**NCS relationship to ISO "Parts Library"**

**ISO 13 584**

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**Characterizing items by class and properties:**

**A precursor: the NCS**

- The need:
  - define a common understanding about items of supply
  - reduce supplies of military forces
  - facilitate logistic data management

- The NCS solution
  - hierarchical classification structure for names
  - characteristic properties (MRC) for characterization
  - NATO Stock Number for identification

**A 50 years old complete solution for computer-supported logistic!**

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**New industry requirements: mid 80's**

**Library for CAD and digital mock-up**

- Most products consists of components:
  - characterize product by **computer-sensible** properties (searching)
  - managing component libraries

**Requirement:**

**to switch from documents to data!**
New industry requirements: 90's
Electronic commerce

- Buying, ordering, inquiring about something need to specify the **what**

Electronic commerce: information shall be **explicit**

I need a can of hexagonal machine screw: total length? 20
threaded length? 10
diameter? 5
coating? teflon

Requirement:
- to define computerized information models for dictionaries and catalogues
- to define and to share computer-sensible product / properties dictionaries

Definition

Product / property dictionary:
Set of product and product property concepts with:
- computer-sensible identification
- computer-sensible definition, and
- computer-sensible value representation

Current status: NATO VS Current IT practice

NATO
- Large experience in developing and maintaining product / property dictionaries
- huge content available: > 20 000 properties, 2500 product domains,…

But
- NATO specific structure (RDB) ==> specific systems / software  **cost**
- NATO specific value encoding ==> specific codification process  **cost**

Current IT practice
- Accepted language for technical information modeling  **EXPRESS**
- Accepted format for technical data exchange  **STEP Physical files**
- Accepted model for product /property dictionary and catalogues Parts Library

But
- no (few) existing dictionaries

AC/135 study on NCS relationship to Parts Library

**Goals:**
- **▼** to make profit of IT opportunities
  - reduce the cost of NATO systems
- **▼** to investigate partial automation of codification through direct use of NCS in the industry
  - reduce the cost of item codification
- **▼** to investigate process and model simplification
  - reduce the cost of NATO process
Findings (1) approach similarities

- Classification of all parts through a hierarchy:
  - class hierarchy and the properties are defined together:
    - applicable properties precise the meaning of a class
    - application domain precise the meaning of a property
  - Similar property description: a number of attributes
    - definition, unit, drawings...
  - Similar sets of property values (data types): codes + meaning, measure, set of values...

Findings (2) values are not fully computer sensible

- Example 1: properties with reply code "A" (may be alphabetic or numeric)
  - BLPK (Number of mounting holes)
  - Reply example: BLPK A 2 #
  - Is "2" an Integer or a String value?

- Example 2: The unit of a measure may be part of the name
  - CQOR (Thread pitch in millimeters)
  - How could the computer know that "2" is "2 mm"?

- Example 3: multiple or optional replies need specific string encoding

Findings (3) highly centralized approach

- Material table Fabrication method table

Challenges for the NCS

- To switch from information encoding to formal information modeling while preserving legacy data and knowledge
  - Standard system and software
  - Full data representation of document contents

- To make (subsets of) the NCS available for industry
  - get partial codification for free
The complete information content of NCS may be modeled into PLIB.

For industry use, each IIG may be provided as a standalone dictionary.

- Select a target information model for NCS
  - suggestion: ISO13584 + small extensions

- Map individually each IIG structure onto the PLIB formal structure
  - suggestion: use this opportunity to simplify IIGs

- Promote the use of re-structured IIG within industry

- Develop import (export) interfaces from NCS-based system from/to restructured NCS

- Base new developed systems on restructured NCS

The NCS represents the largest consistent body of knowledge about product characterization.

It is possible to switch from data encoding technology to modern information modeling while preserving legacy data and knowledge.

Software systems and links with PDM would be simpler:
- NCS documents would be generated from data
- Synergy restructuring / simplification

Subsets of restructured NCS could be offered to/used by the industry:
- Use by industry => direct access to data
- Reduction of codification cost

A path for preserving NCS advance in the new Millenium.