solid list of our requirements nothing can be done. There may be a requirement for further discussion and revision, and this should be done at the earliest time possible