



VALUE OF MATERIAL CATALOGING

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Date: 18 November 2008

Version: 3.1

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Template version: V0.22

INTRODUCTION

In this modern world, managers are being asked to do more with less at an ever-increasing pace. Managers have to examine and re-examine their priorities and decide how operational management goals are going to be achieved to ensure that their organisation maintains its competitive edge.

The market is full of a great range of products and tools that help Managers make decisions. All of which come with an ever-increasing range of acronyms such as ERPs, EAMs, RCM, CMMS, TQM, TPM, FMECA et al. However, all these products and tools rely on basic information such as: what is the plant and equipment? What is happening? What materials are used? What labour is used? How much does it cost? This information needs to be accurate and suitable for all domains within the organisation. This is where many organisations trip over the basics.

If an item of critical equipment needs maintenance you must know what should be done by whom with what materials. If this information isn't effectively communicated there is no way in the world any product or tool can improve plant reliability, optimize maintenance and maximize production. Moreover, this information must be shared throughout an organisation to ensure operating costs are minimised.

MASTER DATA

Master Data is a term used to describe information that seldom changes but is fundamental to managing, analysing and optimizing an organisation's effectiveness. Information that falls into this category includes the chart of accounts, equipment register, material catalog and a range of static configuration parameters. This document concentrates on one such area that has a significant impact on the bottom line - the material catalog.

MATERIAL CATALOG

The material catalog contains key information that is used to describe the materials used for the operation of the business. Spares used by the maintenance department, materials used for manufacturing, materials held in the warehouse, managed by inventory controllers, purchased by the procurement group and supplied by a vendor. The material catalog is truly cross-domain, and is the means to ensure effective communication. Good communication is vital to ensure that critical production materials and spares are available when required.

Not only does a good quality material catalog assist in communication but it can help prevent unnecessary expense through the selection of incorrect materials, expediting, excessive stock holdings and rework.

CATALOGING STAGES

Material cataloging is not a complex discipline. Simply put, material cataloging is a means of unambiguously describing materials. The cataloging process is best described through an example. The list below comprises a study of 14 material items from an unstructured catalog where standards have been loosely applied.

1. 3/4" BOLT, 6IN LONG UNC GRADE 5 W/NUT AND WASHER
2. 3/4" UNC X 6" HEX HEAD UNC BOLT
3. 3/4" UNC X 6" ZINC PLATED HEX HEAD UNC SCREW
4. 3/4" X 6" HEX HEAD UNC GRADE 5 BOLT
5. 3/4" X 6" HEX HEAD UNC GRADE 5 SCEW ZINC FINISH
6. 6"IN LONG BOLT GRADE 5 3/4"UNC
7. GRADE 5 BOLT BLACK .375" X 6.0" UNF C/W NUT AND WASHER
8. GRADE 5 SCREW BLACK .375" X 6.0" UNF C/W NUT AND WASHER
9. HEX BOLT 3/4 X 5-1/2IN UNC GRADE 5
10. HEX HEAD BOLT UNC 3/4IN X 6IN LG WITH NUT AND WASHER GDE 5
11. HEX SCREW 3/4 X 5-1/2IN UNC GRADE 5
12. HEXAGON HEAD BOLT 3/4"UNC X 6" LONG TO GRADE 5 W/NUT AND WASHER
13. UNC BOLT 3/8IN X 6 IN C/NUT AND WASHER BLACK GRADE 5
14. UNC SCREW 3/8IN X 6 IN C/NUT AND WASHER BLACK GRADE 5

Take a moment to examine the list and consider how many items are unique or might be combined with a similarly cataloged item. This process is called data standardization and comprises the following 5 simple steps:

- Sort alphabetically
- Place the noun first and re-sort
- Format data, re-sequence qualifiers and re-sort
- Apply encoding standards
- Conduct full research, examine actual item, and use standard names and abbreviations.

The table overleaf takes you through each of the steps and clearly illustrates the value of each step as we discover that nine of the fourteen items are duplicated.

Cataloging Process

<p>Step one sort – sort alphabetically</p> <ol style="list-style-type: none"> 1. 3/4" BOLT, 6IN LONG UNC GRADE 5 W/NUT AND WASHER 2. 3/4" UNC X 6" HEX HEAD UNC BOLT 3. 3/4" UNC X 6" ZINC PLATED HEX HEAD UNC SCREW 4. 3/4" X 6" HEX HEAD UNC GRADE 5 BOLT 5. 3/4" X 6" HEX HEAD UNC GRADE 5 SCEW ZINC FINISH 6. 6"IN LONG BOLT GRADE 5 3/4"UNC 7. GRADE 5 BOLT BLACK .375" X 6.0" UNF C/W NUT AND WASHER 8. GRADE 5 SCREW BLACK .375" X 6.0" UNF C/W NUT AND WASHER 9. HEX BOLT 3/4 X 5-1/2IN UNC GRADE 5 10. HEX HEAD BOLT UNC 3/4IN X 6IN LG WITH NUT AND WASHER GDE 5 11. HEX SCREW 3/4 X 5-1/2IN UNC GRADE 5 12. HEXAGON HEAD BOLT 3/4"UNC X 6" LONG TO GRADE 5 W/NUT AND WASHER 13. UNC BOLT 3/8IN X 6 IN C/NUT AND WASHER BLACK GRADE 5 14. UNC SCREW 3/8IN X 6 IN C/NUT AND WASHER BLACK GRADE 5 	<p>Step two – place the noun first and re-sort</p> <ol style="list-style-type: none"> 4. BOLT, 3/4"X 6" HEX HEAD UNC GRADE 5 2. BOLT, 3/4" UNC X 6" HEX HEAD UNC 1. BOLT, 3/4", 6IN LONG GRADE 5 W/NUT AND WASHER 6. BOLT, 6"IN LONG GRADE 5 3/4"UNC 7. BOLT, GRADE 5 BLACK .375" X 6.0" UNF C/W NUT AND WASHER 9. BOLT, HEX 3/4 X 5-1/2IN UNC GRADE 5 10. BOLT, HEX HEAD UNC 3/4IN X 6IN LG WITH NUT AND WASHER GRADE 5 12. BOLT, HEXAGON HEAD 3/4" UNC X 6" LONG TO GRADE 5 W/NUT AND WASHER 13. BOLT, UNC 3/8IN X 6 IN C/NUT AND WASHER BLACK GRADE 5 3. SCREW, 3/4" UNC X 6" ZINC PLATED HEX HEAD UNC 5. SCREW, 3/4" X 6" HEX HEAD UNC GRADE 5 ZINC FINISH 8. SCREW, GRADE 5 BLACK .375" X 6.0" UNF C/W NUT AND WASHER 11. SCREW, HEX 3/4 X 5-1/2IN UNC GRADE 5 14. SCREW, UNC 3/8IN X 6 IN C/NUT AND WASHER BLACK GRADE 5 	<p>Stage 3 - format data, re-sequence qualifiers and re-sort</p> <ol style="list-style-type: none"> 7. BOLT, .375" UNF X 6.0" GRADE 5 C/W NUT AND WASHER BLACK 9. BOLT, 3/4 UNC X 5-1/2IN HEX HEAD GRADE 5 2. BOLT, 3/4" UNC X 6" HEX HEAD 4. BOLT, 3/4" UNC X 6" HEX HEAD GRADE 5 6. BOLT, 3/4" UNC X 6" LONG GRADE 5 1. BOLT, 3/4" UNC, 6IN LONG GRADE 5 W/NUT AND WASHER 12. BOLT, 3/4" UNC X 6" LONG HEXAGON HEAD TO GRADE 5 WITH NUT AND WASHER 10. BOLT, 3/4IN UNC X 6IN LG HEX HEAD GDE 5 WITH NUT AND WASHER 13. BOLT, 3/8IN UNC X 6IN GRADE 5 C/NUT AND WASHER BLACK 8. SCREW, .375" UNF X 6.0" GRADE 5 C/W NUT AND WASHER BLACK 11. SCREW, 3/4 UNC X 5-1/2IN HEX GRADE 5 3. SCREW, 3/4" UNC X 6" HEX HEAD ZINC PLATED 5. SCREW, 3/4" UNC X 6" HEX HEAD GRADE 5 ZINC FINISH 14. SCREW, 3/8IN UNC X 6IN GRADE 5 C/NUT AND WASHER BLACK
<p>Stage 4 - apply encoding standards</p> <ol style="list-style-type: none"> 9. BOLT, 3/4" UNC X 5-1/2" HEX HEAD GDE 5 6. BOLT, 3/4" UNC X 6" GDE 5 1. BOLT, 3/4" UNC X 6" GDE 5 W/NUT AND WASHER 2. BOLT, 3/4" UNC X 6" HEX HEAD 4. BOLT, 3/4" UNC X 6" HEX HEAD GDE 5 10. BOLT, 3/4" UNC X 6" HEX HEAD GDE 5 W/NUT AND WASHER 12. BOLT, 3/4" UNC X 6" HEX HEAD GDE 5 W/NUT AND WASHER 13. BOLT, 3/8" UNC X 6" GDE 5 W/NUT AND WASHER BLACK 7. BOLT, 3/8" UNF X 6" GDE 5 W/NUT AND WASHER BLACK 11. SCREW, 3/4" UNC X 5-1/2" HEX HEAD GDE 5 3. SCREW, 3/4" UNC X 6" HEX HEAD ZINC PLATED 5. SCREW, 3/4" UNC X 6" HEX HEAD GDE 5 ZINC FINISH 8. SCREW, 3/8" UNF X 6" GDE 5 W/NUT AND WASHER BLACK 14. SCREW, 3/8" UNC X 6" HEX HEAD GDE 5 W/NUT AND WASHER BLACK 	<p>Stage 5 – full research, use standard names and abbreviations</p> <ol style="list-style-type: none"> 9. BOLT, MACHINE; 3/4" UNC X 5-1/2" HEX HEAD GDE 5 W/NUT AND WASHER 6. <i>BOLT, MACHINE; 3/4" UNC X 6" HEX HEAD GDE 5 W/NUT AND WASHER</i> 1. <i>BOLT, MACHINE; 3/4" UNC X 6" HEX HEAD GDE 5 W/NUT AND WASHER</i> 2. <i>BOLT, MACHINE; 3/4" UNC X 6" HEX HEAD GDE 5 W/NUT AND WASHER</i> 4. <i>BOLT, MACHINE; 3/4" UNC X 6" HEX HEAD GDE 5 W/NUT AND WASHER</i> 10. <i>BOLT, MACHINE; 3/4" UNC X 6" HEX HEAD GDE 5 W/NUT AND WASHER</i> 12. <i>BOLT, MACHINE; 3/4" UNC X 6" HEX HEAD GDE 5 W/NUT AND WASHER</i> 13. BOLT, MACHINE; 3/8" UNC X 6" HEX HEAD GDE 5 W/NUT AND WASHER BLACK 14. BOLT, MACHINE; 3/8" UNC X 6" HEX HEAD GDE 5 W/NUT AND WASHER BLACK 7. BOLT, MACHINE; 3/8" UNF X 6" HEX HEAD GDE 5 W/NUT AND WASHER BLACK 8. BOLT, MACHINE; 3/8" UNF X 6" HEX HEAD GDE 5 W/NUT AND WASHER BLACK 11. <i>SCREW, MACHINE; 3/4" UNC X 5-1/2" HEX HEAD GDE 5</i> 3. SCREW, MACHINE; 3/4" UNC X 6" HEX HEAD GDE 5 ZINC PLATED 5. SCREW, MACHINE; 3/4" UNC X 6" HEX HEAD GDE 5 ZINC PLATED 	

VALUE OF A GOOD QUALITY MATERIAL CATALOG

Besides ensuring that maintenance engineers are able to select the correct material, there are many good reasons why an organisation should establish and maintain a good catalog. Consider the previous example; of the 14 items, 9 have been identified as duplicates. If we assume that these items are purchased 4 times per year, then purchasing activity will drop from 56 to 20 orders per year. With the average cost for purchase order line being \$30, the value of a good quality catalog for these 14 items alone is \$1,080 in terms of procurement costs alone. This is an excessive overhead given that the items used in this example probably cost less than a dollar each!

The value goes well beyond procurement. A good quality catalog facilitates strategic purchasing, improved supply contract coverage, higher service levels, reduced inventory holdings and reduced material handling. For a material catalog of 5,000 items valued at A\$5million, Oniqua regularly sees duplication of 5-20% - just think what that might mean to your organization.

BUSINESS CASE TO CLEANSE 5,000 MATERIAL ITEMS

Using the value identified above, a business case to cleanse a catalog comprising 5,000 items is straight-forward. Using an average duplication figure of 12% and an average of 4 orders per item per year, the procurement savings through de-duplication alone are about \$120,000 per annum. The capital cost of the duplicate items (at 8% interest) represents \$48,000 per annum. This level of duplication represents an operating cost of \$168,000 per annum (or approximately 3% of inventory value).

Whilst some of these savings can be regarded as "soft", they can be realised by the redeployment of capacity into more productive areas such as rotatable management, contract negotiation, other business improvement initiatives, etc.

Accurately cataloging material items and removing duplicates has a number of additional benefits such as a reduction in supplier returns and incorrect end-user issues (which, in addition to the cost of rework, can also unnecessarily trigger reorders).

Lost opportunity costs should also be taken into account. These include expediting urgent spares from a supplier that you may already have under a different material number, putting in place "band-aid" solutions and the loss of production.

Good material cataloging increases an organisation's ability to automate on-contract purchasing activity. Oniqua regularly sees the cost of a purchase order drop from about \$50 to about \$20 in these circumstances. The table below contains a summary of typical savings.

Initiative	Description	Estimated cash saving / year
1	Reduction in ordering costs due to de-duplication	\$120,000
2	Reduction in spares capital cost due to de-duplication	\$48,000
3	Incorrect material issues to trades	Add your estimate
4	Handling of incorrect material orders (returns, re-receipts)	Add your estimate
5	Increased automation of orders (cost reduction of \$30 per order)	Add your estimate

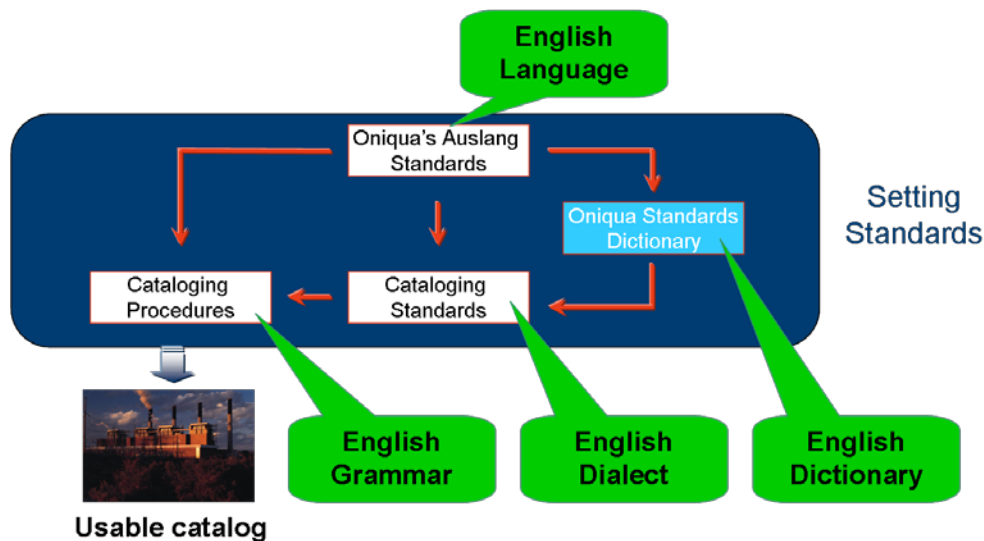
Initiative	Description	Estimated cash saving / year
6	Stock-outs, expediting and work arounds	Add your estimate
7	Negotiate Group contracts / National purchasing agreements	Add your estimate

Using the business benefits outlined above and a typical three-year investment profile, it can be seen in the table below that the return on investment is 15 times with payback in the first year!

Item	Year 1	Year 2	Year 3	Total
Generic Material Catalog Specification	\$5,000			\$5,000
Cleansing 5,000 items	\$20,000			\$20,000
Public Training Course	\$2,400			\$2,400
Oniqua Standards Dictionary Subscription	\$1,100	\$1,000	\$1,100	\$3,300
Total	\$28,500	\$1,100	\$1,100	\$30,700
Estimated benefits	\$168,000	\$168,000	\$168,000	\$504,000
Net cash benefit	\$139,500	\$166,900	\$166,900	\$473,300

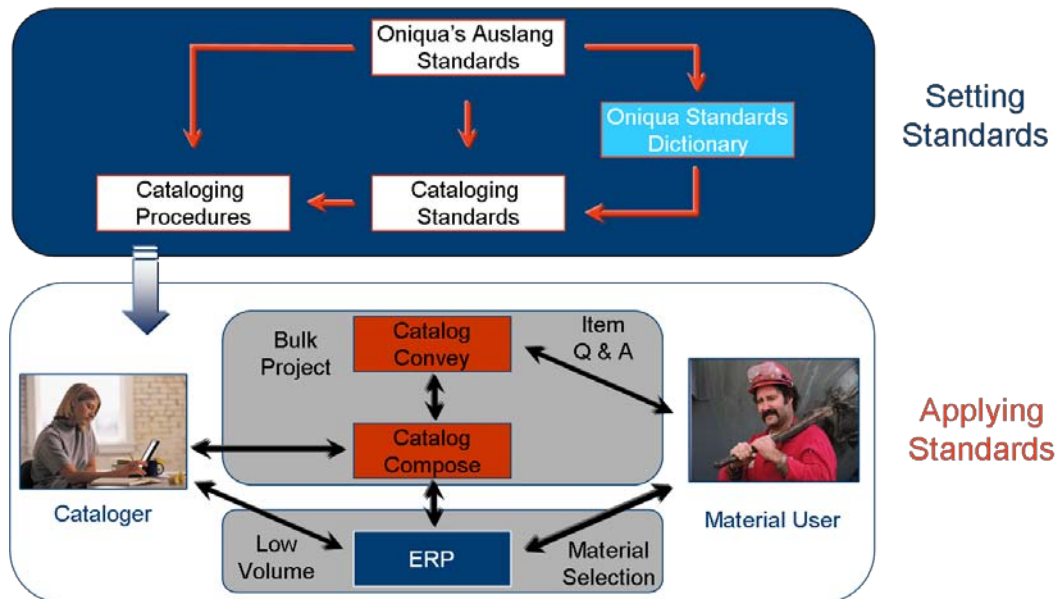
IMPLEMENTING AND MAINTAINING A MATERIAL CATALOG

Implementing and maintaining a good quality material catalog is not onerous. Well managed and mature organizations consider catalog maintenance as a key business process and allocate resources to carry out the function. Firstly it is important to understand the principles of the material cataloging language – it is not too dissimilar to English as the diagram below illustrates!



There are three steps to ensuring a good quality material catalog. The first step is to decide on the language (i.e. cataloging taxonomy such as Auslang, UNSPSC, NATO, ECCMA or others) and then apply them so that they reflect the needs of your organization. Oniqua has over 20 years of experience in the capital intensive market and strongly recommends that an item

naming tool such as Oniqua's Standards Dictionary is used to ensure that an item is named unambiguously.



The next step is the implementation, this can be done either manually directly into the ERP system or using a bulk cataloging tool such as Oniqua Catalog Compose that can produce load files for import into the ERP system.

Lastly, the catalog must be maintained to ensure that it is kept up to date as materials and suppliers change and to ensure that data quality does not erode over time. This is typically a manual process.

Materials cataloging is specialised work and should be done by suitably qualified and experienced people.

FREQUENTLY ASKED QUESTIONS

From time to time Oniqua has been asked a range of questions about the cataloging process and to provide advice. Below are some of the more common questions and the answers we give.

Question	Response
Can Oniqua recommend a numbering sequence for materials?	Oniqua recommends a simple number sequence is used with no inbuilt intelligent prefixes. With the power of modern ERP systems, catalog search capability is readily available.
We are building a new catalog, can we pre-load our catalog with somebody else's catalog?	In general Oniqua does not recommend bulk loading another organization's material catalog for several reasons: <ul style="list-style-type: none"> • Items held in a catalog are assumed to be approved for use from a purchasing, engineering and reliability viewpoint. • A material item approved for another client's plant may not be compatible for you to use. • There may be regional and local differences in materials specification due to climate and operational requirements.

Question	Response
What coding should be use for spend analysis?	<p>These are several encoding standards that are frequently used including:</p> <ul style="list-style-type: none"> • Oniqua's Group Class • NATO Supply Code • eCl@ss • UNSPSC. <p>These can easily be applied during a Catalog Standardization project.</p>
I am speaking with a service provider who says they can catalog material items to Auslang / Oniqua standards, is this true?	Oniqua licences other providers to perform cataloging work to Auslang / Oniqua standards from time to time. This licencing system helps to assure good quality levels are maintained. Please check with Oniqua that your selected provider is licenced prior to contractual arrangements being finalized.
What are Oniqua's standards based upon?	Oniqua's standards have evolved over a period of 25 years from the NATO standards. During this evolution Oniqua has adapted the standards to reflect industrial usage no mater what industry sector. In addition material templates have been constructed that improves end-user usability and speeds up the cataloging process.
What is Oniqua Standards Dictionary?	<p>Oniqua Standards Dictionary is an easy to use reference tool that provides access to widely accepted material cataloging standards. Oniqua Standards Dictionary enables users to quickly identify standard names, material characteristics and abbreviations. The dictionary comprises</p> <ul style="list-style-type: none"> • 40,000+ standard names • 30,000+ colloquial names • NATO supply classifications • Manufacturer mnemonic codes • Units of measure • Recommended abbreviations.
Can Oniqua catalog in foreign languages?	Yes!
Can Oniqua conduct library searches to augment material records or suggest alternative parts?	Yes!
Can Oniqua transcribe documents to produce a material catalog?	Yes!

CONCLUSION

Good quality material catalogs deliver bottom-line benefits throughout the organisation. Some benefits such as holding costs and procurement costs are easily quantified; others such as the effort spent locating the correct item or the time wasted by a fitter doing emergency modifications are more problematic but real never the less.

A good material catalog is critical to support good material and maintenance planning practices and outcomes.

How many projects can deliver a return of 15 times the investment and be cash positive in the first year?