



One PIM White Paper

28/12/2021

Icecat NV

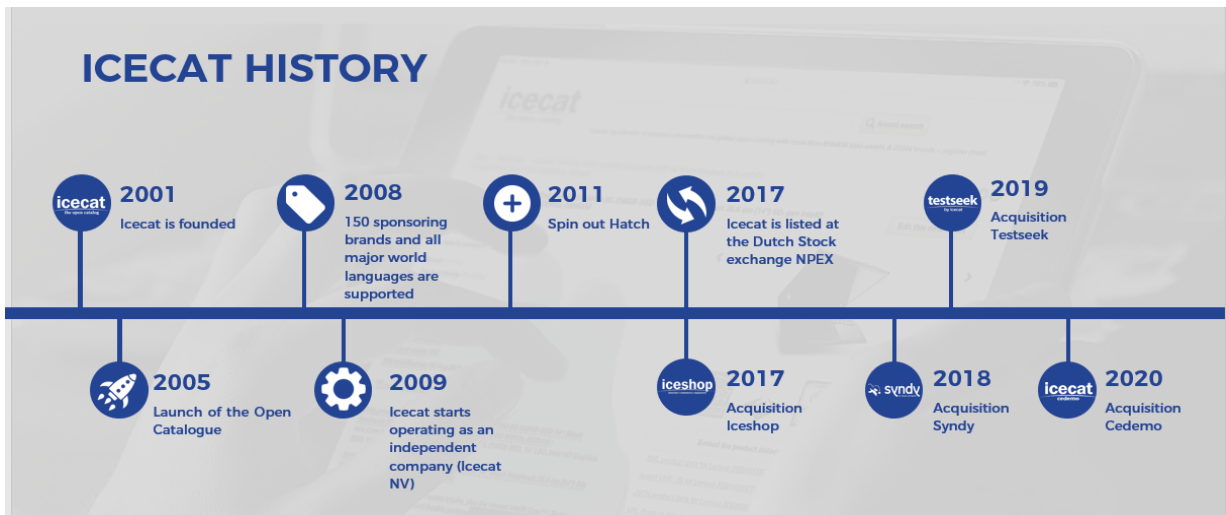
Contents

1 Introduction	1
2 Vision and Mission	2
3 Current Icecat PIMs	2
4 Icecat One PIM	3
5 Services	4
5.1 One PIM for Brands - Vendor Central	4
5.2 One PIM for Retailers	8
5.3 Single Sign On	11
5.4 Digital Rights Management – Authorization	12
5.5 Security	13
5.6 Centralized Data Storage	13
5.7 Taxonomy service	15
5.8 Multilingual supported	15
5.9 Statistics	15
6. Conclusion	18
7. About Author	18

1 Introduction

Icecat NV, headquartered in Amsterdam, is a global publisher and syndicator of product information for online and offline channels. We produce millions of products datasheets in all world languages that are distributed through various sales and marketing channels worldwide.

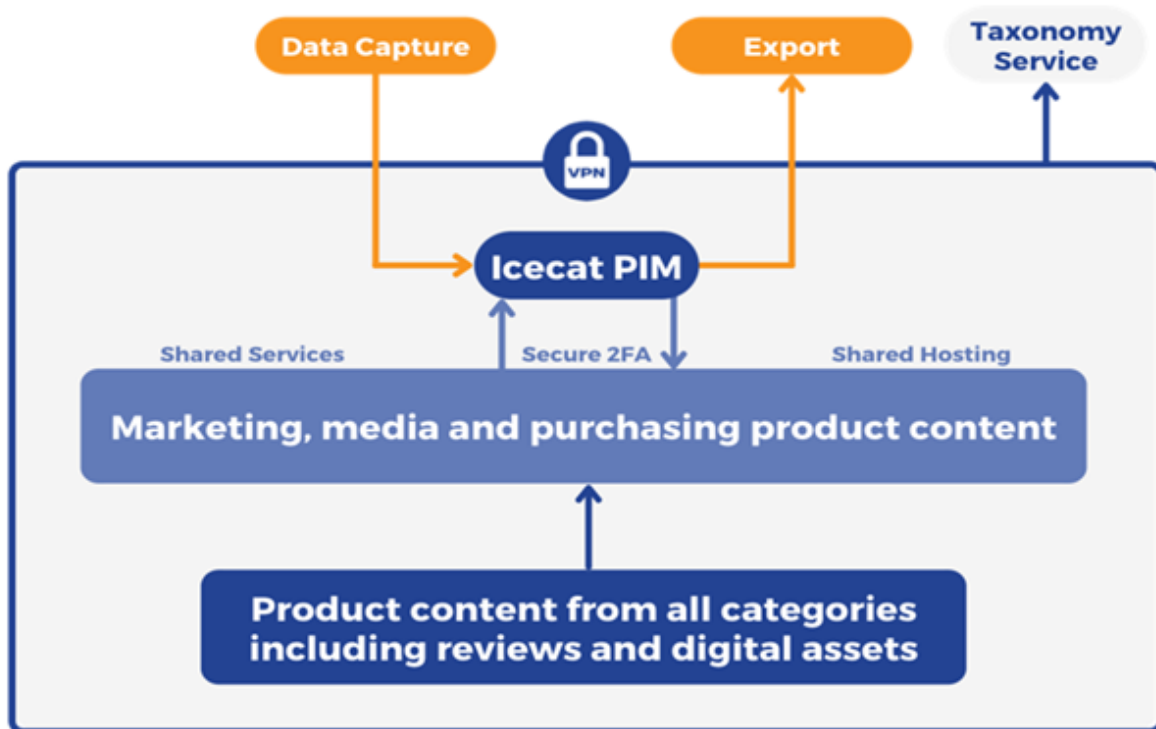
Icecat offers online cloud PIM, the Free Vender Central, in which the brands' product content is structured and automatically ingested by selected channel partners.



2 Vision and Mission

The Icecat group includes several companies, each with its own category specialization. We believe that any product or service will be offered online, everywhere offering an optimized buying experience.

Our mission is to support ecommerce through one global product catalog. The all-in-one platform, covering all products and services of any brand or retailer or category in any language or market across the globe. This is to help online shoppers make more sustainable buying decisions.



3 Current Icecat PIMs

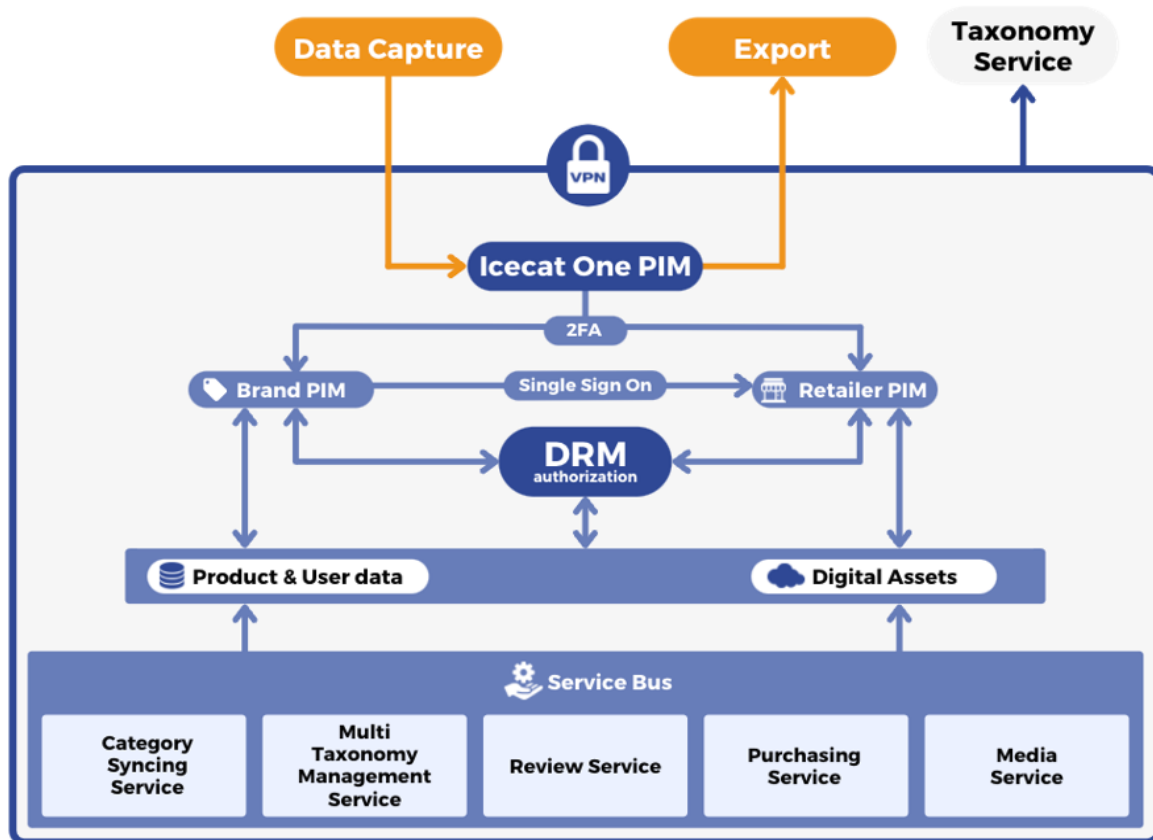
At present, we syndicate product information in all categories via category specific PIMs, each with its own specialization i.e., FMCG, Toy & Entertainment and Purchasing information.

To make user experience as seamless as possible, we would like to build a full-featured ecosystem, the Icecat One PIM where brands and retailers can take advantage of all capabilities of the Icecat group as one unique service offer.

4 Icecat One PIM

The Icecat One PIM will be able to distribute product content to any brand, retailer, e-commerce, and marketplace partner. The Icecat one catalog contains product content from all categories including product reviews, purchasing information, and digital assets.

Our goal is to build a more sustainable, centralized data-managed, inter-connected, shared micro-services and more secure ecosystem.



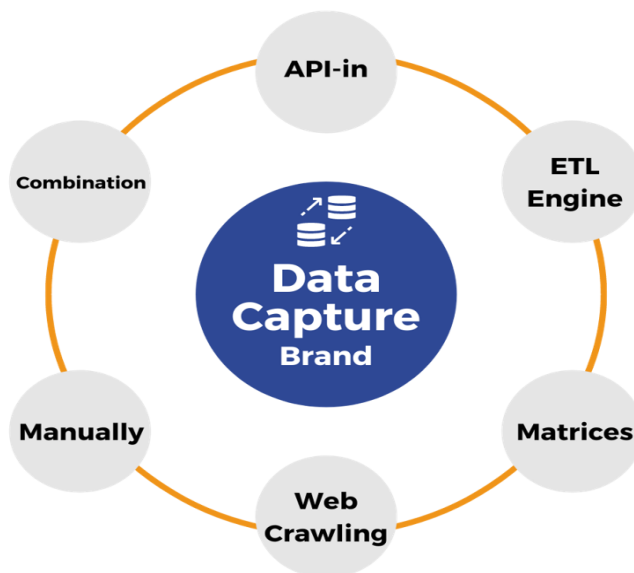
5 Services

5.1 One PIM for Brands - Vendor Central

5.1.1 Overview

Vendor Central is our chosen method for brand users to add and enrich their product content to the Icecat database. Brand users could manually enter the product data, or our editorial team can collect, transform, and import in the database. Then the enriched product content is immediately available for brand users to distribute further to their preferred channels, e-commerce partners or marketplace partners.

5.1.2 Data Capture



5.1.2.1 API-in

The API-in is primarily intended for the automated and easy ingestion of large datasets of SKU's from a brand to the Icecat database. Brand owner's IT team could integrate and push product content in JSON format.

The API will store data in Icecat taxonomy format which is then immediately available for brand owners to access via One PIM and/or distribute to their preferred partners.

5.1.2.2 ETL Engine

Extract-Transform-Load tool enables uploading a product feed from unstructured data source, apply validations and transformation rules to make data in Icecat taxonomy format and finally load data into the Icecat database. The ETL engine has a policy “Add if missing “. It means that only the information that is missing in a product will be added from the product feed. And thus, the rest of the data will remain untouched.

The ETL tool helps brick-and-mortar omni-channel businesses to enrich product data in Icecat One PIM which enables them to sell products on any online platform.

5.1.2.3 Web Crawling

Web crawling is the process of collecting structured and unstructured data on web pages by using a program or automated bot.

Icecat offers service to collect brand’s product information from other online sources and store them in Icecat database which then immediately available to further enrich in One PIM and distribute to their preferred partners.

The web crawling approach is preferred for business with product feeds from 3rd parties into their web shops. Due to complexities in 3rd party integrations, web crawling helps to collect data directly from web shops.

5.1.2.4 Matrices

Via matrices brands could add their product content to a data file. The data file is created in a matrix format so that it's very convenient for the brand owner to fill in the product content.

This approach is best suitable for brands who are having multiple subsystems to maintain product content. The brand owner could collect and put only relevant information into the data file.

The Icecat editorial team then with the help of import-export tool, will process into Icecat database which is then immediately available to distribute to their preferred partners.

5.1.2.5 Manually

When only uploading a handful of products, the manual way using the One PIM interface is the most convenient option to add product content to the Icecat catalog.

The brand owner could very easily enrich all kinds of product content via One PIM.

5.1.2.6 Combination

Often brands have stored their product content in multiple databases. Therefore, a combination approach of API-in, ETL, Matrices, Web Crawling or Manually is also possible.

In short, we offer all possible ways to collect product information from any sources and store them into the Icecat database.

5.1.3 Export



5.1.3.1 API-out

The API-out is primarily intended for the automated and easy ingestion of a brand's product information into their preferred channel or ecommerce or marketplace partners.

Brand owner's IT team could integrate and pull product content in JSON format. The API-out approach is most suitable when the consumer would like to have full control over product data to either store locally or customize as per their needs.

5.1.3.2 Icecat Live – Real Time Product Data

Icecat Live is a service that enables channel partners to retrieve real-time product content from hundreds of major brands or manufacturers from Icecat to any of applications, simply with a few lines of JavaScript code in the HTML template.

Icecat Live enables the seamless insert of a full product datasheet, and the seamless insert of individual content assets, without the need to use iframes. Further, Icecat Live is responsive by design and adapts to consumer's CSS style.

Icecat live gives flexibility to choose from a complete datasheet -or a specific object like a Video, a 3D tour, or Reasons to buy.

5.1.3.3 Manually

Icecat offers three download methods - the [XML](#), [JSON](#) or [CSV](#) format.

The consumer needs to have a shop-type account in Icecat One PIM and then the consumer will be able to manually download all product data sheets from products on which they have been authorized by brands.

5.1.3.4 Marketplace Connectors



Icecat offers ready to use product data connectors to the most popular marketplace partners, that allows brand owners to enrich product content in Icecat One PIM and automatically ingest product content to their online web shops.

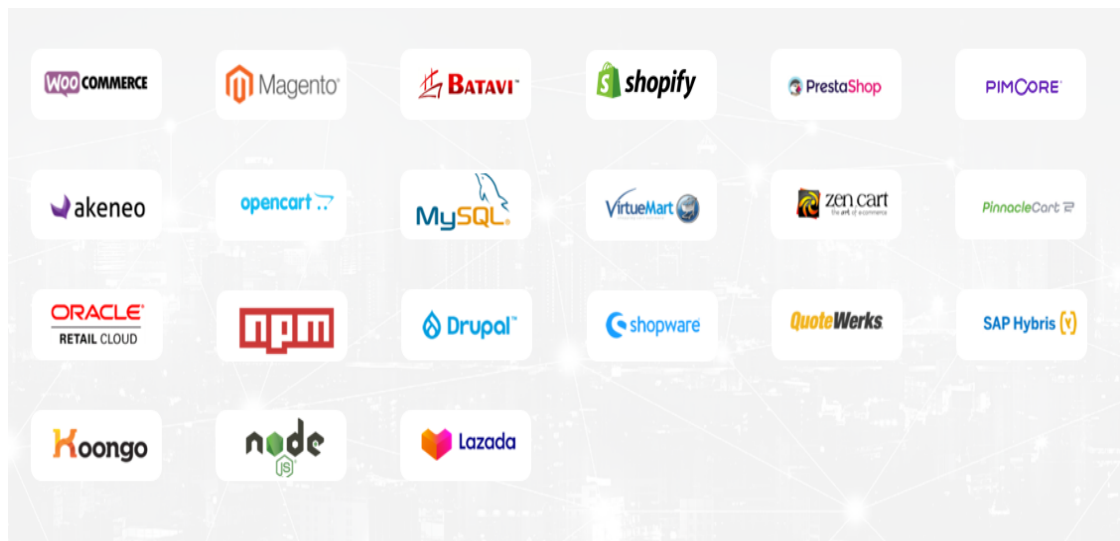
The standard marketplace connectors help brands to enrich product data content once and distribute to all the selling points. The integrations

include complete product content, digital assets and purchasing information.

5.1.3.5 E-commerce Integrations

Icecat offers ready to use integrations to the most popular and any e-commerce partners, that allows brand owners to enrich product content in Icecat One PIM and automatically ingest product content to their online web shops.

Likewise, the e-commerce integrations include complete product content, digital assets and purchasing information.



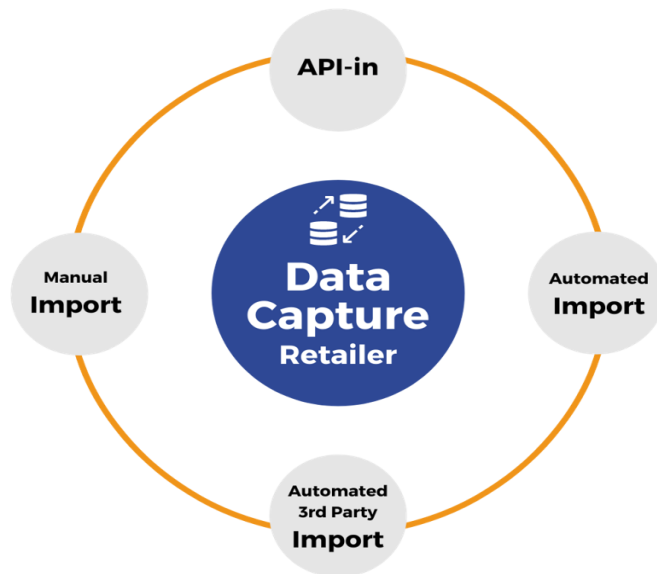
5.2 One PIM for Retailers

5.2.1 Overview

Retailer PIM is our chosen method for a retailer user to store, organize, and enrich all their product content and digital assets in one simple and easy-to-use cloud environment.

Retailers have the flexibility to store product content once via Template Exporter, which then gets mapped to every channel partner format. With Master Data Template, a retailer user could enrich the product content once and publish to all their channel partner specific formats in one go.

5.2.1.1 Data Capture



5.2.1.2 API-in

The API-in approach is primarily intended for the automated and easy ingestion of product data from Retailer's environment to Icecat's database. Retailer's IT team could integrate and push product content in JSON format.

The API will store data in Retailer specific taxonomy format which is then immediately available for Retailers to access via Retailer PIM and ingest or export channel specific taxonomy format product content in their online web shops.

The API-in approach is best suitable for Retailers who are continuously enriching product content in Retailer PIM and distributing updated content to their web shops on a daily basis.

5.2.1.3 Manually

Icecat offers service to retailers to collect data from any source and in any format. Then transform, validate, and map data in retailer specific taxonomy format.

Finally, the data is imported in the Icecat database which is then immediately available in Retailer PIM for enrichment or distribution to e-commerce partners and web shops.

5.2.1.4 Automated Import

The automated import is an extension of manual approach. The data collection, transformation, validation, and mapping to retailer specific taxonomy format happen in an automated manner. Icecat collects data on a specified frequency from a specified source e.g., sFTP or via integrations from retailer provided API's.

The import frequency could be set to near real time. This approach is best suitable for retailers who are continuously enriching product content in their environment and would like to immediately distribute to all their e-commerce partners or web shops via Icecat Retailer PIM.

5.2.1.5 Automated 3rd Party Import

Icecat offers service to retailers to collect data from 3rd parties on retailer's behalf. For example – to meet GS1 standards, retailers could publish product content to GS1. Icecat could collect data via GS1 integration and store in retailer specific taxonomy format in Icecat database which is then immediately available for further distribution.

This approach is best suitable for retailers who are maintaining product content internally in distributed sub systems.

5.2.2 Export



5.2.2.1 API-out

The API-out is primarily intended for the automated and easy ingestion of a retailer specific taxonomy format product content in their e-commerce partners or web shops. Retailer's IT team could integrate API and get full or daily index product content in JSON format.

The API provides flexibility to get complete assortment or a specific product or digital assets or purchasing information.

The API-out approach is most suitable when the retailers like to have full control over product content to either store locally or customize as per their needs.

5.2.2.2 Manual Export

The manual export feature gives retailers flexibility to generate export in their taxonomy format in a particular market in Excel format with providing an option to distribute to a group of users or specific email-addresses via Retailer PIM.

Additionally, Icecat offers service to generate excel exports on demand and send via email or upload to their environment.

5.2.2.3 Automated Export

The automated export is an extension to manual export. The entire process could be automated with one time setup.

5.2.2.4 Automated 3rd Party Export

Icecat offers service to retailers to ingest product content into their e-commerce partners or web shops. This includes market specific product data, digital assets and purchasing information. For example – in the FMCG category, we provide custom widgets to ingest nutrients & allergens information which could be easily consumed using iFrame.

5.3 Single Sign On

Single Sign On feature will enable users to seamlessly switch between Brand and Retailer PIMs. The user will be able to register once and use all the PIM service seamlessly.

5.4 Digital Rights Management – Authorization

Icecat offers the brand's Digital Right management (DRM) functionalities via One PIM. DRM is a set of functionalities to control which Icecat user is authorized to access and/or manage which information from which Locale. The DRM system manages the brand's syndication policy, ranging from very open to very restricted. Also set release and end-of-life dates per product

On every product in the Icecat, the user has control to define restrictions via the "Publication restrictions" option in the one PIM.

Public restrictions	
Publish	Yes
Release date	16-02-2016
End of life date	DD-MM-YYYY
Product has private assets	Yes
Brand restriction policy	Yes
Accessible by	All users according to brand restriction

5.4.1 Brand Restriction Policy

Brand owners can define a syndication policy not just on product level, but also on the level of a Locale (country) for all the products. Further, de Locale restrictions can be set for just Open Icecat users or the whole Icecat user list via DRM. It can also consider blocking users from certain countries.

5.4.2 Authorization to Resellers

Brand owners have full control over giving authorization to resellers. This is controlled by "Publish: Limited. The Brand owner then assigns User(s) from its brand-specific predefined authorized reseller list. Only authorized resellers will then have access to product content.

5.4.3 Private Digital Assets

Brand Owner has full control over all digital assets at product level via 'Product has private assets' functionality in One PIM. If the product has private assets, then the Brand Owner can authorize user(s) to have access to private digital assets. An unauthorized user won't be able to see or download private digital assets.

5.5 Security

5.5.1 Infrastructure

The all-in-one ecosystem's infrastructure will be protected and secured via VPN and two factor authentication. Further, the data will be security stored in a distributed cloud environment. To gain local speed, the infrastructure will be implemented in a hybrid-mode. All the industry recommended security vulnerabilities will be regularly scanned and appropriate patches will be immediately applied.

5.5.2 IP Filtering

The extra security layer has been added to access information, APIs, and Applications. The IP address of the user needs to be whitelisted. It can be managed via the user account or by account managers.

5.6 Centralized Data Storage

5.6.1 User Management

The user registration will be centrally managed by One PIM. The users of the sponsoring brands and their respective channel partner users will be able to register once and will be authorized to gain access to Brand PIM and/or to Retailer PIM.

5.6.2 Product Data Management

The Micro-services supported architecture will enable it to manage complete product data centrally.

5.6.2.1 Category Syncing Service

The service will be responsible for maintaining and syncing all-categories product data at centralized storage. This service will be implemented in such a way so that data from any taxonomy format could be easily stored in the Icecat database.

5.6.2.2 Media Service

The service will be responsible for managing all types of digital assets, i.e., Images, 3D Images, Videos, Documents etc.

5.6.2.3 Reviews Service

The aggregated and standardized reviews from thousands of high-quality online publications from over 70 countries will be available at centralized storage which can be easily consumed via XML or Live API to channel or ecommerce partners. Further, reviews will be categorized in Expert, Consumer and Video reviews.

5.6.2.4 Purchasing Service

The service will be responsible for dealing with product purchasing information. Firstly, the service will manage importing pricing and logistic information from multiple sources and store at centralized storage. Secondly, the service will manage exporting pricing and logistic information to multiple channel, ecommerce, and marketplace partners.

5.6.2.5 Multi-Taxonomy Management Service

The service will be responsible to collect data from any taxonomy format and map into Icecat taxonomy format and vice-versa.

5.6.3 Advanced Product Stories Management

Product Story provides a brand's look and feel and presents its content in a brand-consistent way across. Each product story has a branded layout of multimedia and messaging assets to provide a recognizable and immersive online shopping experience. With just a few lines of JavaScript, product stories are easy to consume in HTML templates.



5.7 Taxonomy service

The taxonomy is a core database within One PIM. It defines the data model per product category and the database integrity rules per product attribute in the data model.

The taxonomy engine defines the units in which specifications are expressed for example - gigabyte, mm, inch, conversion rules between, like the imperial and metric systems, and the spec value tables with allowed values per attribute.

The Icecat Taxonomy Service standardizes its domain completely so that any conversion, mapping, or translation can be fully automated. It allows for domain-specific, multilingual, and localized data model creation.

5.7.1 Taxonomy Service to Brands

The Icecat taxonomy management service enables brands to map their taxonomy to Icecat taxonomy. This helps brands to automatically enrich product content in Icecat One PIM. Further, Icecat's taxonomy service gives flexibility to the brands to choose their preferred method of enriching the product content, it can be via API-in or manual or via 3rd party integrations.

5.7.2 Taxonomy Service to Retailers

The Icecat taxonomy management service enables retailers to map Icecat taxonomy to their taxonomy format. This gives retailers the flexibility to further distribute enriched product content from Icecat to their preferred selling channels, it can be to web shops or ecommerce or marketplace or any 3rd party sellers.

5.8 Multilingual supported

The Icecat catalog supports product content in more than 60 popular languages and locales worldwide. Therefore, most channel partners of a brand will be able to use the product content in their local language. And a brand is able to adapt its messaging to local requirements.

5.9 Statistics

Proactive, aggregated reporting to get insights around missing product information and engage Brands and Retailers to increase completion score.

5.9.1 Product Coverage Report

The product coverage report gives the complete insight about the coverage of Brands' portfolio. A brand user could also upload an excel file with product identifier details to match the catalog coverage within the Icecat database. The report will give a categorized view of catalog in matched and non-matched products.

Report also provides an option to include Completeness score per product in the coverage report.

Product coverage report	
Category	<input type="text" value="Any category"/> <input type="checkbox"/> include subcategories
Brand	<input type="text" value="Any brand"/>
On market	<input type="text"/> <input type="checkbox"/> on stock <input type="button" value="Report"/>

5.9.2 Number of product datasheet requests

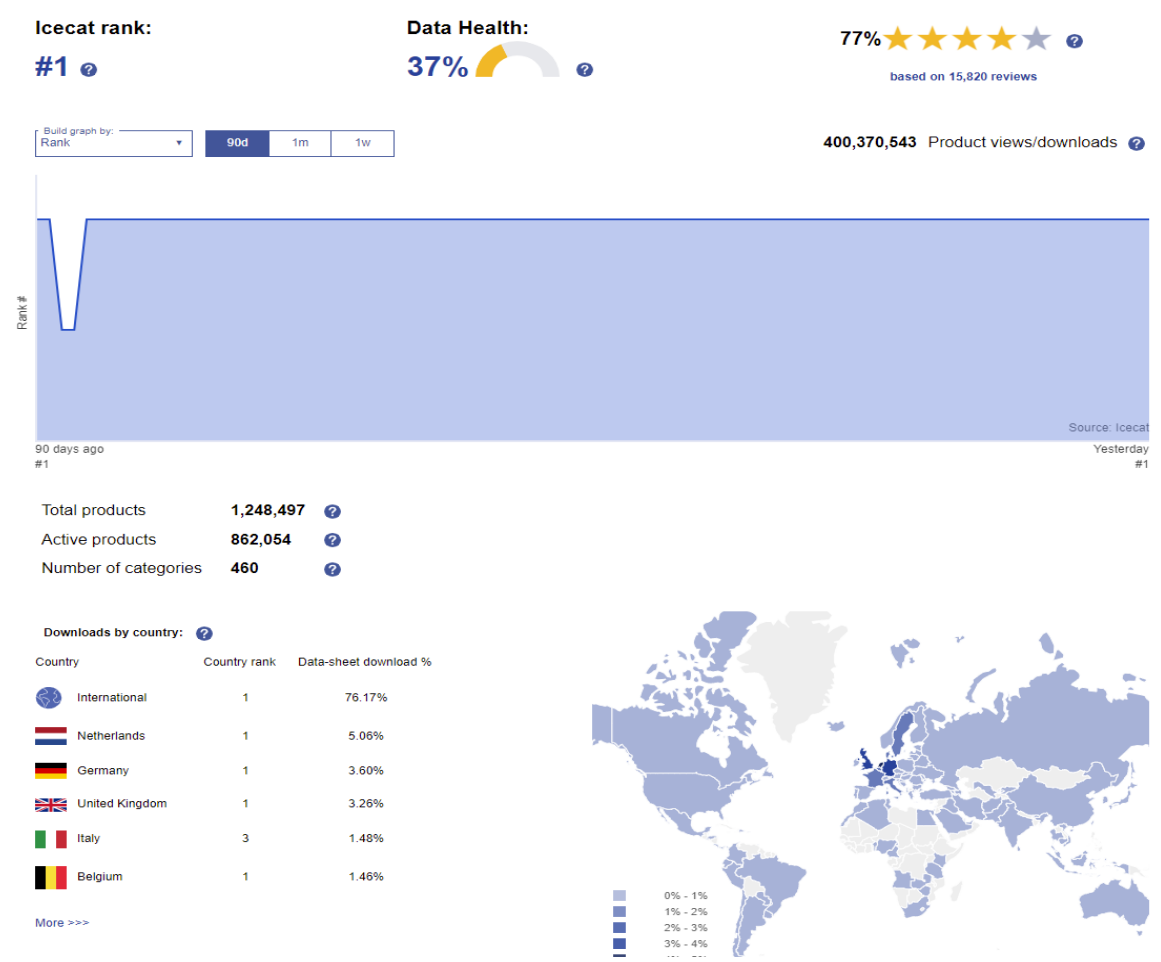
The brand owners could generate a product datasheet visit/download report to understand patterns in their selling space. The report could be categorized further by request type, brand, category, distributor, product country, by users and so on. The report could be generated in multiple formats and shareable via emails.

This allows brand owners to get a clear picture about their product catalog utilization pattern and allows them to explore and/add marketing and up-sale opportunities.

Request type !	<input type="text" value="live"/> ?
Brand !	<input type="text"/>
Brand sponsoring	<input type="text" value="no sponsor"/> ?
Category !	<input type="text"/>
	<input type="text"/>

- live
- xml
- url
- csv
- www
- live
- json
- xml+csv
- www+url

5.9.3 Real-time e-commerce brand ranking



On Brand Dashboard - we show the global rank-number of a brand, based on a moving time-series with product data-sheet downloads by consumers and e-commerce business partners over the past 90 days. Further, we show a graph of the past 90 days of the ranking evolution, product data-sheet downloads, and the number of downloading e-commerce platforms. We give the total number of downloads per selected period, the total number of a brand's product data-sheets in our database, and the number of categories that are relevant for the respective brand. We limit this stat to the products that we currently see on the market.

On the same Brand Dashboard - we show a list of the most popular products of the respective brand. For every brand its most popular products in the Icecat catalog are based on (tens of) thousands of requests. The ranking of the most popular products is based on the number of product data-sheet views and downloads by end-users and channel partners.

		views/downloads
	HP 14-cm0059au 4NB95PA	95,570
	HP LAN Thermal Receipt Printer M2D54AA	33,769
	HP USB for PC keyboard QY776AA	31,904
	HP 301 Tri-color Original ink cartridge CH562EE	27,424
	HP 301 Black Original ink cartridge CH561EE	25,607
	HP 304 Black Original ink cartridge N9K06AE	25,275
	HP 300XL High Yield Black Original ink cartridge CC641EE	25,258

6. Conclusion

As a responsible company, our mission aligns with our commitment to the Planet. In other words, we are taking a closer look at our footprint and the impact we have through our value chain to find opportunities to improve our sustainability and have a greater impact. So, we are busy creating a more sustainable, centralized data-managed, inter-connected, shared micro-services and more secure ecosystem. This is in order to help online shoppers make better sustainable buying decisions.

7. About Author

Prakash Dagwal, Program Manager – Icecat One PIM