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View Point

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Dealing with Challenges of Product, Category and Channel Growth in Retail using Oracle PIM

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Abstract

What is your view of a product data hub? Is it that of a database which consolidates product data from various applications to provide a single view of the product that you sell? Is it a single place that helps you describe your products and their features? Is it a repository that helps you identify a product with its global identifiers and helps you effectively communicate with your suppliers and customers?

What are the benefits of the product data hub? Does it help in minimizing data interfacing needs across your application stack? Does it reduce the number of errors due to wrongly identifying a product? Does it provide enriched business definition and a single source of truth for your products?

These benefits are just the tip of the iceberg. This paper deals with business benefits and how to navigate the challenges faced while achieving the benefits.

Sep 2011

Business Benefits

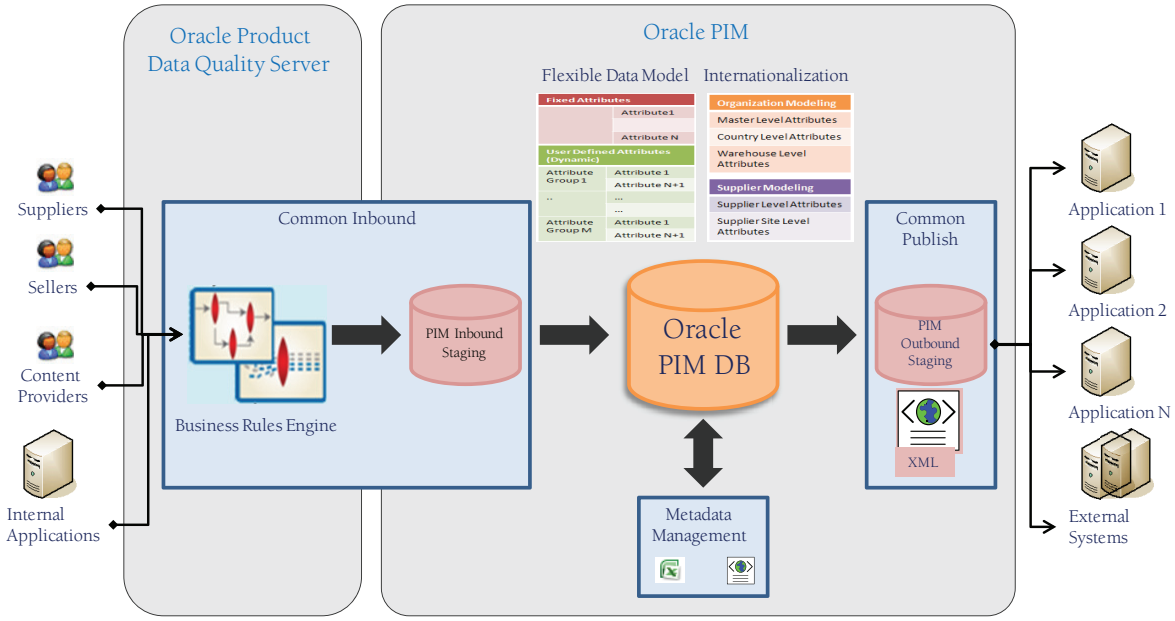
The benefits of a Product Hub are typically seen from a technology perspective. The common perspective is that over the past few decades, organizations have invested heavily in IT which has helped them handle their day to day transactions efficiently. But this has resulted in master data spread across disparate systems which is in a constant state of flux. This is a major challenge and organizations today are countering it by consolidating master data in a single repository, since, ignoring data management may impact the ability to deliver the key enterprise functions and processes.

A product hub is viewed as a similar implementation to provide a consolidated and unique product data, complete and accurate item information across the enterprise. These benefits are only the tip of the iceberg. The retail environment faces many pressure points today. Developing multi-channel initiatives, new product or private label development and product range or category expansion are seen as critical action items in the near future. In this rapid changing retail environment a central product hub could serve as a back-bone of the organization to improve speed to market thereby increasing the pace of product growth, accelerate category expansion and provide a vehicle for enabling multi-channel commerce, cross-border sales and internationalization

Six Critical Features Required

To get the most out of a Product Hub and realize the business benefits, Infosys proposes six critical features that are required as part of the complete solution set.

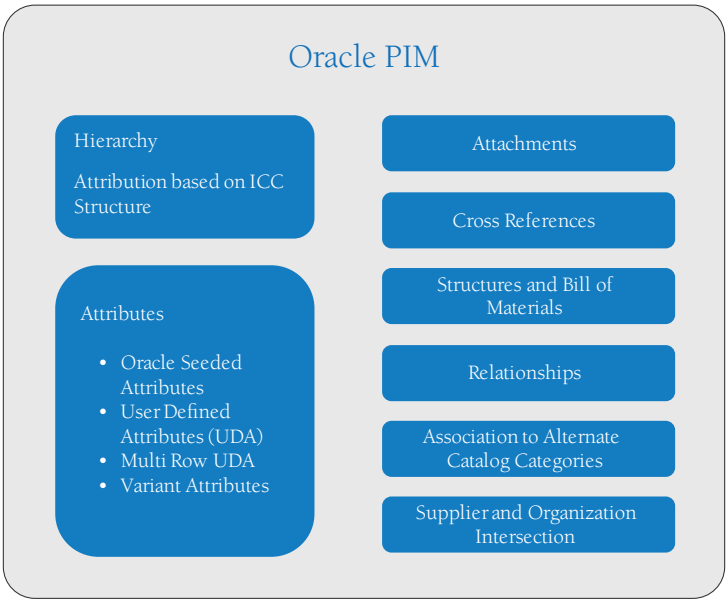
Oracle PIM for Retail as a product hub, along with Oracle Product Data Quality Server provides a powerful tool for achieving this. Infosys Retail Lab has experience in providing such solutions by enhancing the Oracle PIM for Retail platform as shown in the Feature Map below.



1. Flexible Data Model

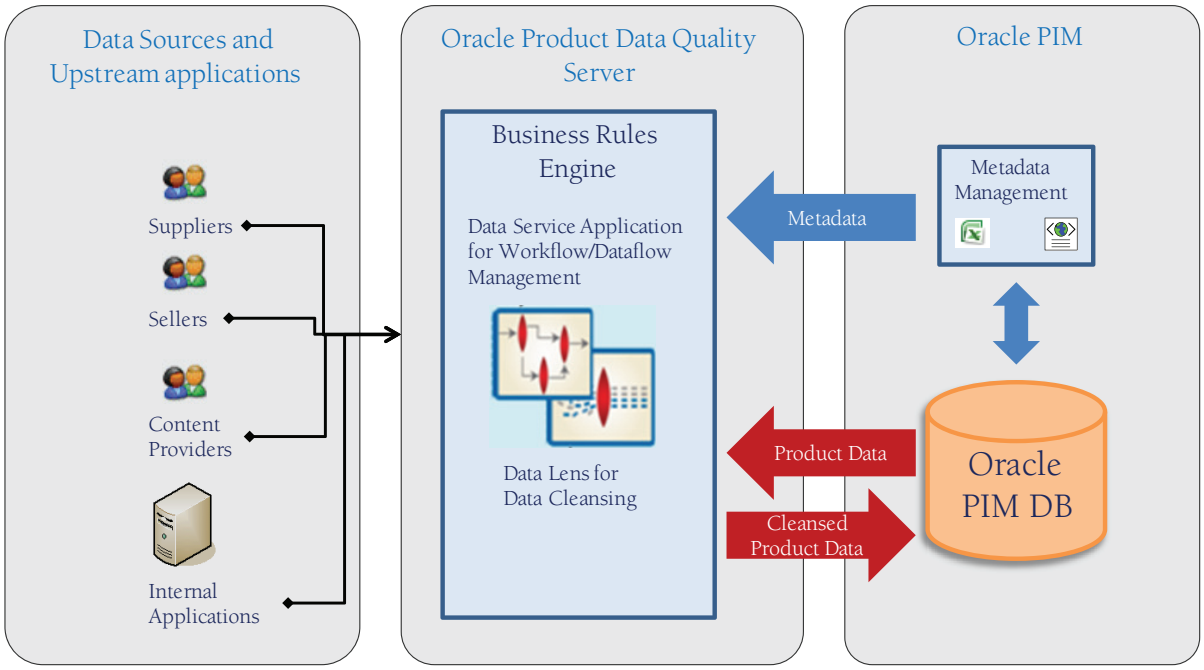
The primary purpose of the Oracle PIM is to provide a clear and accurate definition of the product. Product definition has various dimensions such as product type (clothing, electronics etc.), information type (structured product features, unstructured reviews, and rich media content), and associations (product to product relationship, bundles, and categorization).

The product definition also varies depending on the country (such as age restrictions), warehouse (operation attributes such as back-orderable) or supplier (such as supplier product identifier, lead time). Oracle PIM provides a host of entities and flexibility to map them as per the business needs.



2. Business Rules Engine

Product data can be received into the Product Hub from various sources for a wide range of product categories, hence there is a need for standardization of product data, values of product attributes etc. these can be achieved by using a powerful 'Business Rules Engine' provided by Oracle Product Data Quality Server (OPDQ). The metadata of the product defined in Oracle PIM can be synchronized with the OPDQ where the rules can be built for this purpose.



Product information is required in some downstream systems to perform their respective business operations for e.g. Order Management System, Warehouse Management systems etc. Most of this information is common or standardized based on product categories, hence can be managed by defaulting. This can be either managed by the business rules engine in Oracle PIM or OPDQ server respectively. Basic defaulting can be addressed in Oracle PIM whereas OPDQ Server can handle complex rules based on product category and product attribution etc.

3. Common Induction & De-duplication

The need for category and range expansion can be met by retailers only though sourcing product information from various parties.

In-house Applications: It is normal for retailers to create product information in-house for private labels and create rich content such as images, web descriptions in-house for distant selling channels. Such information to be mastered will flow from In-house applications.

Supplier Feeds: Supplier feeds are product details received from the suppliers of the product that typically contain the product features, trade market specific data and the associated product prices received generally in Excel using a retailer specific predefined template.

Content Providers: These are organizations that specialize in generating and selling specific categories of product data to retailers. Data is collated by content providers from the market and other reliable sources and hence is a trusted source for enriched & accurate product data.

GDSN Certified Data Pools: GDSN certified data pool provides the access to huge volume of product data available across the globe. The content provided is generally supply chain related and not enriched content required for selling the product. This enables the business to derive value in the supply chain through consistent, accurate information that helps in product consolidation and uniquely identifying a product. It also helps in increasing the business opportunity by increasing range.

To create a central repository & single source of truth of product in Oracle PIM from disparate systems, the product feeds need to go through data standardization, validation and de-duplication process before induction or update in Oracle PIM. Additionally, increase in SKU count will mandate an automated process with lesser manual touch-points

A common product induction process from multiple sources through a principle of 'single touch of data' is projected to enable increase in SKU count by 100 times in 2 years, for a major retailer based in UK

Duplicate product data is a leading cause of bad user experience, inefficiencies in processes and reporting. A Common Induction process greatly aids efficient de-duplication and also provides a scalable infrastructure for inducting additional suppliers, content providers and other sources of data.

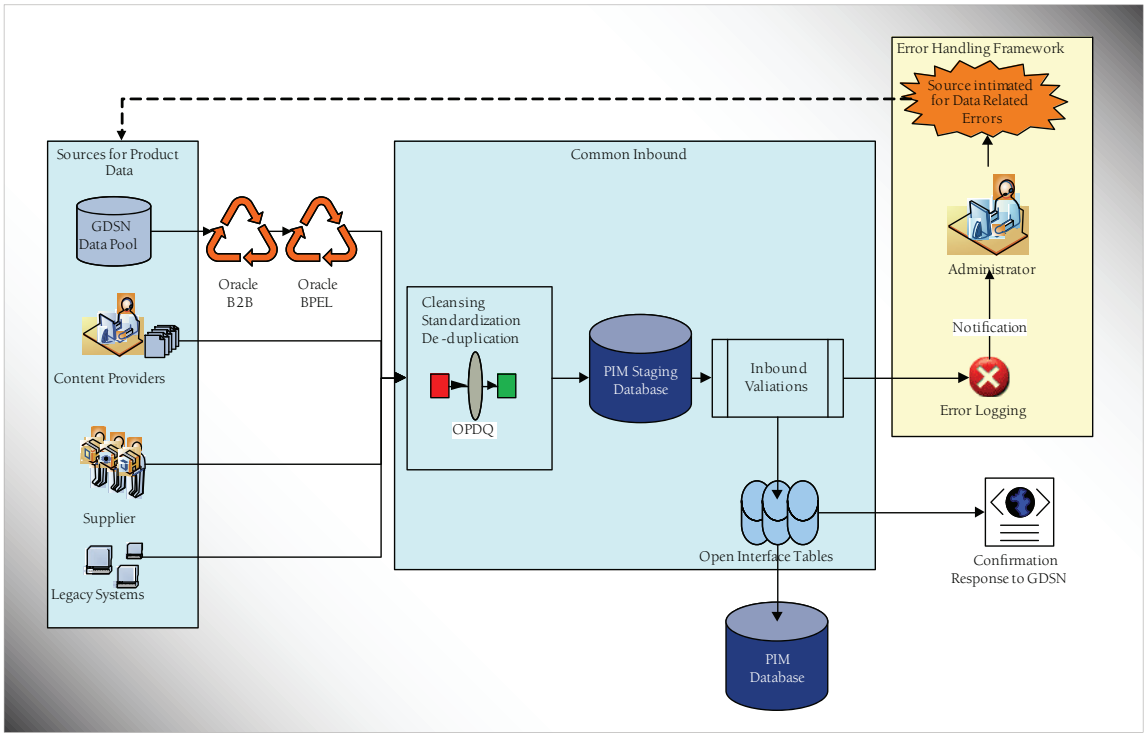
Additionally, product data from different source will have infinite variability in terms of format, content, syntax, and translation. Standardization is necessary before mastering in Oracle PIM and publishing to other downstream systems. Cleansing the product data variations specific to each category is difficult to achieve using traditional tools, custom code or through manual activity.

OPDQ with its semantic approach makes it a right choice as a tool for achieving single product record with required level of data quality. In the common induction mechanism, product data from different source are passed through OPDQ to identify duplicates, cleanse, standardize and execute business rules. OPDQ – Oracle PIM Out-Of-Box integration also helps in periodic cleansing of data that resides in Oracle PIM based on modified business rules. Positioning OPDQ in the architecture should be decided based on the business & organizational needs as different architecture helps business in different ways.

Different options are available to business for product approvals while processing the products. It is advisable to decide on the option based on the business & organizational requirements.

- Product data approval in OPDQ as in workflow without manual intervention.
- New Item request feature in Oracle PIM
- Change Management features of Oracle PIM

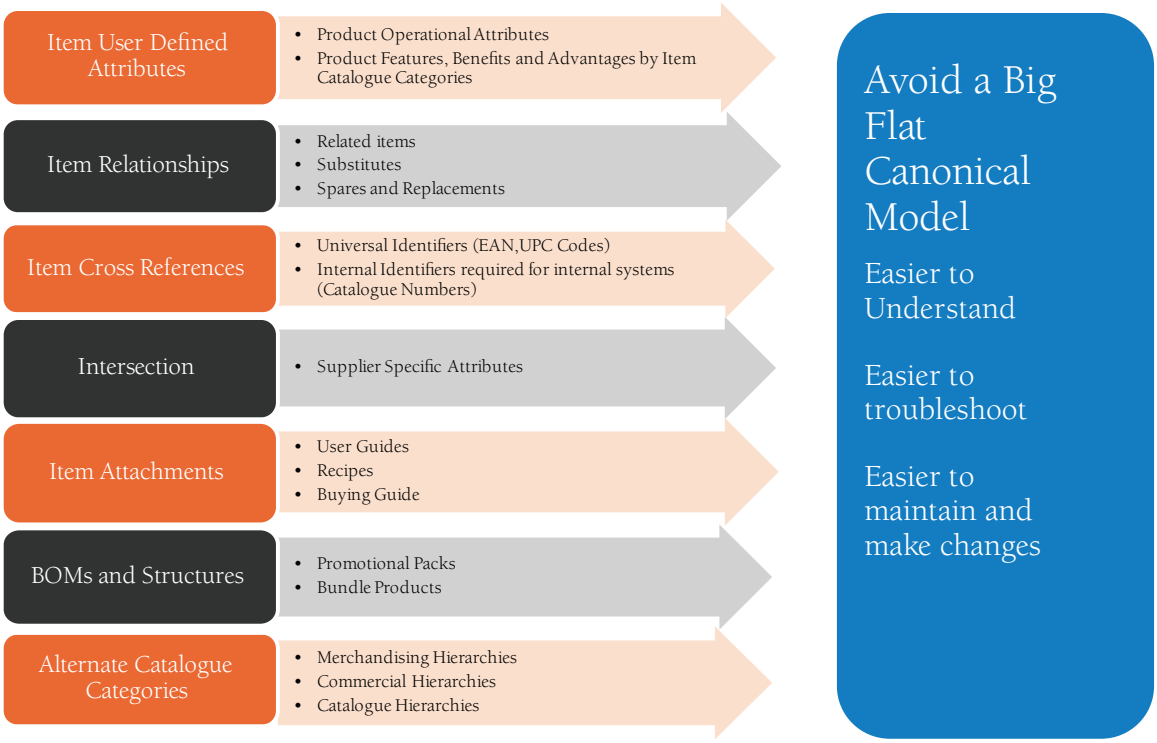
Product data received from different sources may involve different set of mapping and validations. Source specific data mapping can be handled through transformations in Oracle BPEL and through predefined templates based on business needs. Validations can be handled through a set of common functions such as mandatory conditions, list of values. Each source batch is configured to invoke specific functions to ensure data completeness and correctness. This provides a scalable framework where new sources can be enabled by configuring a new batch and validations required for the same.



Through an error handling framework product administrators will be able to view the errors encountered during induction, classified by error types. Corrective actions can be taken as per business needs and reprocessed.

4. Common Publish Framework

A product hub needs to provide a common definition of the product across the organization and publish product information for multiple downstream applications such as merchandising, order management, warehousing applications etc. The Infosys Oracle PIM solution achieves this by defining a product canonical model.



The canonical model consists of a definition of the product as an XML, mapping from each source system to the model, and mapping from the model to each destination system. The model contains the elements as shown in the pictorial above

Different product outbound batches are defined in the Common Publish Framework, along with trigger criteria and Oracle PIM entities/ attributes that are required for each batch. Each destination system subscribes to a specific outbound batch and any destination system specific mapping or transformation is maintained as configurations in the Integration Layer.

This common publish framework eliminates the need for point to point interfacing and drives other powerful benefits

- Eliminates the need for understanding the internal data formats of every interfacing system
- Schema/Data model changes in a system can be isolated from having impact on others
- New batches, sources and destination systems can be added without any changes in Oracle PIM, creating a scalable model which helps multi-tenancy and internationalization
- Adding categories and attributes can be handled through simple configurations rather than development, easing the process of category and range expansion

5. Channel Specific Metadata

Multi-channel commerce requires different types of product data available to surface the product. In distant selling channels like web, a granular definition of the product and additional metadata of attributes such as search-able, browse-able, key words, attribute descriptions, sequencing etc. are required to provide world class user experience such as side by side product comparisons and good search-ability. Other rich content such as professional reviews, awards, digital assets (such as images, videos, 360 etc.) are required to provide a touch and feel to the product.

Oracle PIM provides functionality to store various assets of a product. Channel specific metadata has been provided in the Infosys solution by leveraging the common publish framework.

6. Regulated Metadata Management

Product Structure Metadata consists of product data attributes, their data types, acceptable set of values, acceptable set of units of measures, date formats etc. This metadata is in a constant state of flux, especially in an environment where the SKU count and number of categories increases dramatically. The metadata also influences the mechanism in which various sources induct product information into Oracle PIM and various destinations interpret the published batches.

The common publish framework along with a regulated metadata management process have enabled a major retailer to double their category range

A robust mechanism for regulating these metadata changes in Oracle PIM and synchronizing with interfacing applications/ parties is essential for an organized increase in categories and SKUs. Lack of this will at best mandate frequent development in PIM & interfacing applications, and at worst result in Oracle PIM not being able to handle the pace of change that the business may require.

In the Infosys solution, various automation scripts are available for speeding the process of metadata changes in Oracle PIM. An extension has been created for staging the metadata in Oracle PIM such that changes are released to Oracle PIM users and interfacing applications only through a staged release process.

Conclusion

Oracle PIM, along with OPDQ and the Infosys solution provides a powerful platform for the retailer to derive real business benefits and could prove to be the vehicle for driving revenue expansion through category, SKU and channel expansion.

About the Authors

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