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IMPROVING PRODUCT DEVELOPMENT THROUGH STANDARDIZATION AND REUSE

Early in the design phase of a product, many of the overall lifecycle costs are set. For this reason, it is important that individuals involved in product development are able to ask questions that help to get the best cost possible at the time of launch. Some of the questions that must be asked include:

- Do we have a part that can re-used and still meet my specifications?
- What parts will help me to meet my target cost?
- Which ones do we buy the most of?
- Which supplier is the most reliable?

One of the key ways to reduce cost and risk is by standardizing designs and re-using parts. Part standardization reduces the overhead required to:

- Select and review new parts and suppliers
- Certify and track new parts and suppliers
- Create new design libraries
- Procure, kit, store and manage parts
- Resolve part/supplier issues
- Program manufacturing machines
- Develop manufacturing processes

These costs and risks add up. Back in 1991, Coopers & Lybrand estimated that the industry average cost for introducing a new part into inventory was $9400. More recently, in 2008 the Defense Supply Center, Columbus (DSCC) – a greater than $3 billion per year supply chain depot for the Defense Logistics Agency (DLA) – estimated the cost to be more like $27,000 for government / military programs.

Engineers need access to complete information about their enterprise' products and parts to better effect standardization and re-use. This information comes from a number of sources (Figure 1).

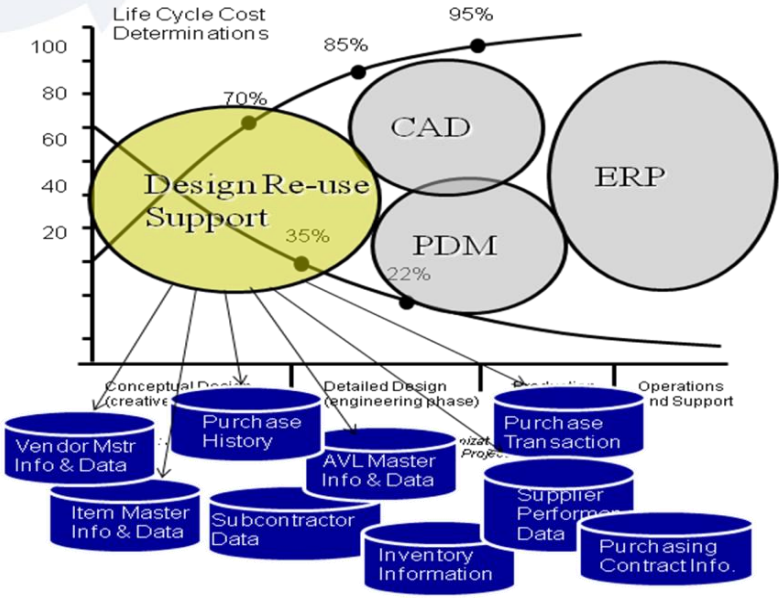

Figure 1 Engineers need information support early in the development cycle

CAD/CAM and Product Data Management (PDM) / Product Lifecycle Management (PLM) systems do not provide the complete picture. Typically, existing parts are found in PDM/PLM systems via the part number and perhaps some small number of part describing attributes. This requires the engineer to have some prior knowledge of the specific part they are looking for in order to find it. This scenario is not optimum for finding parts across organizational and geographic boundaries.

Meanwhile, historical part classification successes show that typically 20 to 30 or more distinct attributes are required to fully describe an individual part. Typical engineering systems such as PLM don't usually provide for this high a number of distinct attributes. A data model such as this may be customized-in, but it is usually static and therefore difficult or expensive to amend over time as the business changes.

A parts classification solution like Design for Retrieval (DFR) from Convergence Data is optimized for enabling the standardization and re-use of enterprise part assets. DFR provides the capability for an enterprise to create a logical, hierarchical taxonomy of products, parts and assets according to the specific, inherent characteristics of those items – from the most broad classifications down to narrower and narrower criteria. In this way, item "Categories" are created which group items in "families" and "subfamilies" according to their similarities and independent of their use in specific product structures. In this way, each category has its own unique set of attributes which, in turn, may be searched against.

This detailed data model allows the federation of data across multiple, important dimensions or domains required for effective decision making, e.g.

- Physical and Technical Attributes
  - Physical Attributes – length, width, weight, etc.
  - Functional Attributes – pressure, flow rate, max operating temperature, etc.

    - Material Compliance Status – REACH, ROHS, etc.
    - Commercial Information such as cost, rebates / incentives, shipping / landed cost, and others
- Internal - Price, Supplier, Volume, Inventory on hand, Approved Vendor List (AVL) status
- External – Life Cycle Stage, Years to end of life (YTEOL)

With DFR, many more attributes and specific attribute values are provided for parts therefore enabling the ability to compare and differentiate objects according to a full range of characteristics which therefore improves part standardization decision making and improving re-use.

Furthermore, DFR utilizes a dynamic data model based on industry standard technology which allows for an enterprise to easily change the classification structure as that business changes, for instance with mergers and acquisitions.

Finally, a classification solution like DFR is meant to complement and enhance the effectiveness of an enterprises' CAD/PLM solution. PLM is retained as the engineering process enabler e.g. for Engineering Release and Change Management as well as the system of record for configuration management, dates, documents and responsible parties. An effectively integrated DFR complements the PLM solution by providing a greatly extended and flexible data model for parts, products and assets with data federated across multiple relevant domains to enable extended enterprise management and reuse of standardized parts for use across geographic and divisional boundaries.

Most Convergence Data Services customers utilize DFR for this purpose. The results have been cost avoidances due to standardization of parts in the tens of millions of dollars per year.

Contact us at info@convergencedata.com or 203-364-8600 for further information.

