

# PTC® Live Global

## PTC121 - Unified Search

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## Search isn't just about retrieving information

PTC® Live  
Global

*Retrieval of captured knowledge for use is just the starting point...*

- Improve Users Productivity by reducing time to retrieve and access context specific, meaningful and precise information
- Promote Reuse & eliminate redundant work
- Find context specific information to reuse in your design fast – at the very first attempt
- Formulate queries to understand complex relationship between product data
- Employees and partners from across the globe search in multiple language and use different units
- Supports collaboration by bringing people together—often from different geographies on same page
- Security - Protect corporate intellectual property by access control
- Ensure retrieved information is filtered so that it does not compromise on corporate intellectual property - critical in outsourcing and offshoring environment



### What we know about it?

- Search is used heavily
  - Each year additional GB of data per user gets into the repository
  - Engineers spend 30% of their time searching
- Users repeat the “same” search often with some modification
- Search needs to be fast, efficient, relevant, intuitive, configurable, scalable and secure
  - Leverage latest enhancement in technology (facets, taxonomies, synonyms)
  - Simple for end users
  - Complicated queries for advanced users
- But Google/Amazon Like Search is not sufficient
  - Product data is structured differently and results need to be presented differently
  - Authentication must be checked
- Users are looking to find a specific piece of information and want to do a targeted search



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## Advanced Search

- Advanced Search Query to **include Classification Search** capabilities
- Ability to Search/Query on **related object** attributes
- Improved display of Search results (with **dynamic columns, KWIC** and classification attributes on the **Search result table views**)
- More Flexibility and Intuitiveness on the Search Query with the ability to perform **Nested Queries**
- Ability to refine Search Results by using **FACETS** on the Advance Search Page
- Introduction of a new **Classification Explorer** with enhanced Classification Browse + Free from search capabilities
- New **Find similar** action on the Search Results table



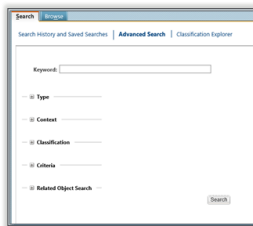
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## Simple Google type Search for users who do not need complications



End users need simple search capabilities with ability to perform search from a high level that results in broad search results. We continue to support quick keyword search capabilities with more advanced and high performance Search engine (Solr 5.1.1 and Tika 1.7)

**Keyword search – The simplified version of the Advance search page**



**Global search with the type picker**



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### Keyword Search

Search on Content and meta Data

### Type Field Set

Select Object Types

### Context Field Set

Select Contexts to search on

### Classification Field Set

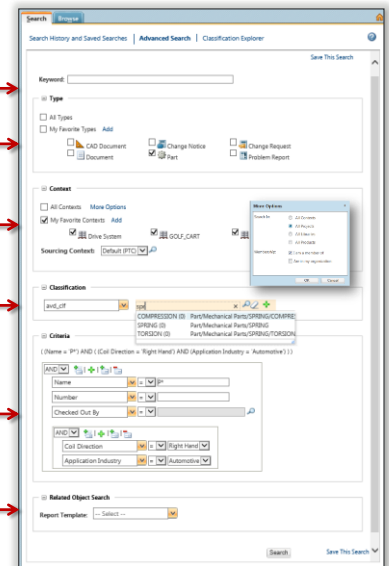
Select Classification(s) for Parts to Search against Type Ahead for classification nodes

### Criteria Field Set

Specify Criteria against Classification Modelled or soft attributes  
Picker for multi values attributes  
Create Complex Queries with Grouping and Nesting

### Related Object Search

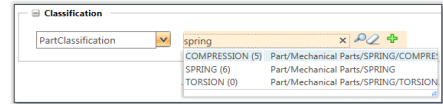
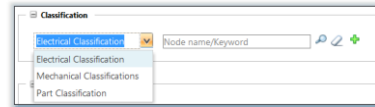
Search against attributes of related objects  
Build complicated relationship scenarios on the report template and execute on Search



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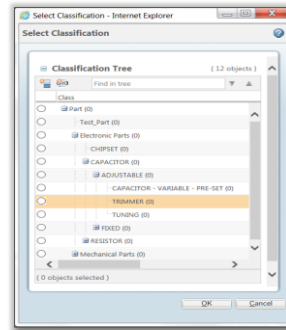
## Classification Field Set

- The concept of Binding Attributes – Filters the list of classification nodes that are relevant for an end user
- Type ahead for classification nodes – Ease of search
- Relevancy - Number of parts classified against a classification node are shown next to the node
- Exposure to the full path of the classification node



What if I don't know which node to search against?  
Ability to pick a classification node from the classification structure

- Tree capabilities like "Find in Tree"
- Next and Previous match from "Find in Tree"
- Expand and Collapse
- Total number of parts classified
- Number of parts classified against each node

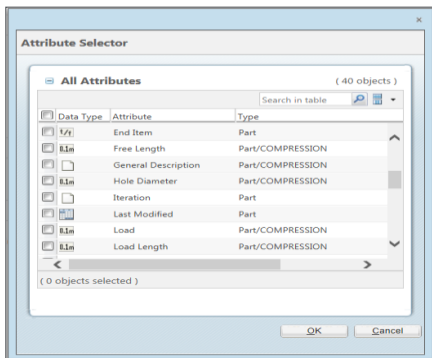
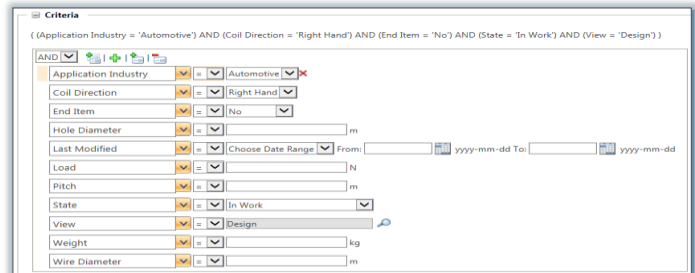


Multi Classification (+)

- Ability to search against multiple binding attributes
- Ability to search against multiple nodes against the same binding attribute

## Classification Attributes on Query Builder

- The new Criteria field set includes all classification attributes with modeled attributes and Soft attributes
- The Classification attributes (for the selected Classification node) are available on the query builder



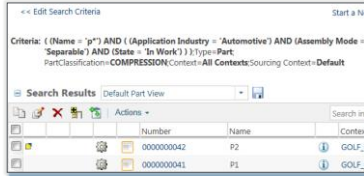
## Classification Attributes in the Attribute Selector

- The Attribute picker shows a list of all classification attributes with the Object type attributes (Part)
- The attribute picker shows three columns – Data type (with icons representing a type of attribute), Attribute name and the attribute type
- In case of Classification attribute, the attribute type shows the complete path of the Classification Node
- Multi-select – Ability to select all relevant attributes in one go

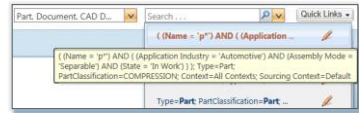
# Advanced Search Query to include Classification Search capabilities

Inclusion of the Classification Attributes on the search criteria at all locations

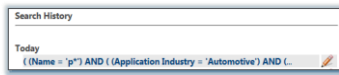
On the Search criteria string



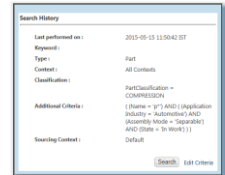
On Global Search history



On Search History



On Mini info page

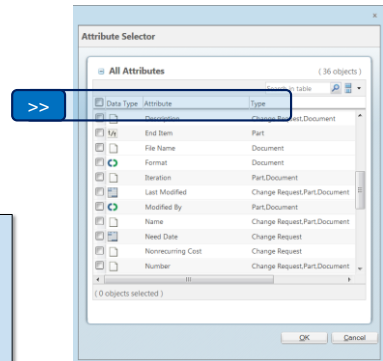
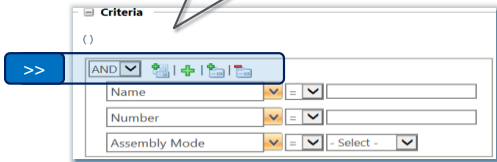


# Ability to perform Nested Queries



AND AND/OR Operator (Default is AND)

- Launch the Attribute Selector to select multiple attributes in one go
- Add a new row to add an attribute using the drop down picker
- Add a new Group to club multiple attributes with an AND/OR operator
- Remove a Group

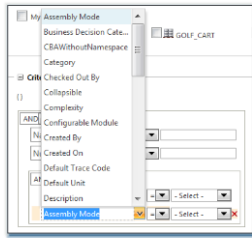


Columns on the Attribute Selector help easier identification of attributes enabling appropriate selection

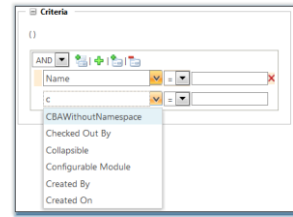
- > **Data Type** – Shows the type of attribute (String, Date, Real number, boolean, reference etc.)
- > **Attribute** – Display name of the Attribute
- > **Type** – All types/Nodes that the attribute is relevant for

# Ability to perform Nested Queries

- Drop down picker for attributes
- The list is driven from the objects types selected from the type picker

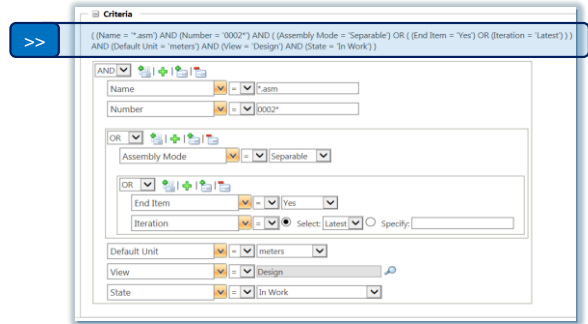


- Type ahead for attributes, the list is dynamically refreshed as text is entered



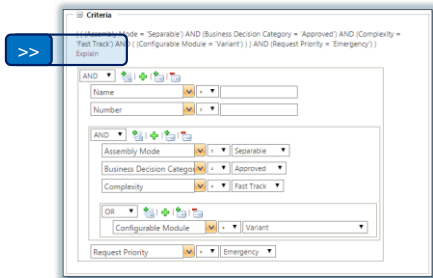
The search query created on the query builder is also displayed in a textual format (as a more meaningful and understandable representation) :

- The criteria string represents the complete nested query in a string format (that includes Boolean operators, both between groups as well as individual attributes).
- The query represents nested loops in parenthesis.
- The string only displays attributes against which a value has been selected.
- The string is localized.
- The string is wrapped if too long (will continue in the next row)
- When there is no criteria added, then only the default brackets are shown in the criteria string.

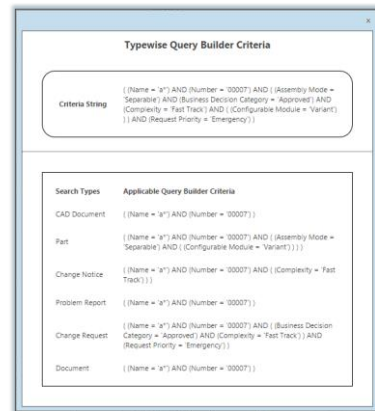


# Ability to perform Nested Queries

- When multiple object types are selected to build a query, each attribute on the query builder could be relevant for multiple types. To avoid any post execution complexity, user needs to understand which attribute would result in search results against which object type. An “Explain” link is available at the end of the Query Builder, which shows a breakup of the query against each object type



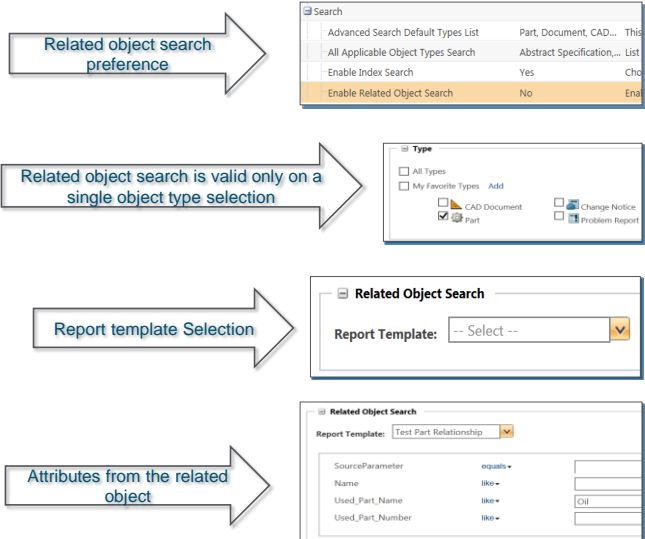
On clicking the Explain Link



# Search/Query on attributes of related objects

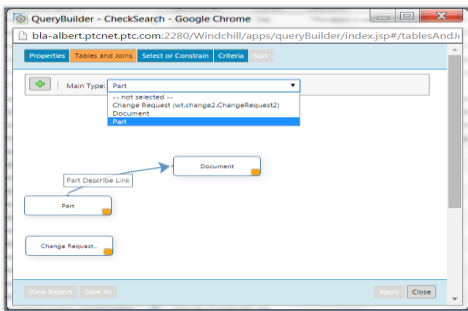
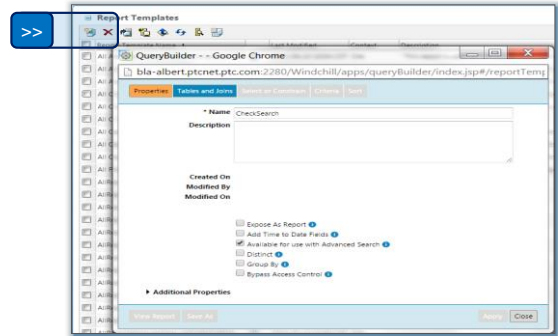
## Related Object Search

- Advance power users have always wanted to formulate a search with knowledge of not just the objects they are looking for, but also about associations that the object has with other objects.
- Advance users can now build complicated queries on report templates and execute the query on the Advance search page
- End users will now be able to select a report template to display the attributes of associated objects, enter values for the attributes and execute search



# Search/Query on attributes of related objects

- An administrator will need to create a Report Template (with the desired associations)
- Ability to enable the availability of a Report Template on the Advance Search page



- Complex relationships can be built on the Query Builder (the new graphical UI has advanced features like drag and link)
- The report template is exposed on the advance search page, that shows all attributes for the associations selected on the Query Builder
- Ability to execute search against this Query

# Improved display of Search results

## Keyword in Context

Keyword: master

<< Edit Search Criteria Start a New Search Save This Search

Criteria: Keyword=master ;Type=Document;Context=All Contexts

Search Results (2 objects)

Number	Name	Text Preview	Context	Version	State
0000000001	Approach_Search_Mult_Language_Support_v3[1]		GOLF_CART	A-2	In Work
0000000021	Approach_Search_Mult_Language_Support_v3[1]				

Text Preview  
Or it can be in the translation dictionary. Or it may not be present if the master text is not yet translated.

- The keyword entered on the search page was "master".
- The search results table reflects the documents that have the word "master" in the content of their attachments.
- The text preview column on the search results table shows icons, which on mouse rollover display a sentence where the word "master" is used

- To enable this feature, property "wt.index.enableTextPreview" needs to be set to true (OOTB it is set to false)
- Any change in the property setting will require re-indexing.
- This feature is only supported for Windchill Documents.
- "Text Preview" column will be available for selection only when Document type is selected.
- The "Text Preview" column needs to be manually added to the search results table view.

# Improved display of Search results

## Dynamic Columns

Criteria

((Name = "P1") AND (State = "In Work") AND (Assembly Mode = "Separable") AND (Created By = "Site, Administrator") AND ((Application Industry = "Automotive") AND (Material = "Stainless Steel")))

AND

Name = P1

State = In Work

Assembly Mode = Separable

Created By = Site, Administrator

AND

Application Industry = Automotive

Material = Stainless Steel

- Attributes (with predefined values) selected while building the search query are displayed as Column headers with the selected values populated on the search results table on execution of the query

- Classification Search:
- If the search criteria includes both typed attributes (for the part) as well as Classification Attributes, on execution, the search results table collectively shows all attributes as columns with the values populated
  - In addition, for classification search, it also shows a column that reflects the complete path of the node against which the part is classified

Criteria: ((Name = "P1") AND (State = "In Work") AND (Assembly Mode = "Separable") AND (Created By = "Site, Administrator") AND ((Application Industry = "Automotive") AND (Material = "Stainless Steel"))) ;Type=Part; PartClassification=COMPRESSION;Context=All Contexts;Sourcing Context=Default

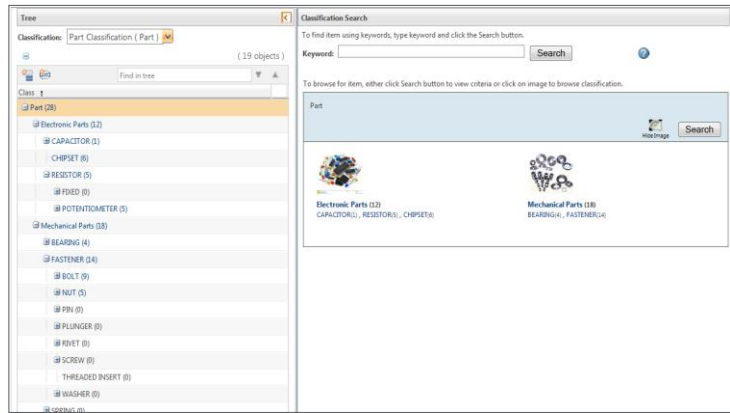
Search Results (2 objects)

Number	Name	Context	Version	State	Assembly Mode	Created By	Application Industry	Material	PartClassification	Last Mo
0000000042	P2	GOLF_CART	A.1 (Design)	In Work	Separable	Site, Administra...	Automotive	Stainless Steel	Part/Mechanical Parts/SPRING/COMPRESSION	2015-05
0000000041	P1	GOLF_CART	A.1 (Design)	In Work	Separable	Site, Administra...	Automotive	Stainless Steel	Part/Mechanical Parts/SPRING/COMPRESSION	2015-05

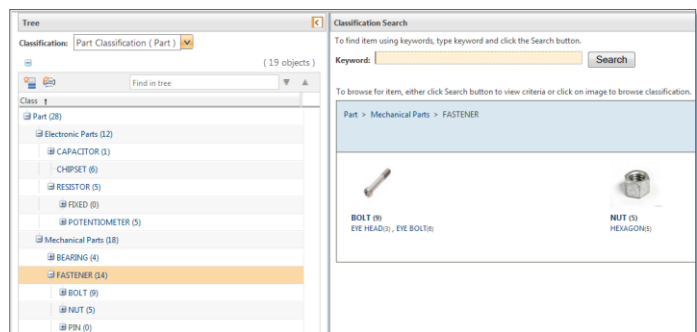


# Classification Explorer

- The new Classification Explorer retains the old look and feel of the legacy classification search but with advanced browsing capabilities
- We now have a Classification tree which works flawlessly with the old classification browser. So user can pick any node from the tree and further navigate to the lower levels as needed

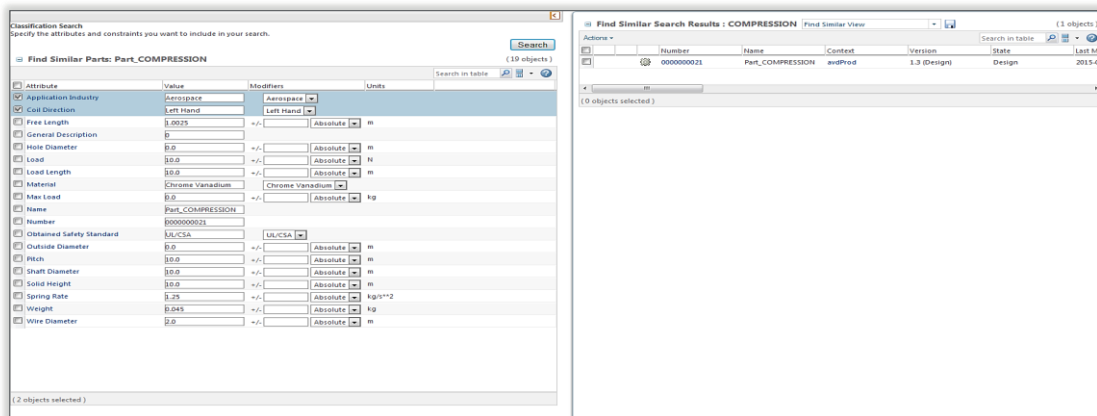
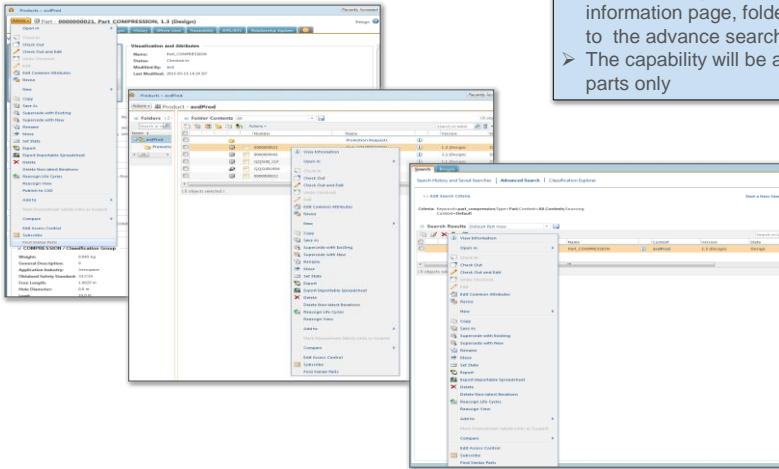


# Classification Explorer



## Find Similar Parts

- The “Find Similar” capability allows searching for other classified parts matching to the values of a given classified part
- The existing find similar capability is exposed as an action only on classification search result table.
- This capability will now be exposed on all other locations like part information page, folder browser, Part structure browser (in addition to the advance search results table)
- The capability will be available as a row level action for classified parts only

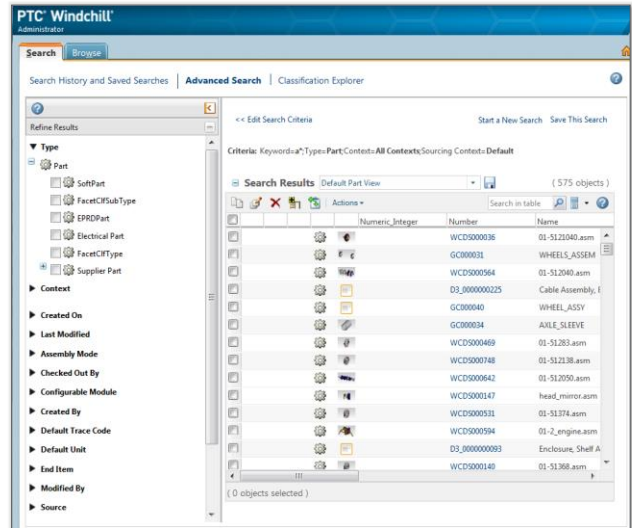


# Refine Search results using Facets

## FACETS

Facets, also known as filters, are a part of the Solr search technology powering PTC Windchill Index Search

- With the availability of Facets, there is no need for users to know the exact search criteria when searching for data.
- Users only need to have a broad idea of what they are looking for, perform search and then further refine their search results using facets, till they narrow down to the exact content they are looking for.

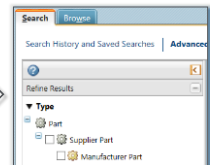


# Refine Search results using Facets

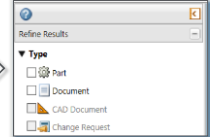
## Filter search results based on TYPE selection

- Ability to filter search results based on object types using TYPE Facets (only if "All types" OR multiple types were selected while performing the search query)
- When "all types" is selected then only those types will be present in type facet which are applicable to the search results.
- When multiple types are selected then all selected types are displayed, but if a type is not applicable to the search results, it is greyed out.
- Ability to select more than one type from the type facet
- Progressive disclosure: Facets will refresh as per type selections
- Search results will refresh as per type selection from facets
- Only common attributes will be shown in case of "All types" and multiple type selections

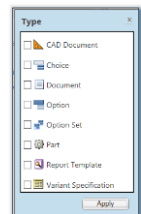
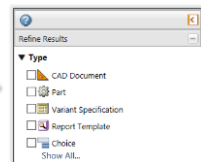
Filter on subtypes (on execution of search on a Single type)



Type Filter (on execution of search on multiple types)



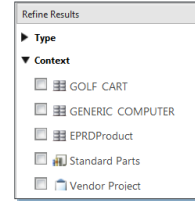
Type Filter (on execution of search for all available types)



# Refine Search results using Facets

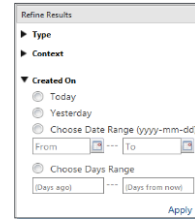
## Filter search results based on Context selection

- Ability to identify Contexts by icons (Product/Project/Library/Program)
- Selected contexts will be shown as facets if explicit contexts are selected on advanced search page
- Contexts are Access controlled



## Filter search results based on Date attributes

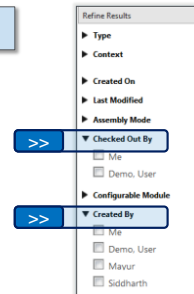
- Options available for filtering search results based on date attributes such as created on/ last modified on:
- Filter on Today, Yesterday
  - Choose Date Range with Calendar inputs (From this date → To this date)
  - Choose Days Range with input text boxes (From X number days ago to Y number days from now)



# Refine Search results using Facets

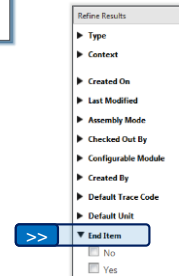
## Filter search results based on Principle type attributes (user picker)

- Ability to filter search results based on user attributes (such as Created by/Modified by)
- The first option to filter is 'Me'
- User can select more than one value (checkboxes)



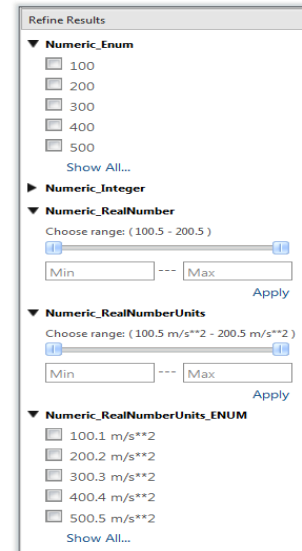
## Filter Search results based on Boolean Attributes

- Both the values are displayed as checkboxes
- If none of the values are selected, the result table shows objects for all values (including 'undefined')
- If both the values are selected, the result table shows objects with both the values (minus "undefined")



## Numeric facets

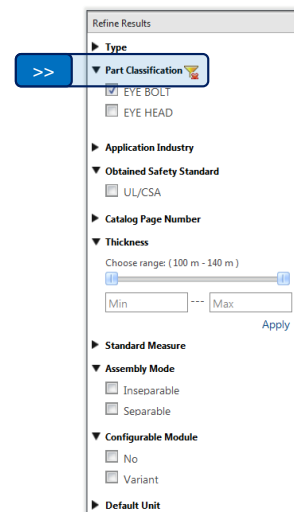
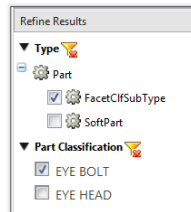
- Facets are rendered for all numerical data type attributes
- A range is displayed based on the minimum and maximum values of that attribute for the given set of search results
- Ability to use sliders to adjust the min and max values
- Ability to enter text in the min and max boxes in case precise values are known
- Precision handling (for decimal values)
- Validation for data input for out of range values



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## Classification Facets

- The Binding attribute is shown as per the selection on the Query Builder
- The leaf nodes (or all relevant nodes) are displayed as values under the Binding Attribute to enable further filtering
- The facet list is refreshed and Classification attributes related to the selected node/s are available as facets



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# Refine Search results using Facets

## Administrative actions

- Facets can be enabled/disabled using a preference available at all levels (Site/Org/Context/User level)
- The Preference is disabled by default at all levels

Search		
Advanced Search Default Types List	Part, Document, CAD ...	This preference specifies the object types d
All Applicable Object Types Search	Abstract Specification, ...	List of types shown in Type Picker in Search
Enable Index Search	Yes	Choose to perform an index search when t
Enable Related Object Search	No	Enable Related Object Search on the Advan
Enable Search Facets	Yes	Enables facets on the Search results page.

- All facets applied to filter data are shown as a string above the search results table
- Each facet has a remove icon next to it
- A "Clear All" action is available at the end of the string
- On removing a Facet or clearing all filter, the search results table is refreshed back to the original state.

Criteria: Keyword:0\*Type:Part;Context:All Contexts;Sourcing Context:Default

Filter: Type:SoftPart @ Assembly Mode:Separable @ Configurable Module:Advanced Configurable @ Context:SearchTestProduct @ Clear All

	Number	Name	Context
		FACET_SOFTTYPE_DA...	Facet_SoftType_DateFacet_03
		FACET_SOFTTYPE_DA...	Facet_SoftType_DateFacet_02
		FACET_SOFTTYPE_DA...	Facet_SoftType_DateFacet_04
		FACET_SOFTTYPE_DA...	Facet_SoftType_DateFacet_05
		FACET002203	Facet_SoftType_EnumNumericWithInt_05
	180	FACET00297	Facet_SoftType_NumericAttributes_08
		FACET00204	Facet_SoftType_EnumNumericWithInt_06

# Refine Search results using Facets

## Other useful features

- Expand/Collapse states are sticky for the user
- An indication to show that the filter has been applied against a facet.
- On clicking on indicator the filter is cleared

- There is a property to configure the number of values displayed as a list under each facet.
- By default five values are displayed
- A "Show All..." link is displayed below these 5 values
- Clicking on the link will show all the values in a fly-out

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