

**NEW PART NO REDUCTION IN DESIGN STAGE (THROUGH GEOMETRIC MINING)**

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**ABSTRACT**

The development of new vehicle is flatteringly progressively complex: proliferation of on-board electronics, development of Electric powertrain technologies, globalization of design and production, to name a few. At the same time, companies are straining constantly to better meet customer desires while reducing time to market and production costs. Definitely a tough challenge! The ever-growing amount of data (both in variety and in number of sources) that the enterprise generates is central to this situation. All new features call for new part development, this increases the number of new part development for new projects. This paper will first sketch the problem at hand then describe what a SBA is in relation to it. It will then discuss how these search-based applications (EXALEAD, GEOLUS, and SIMUFORM) can be put to great use to improve “Part Standardization” and reduce new part proliferation in automotive enterprise's efficiency at various stages of a product development. Applications that can be quickly deployed and configured, have been developed to provide business owners with an intuitive and efficient access to data (PLM, ERP, DMS, and so on).

**KEYWORDS:**

Geometric Search, EXALEAD, GEOLUS, Part Standardization, Search Based Application (SBA), New Part no Reduction.

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**INTRODUCTION**

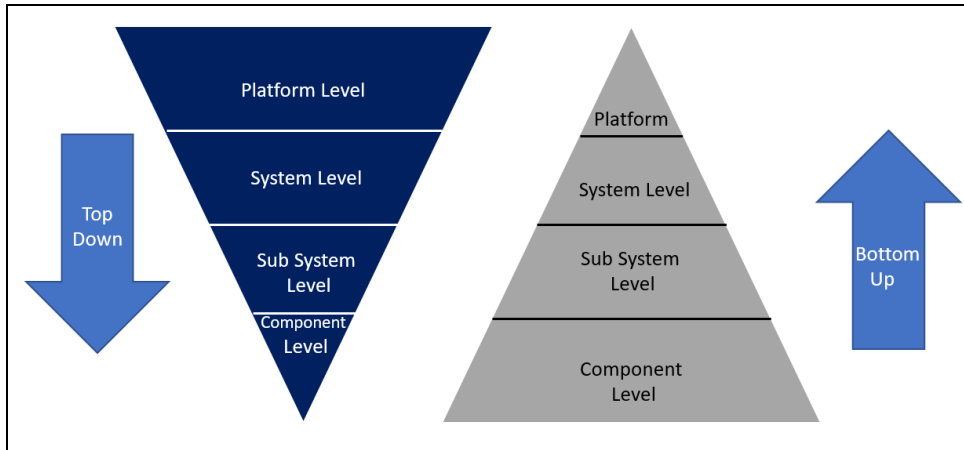
Standardization will be handled in two methods one is “Top down” approach and another is “Bottom up” approach. Top down approach will be implemented/handled only in Modular Product Development, which requires the complete Product Architectural definition in adopt the Commonization across the platform definition. This Top down approach cannot be handled in Existing Product Platform, since this requires complete Architectural changes and that will not be possible because of the proven product as well of Legacy data, Timeline will minimal in this type of project. Identification of geometrically similar part to satisfy requirement will directly benefit in Cost saving in Part development, Procurement and Inventory Management. From this, we can understand that “Top Down” approach is suitable for All New Programs and “Bottom Up” approach is suitable for New Projects in Existing Platforms.

This Paper will describe how “Bottom up” approach of Standardization can be handled in New Projects in Existing Platforms with the help of SBA (Search Based Application) on Legacy CAD, PDM, PLM and any other data base.

**OBJECTIVES**

Standardization / Commonization is applied to attain standard/ common parts across Platforms, Product and Variants to Reduce number of varieties, obtain standard quality products and Reduce Design, Manufacturing and Tooling cost. The main objective of the study is how to reduce the new part number proliferation in new product development.

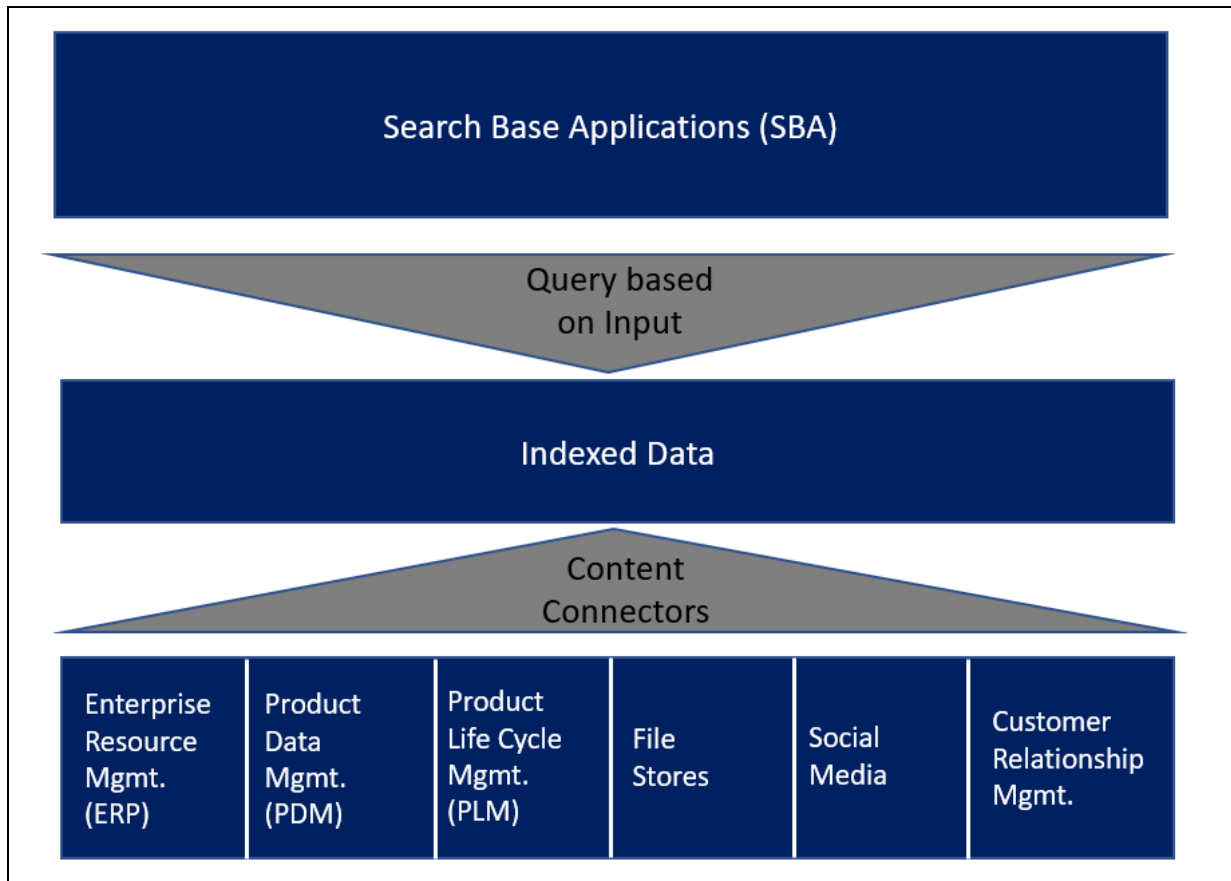
### Standardization Approach:



**Figure 1:** Standardization Approach

### SBA (Search Based Application):

Search Based Application is a software application in which a search engine platform is used as the core infrastructure for accessing information and reporting from different sources.



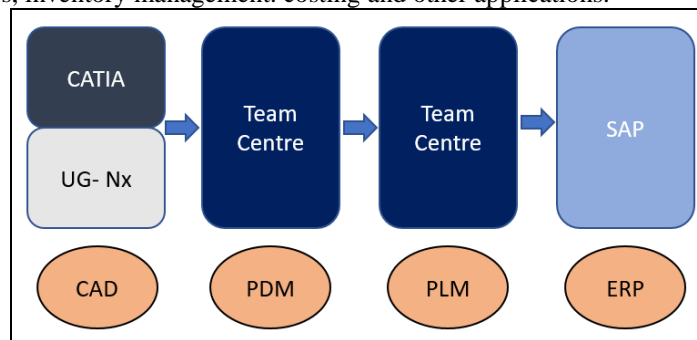
**Figure 2:** Search Based Application Block Diagram

**Geometric Search Engine:**

Geometry-based search or shape-based search technologies usually permit you to use a readily available shape as input. Such systems employ robust shape-indexing algorithms to classify, group and organize files based on geometric feature similarities. Therefore, they can efficiently scan a database and identify existing models with the same geometric attributes as the reference item. It helps designers and engineers find a reusable part at the speed of thought so that they can determine whether it is necessary to create new parts and incur the associated costs. With just a few clicks, users explore legacy parts and related 2D/3D designs, gaining immediate insight into vast amounts of previously hidden data.

**Selecting the Suitable “Geometric Search Engine”:****Case:1**

In this Case, the CAD Tool used are CATIA and UG-Nx in which these CAD Tools coupled with Team Centre for Product Data Management (PDM) and Product Lifecycle Management (PLM) where all the release process, workflow and EBOM generation take place. Then the Team Centre is integrated to SAP for Enterprise Resource Planning (ERP) in sales, inventory management, costing and other applications.

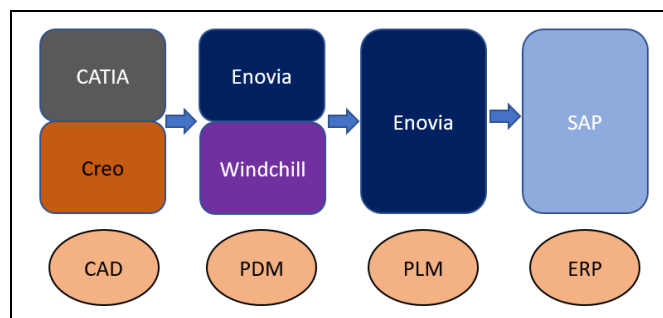


*Figure 3: PLM Architecture- Block Diagram*

**Case:2**

In this Case, the CAD Tool used are CATIA and Creo in which these CAD Tools coupled with Enovia and Windchill for Product Data Management (PDM) and Product Lifecycle Management (PLM) where all the release process, workflow and EBOM generation take place. Then the Enovia is integrated to SAP for Enterprise Resource Planning (ERP) in sales, inventory management, costing and other applications.

In this Case, there are two PDM for managing respective CAD application and single “PLM” application used. From Both the CAD application different format CAD files are generated and saved in respective repository.



*Figure 4: PLM Architecture- Block Diagram*



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As per the comparison, “*Exalead One Part*” will be best fit for this Environment considering capabilities and implementing in Existing Environment. Since both are home ground PLM solution platform “Exalead One Part” will be best fit.

### CONCLUSION

In this paper, we seen how “Bottom up” Standardization approach can be handled for New Projects in Existing platform and how “Geometric Search” based application will help in identifying the similar part in entire database to reduce the New part number creation in Design state which will improve cost saving.

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