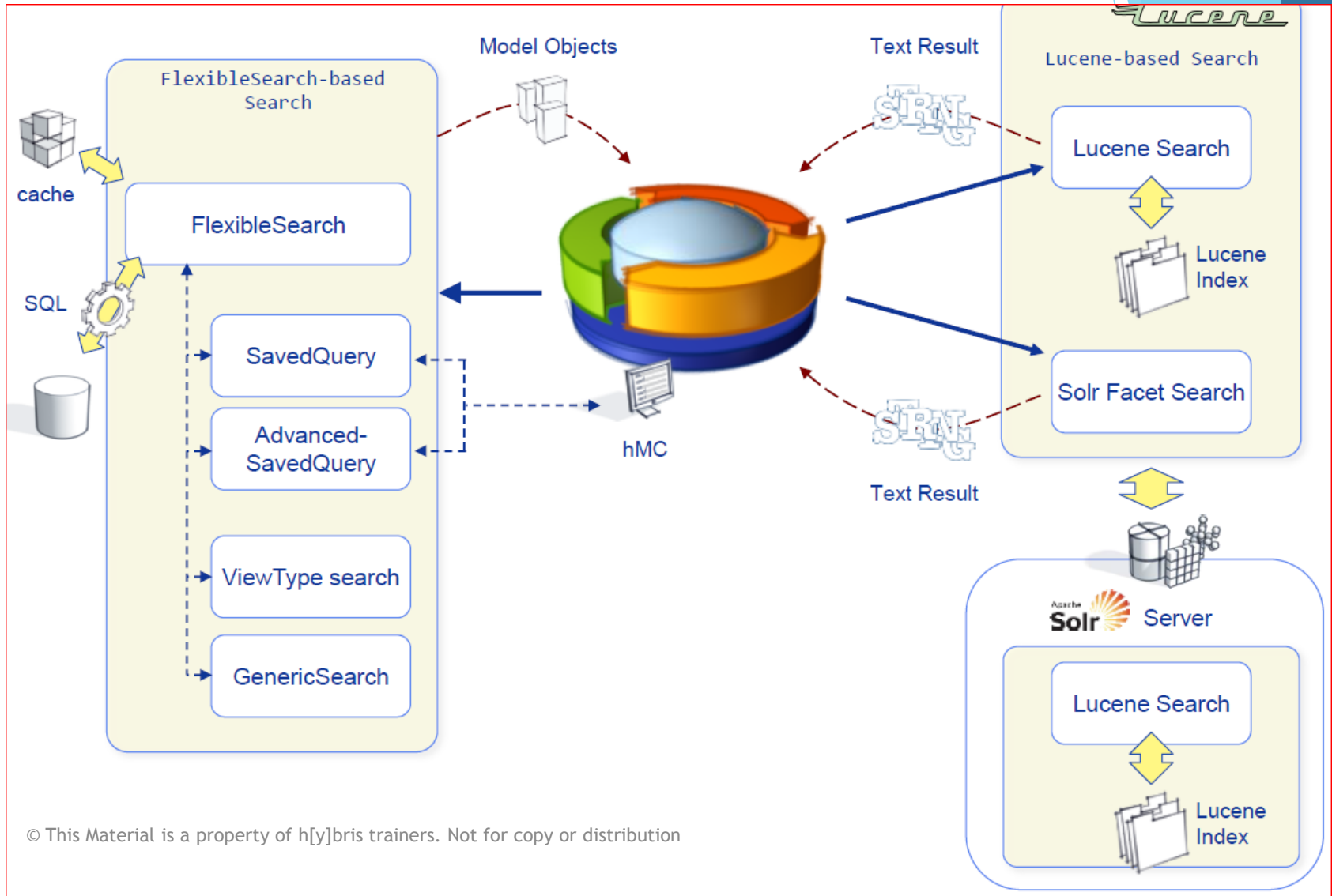# Search and Navigation

MODULE - 04

Contents

▶ Overview

- ▶ Indexing
- ▶ Searching
- ▶ Commerce Search
- ▶ Server setup

hybris Search mechanisms

What is Facet Search?

→ facet represents a distinct feature

→ facet is a way in which a resource can be classified

→ Independent from catalog structure

hybris Search & Navigation

Apache Solr 4.5.0 (in hybris 5.1.0)

Extensionname	Content
solrfacetsearch	Solr core functionality
commercesearch	Searchandizing functionality
commercesearchbackoffice	Backoffice perspective
solrfacetsearchhmc	hMC module
commercesearchhmc	hMC module
commerceservices	Additions to core solrfacetsearch
commercefacades	Search facades

Key Features

➡ Natural Language Search

➡ Configurable Faceting

➡ Searchandizing

   ➡ Hero Products

   ➡ Boost Rules

   ➡ Keyword Redirects

➡ Sorting and Ranking

➡ Synonyms and Stop Words

➡ Autocomplete Suggestions and Spell Checking
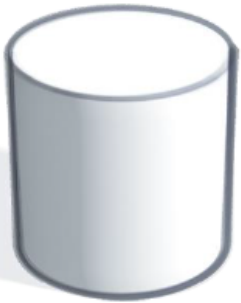
➡ Extensible API
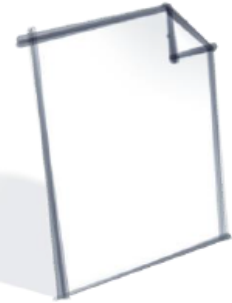
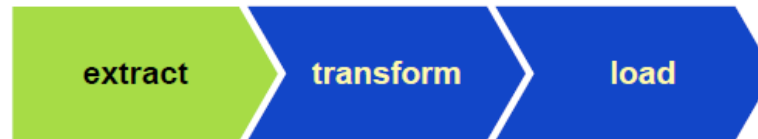# Contents

Indexing

hybris type system

extract → transform → load

Solr Index

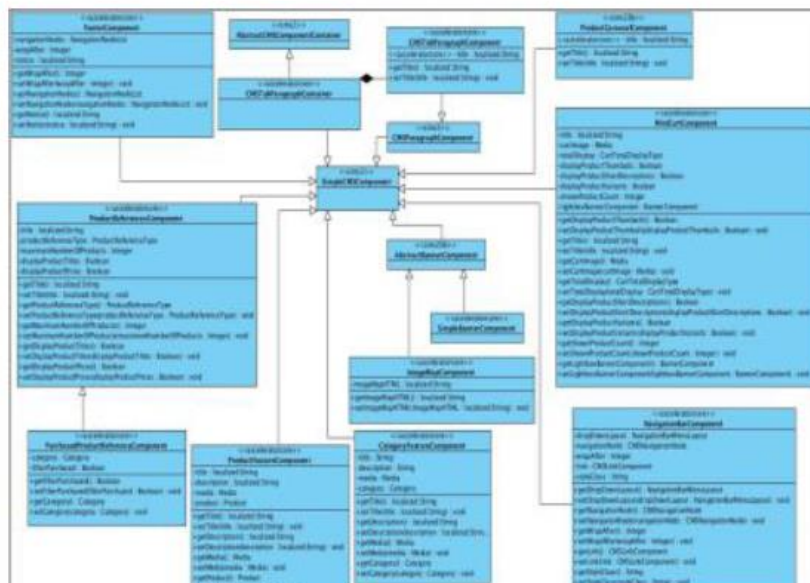# Indexing: Extraction with Flexible Search


```
SELECT {p:PK}
FROM {Product AS p} WHERE
{p:modifiedtime} >= ?lastIndexTime
```

Indexing: De-Normalizing the Data

extract → transform → load

```
▼<doc>
  ▶<arr name="allCategories_string_mv">...</arr>
  ▶<arr name="brandName_text_de_mv">...</arr>
  ▼<arr name="brandName_text_en_mv">
    <str>Toko</str>
    <str>Brands</str>
  </arr>
  ▼<arr name="brand_string_mv">
    <str>Toko</str>
    <str>brands</str>
  </arr>
  <str name="catalogId">apparelProductCatalog</str>
  <str name="catalogVersion">Online</str>
  ▶<arr name="categoryName_text_de_mv">...</arr>
  ▶<arr name="categoryName_text_en_mv">...</arr>
  ▼<arr name="categoryPath_string_mv">
    <str>/categories/others/skigear</str>
    <str>/categories</str>
    <str>/brands/Toko</str>
    <str>/categories/others</str>
    <str>/brands</str>
  </arr>
  ▼<arr name="category_string_mv">
    <str>skigear</str>
    <str>categories</str>
    <str>others</str>
  </arr>
  <str name="code_string">45574</str>
  <str name="ean_string">815087779</str>
  <str name="id">apparelProductCatalog/Online/45574</str>
  ▶<str name="img-300Wx300H_string">...</str>
```

Indexing: Solr indexed properties

Indexing: Data Transformation with Value Providers


```
/* ▨ */
public interface FieldValueProvider
{

    /* ▨ */
    Collection<FieldValue> getFieldValues(IndexConfig indexConfig,
                                          IndexedProperty indexedProperty,
                                          Object model)
            throws FieldValueProviderException;
}
```

Indexing: Multi Language
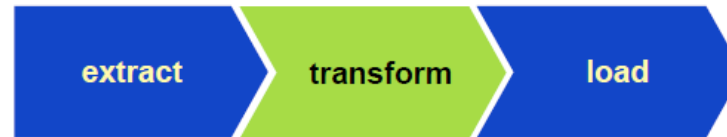
Indexing: SOLR Analyzers & Filters


```xml
<fieldType name="text" class="solr.TextField"
    positionIncrementGap="100">
    <analyzer type="index">
        <tokenizer class="solr.WhitespaceTokenizerFactory" />
        <filter class="solr.StopFilterFactory" ignoreCase="true"
            words="solr/embedded/conf/stopwords.txt" enablePositionIncrements="true" />
        <filter class="de.hybris.platform.solrfacetsearch.ysolr.synonyms.HybrisSynonymFilterFactory"
            ignoreCase="true" coreName="${solr.core.name}"/>
        <filter class="solr.WordDelimiterFilterFactory"
            generateWordParts="1" generateNumberParts="1" catenateWords="1"
            catenateNumbers="1" catenateAll="0" splitOnCaseChange="1" />
        <filter class="solr.LowerCaseFilterFactory" />
        <filter class="solr.SnowballPorterFilterFactory" language="English"
            protected="solr/embedded/conf/protwords.txt" />
    </analyzer>
```

Contents

► **Overview**

► **Indexing**

► **Searching**

► **Commerce Search**

► **Server setup**

Searching

Configurable Search Box Component

Website

cam

- CAMERA
- CAMCORDER
- CAMILEO
- CAMCORDERTAPE

Mini T-Cam	$34.53
DC Car Battery Adapter	$179.93
Battery Charger 4xAA/AAA	$7.61
Battery Charger 2xAA/AAA	$13.88

Free text search box

Suggestions

As you type results

CMS Cockpit

🔒 Header links
🔒 Search Box

🔍 Search Box

Content Editor: Search Box - ELE-S

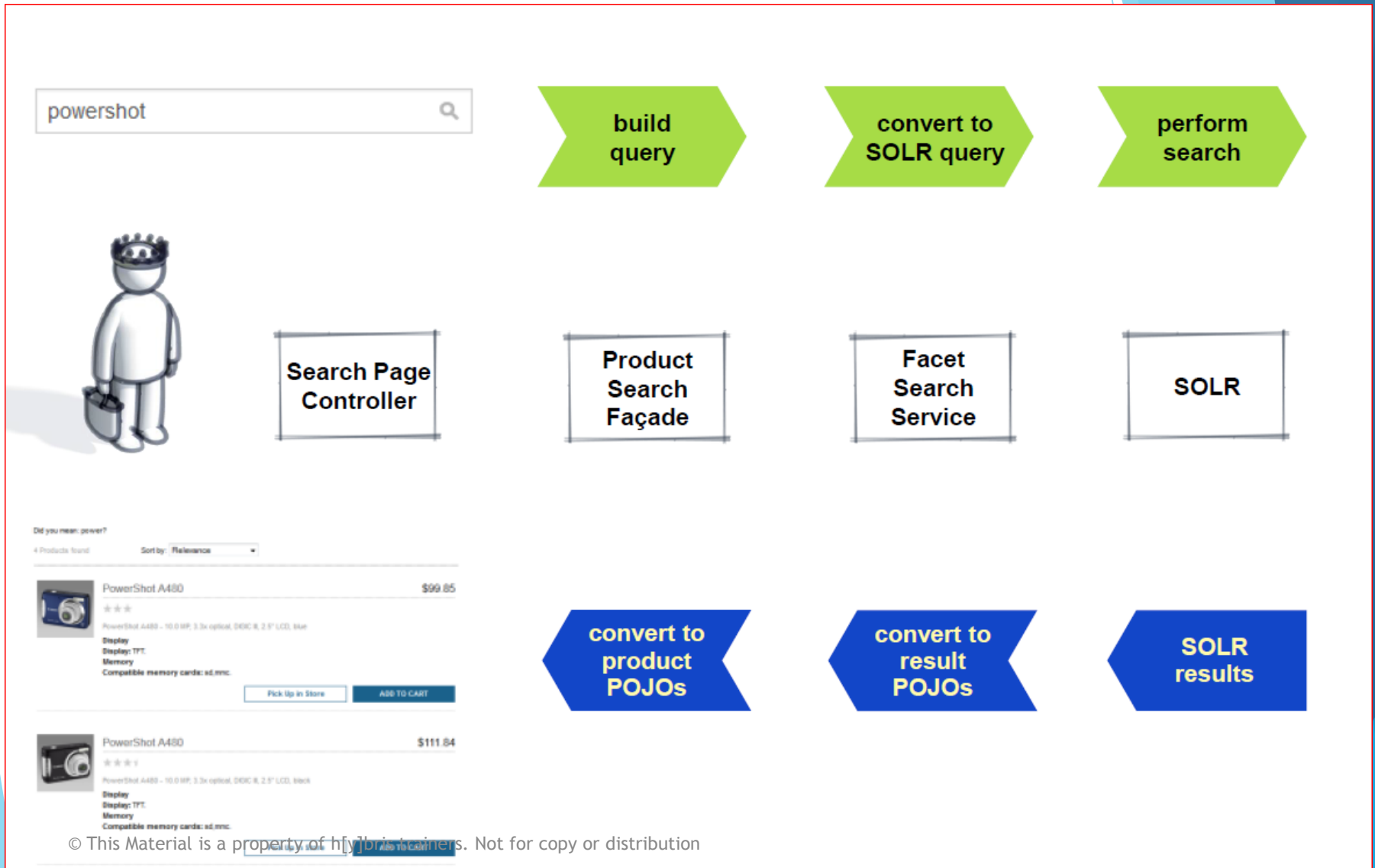|	
Display Suggestions:	⦿ yes ○ no
Max Suggestions:	6
Display Products:	⦿ yes ○ no
Max Products:	4
Display Product Images:	⦿ yes ○ no
Min Characters Before Request:	3
Wait Time Before Request:	100

The Search Lifecycle

The Search Lifecycle – Customizing Search

The Search Lifecycle – Customizing Search
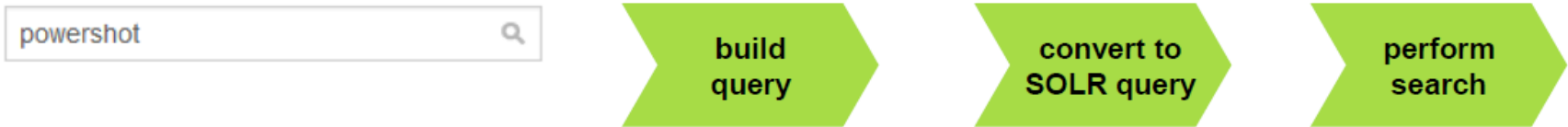


```
powershot                          🔍
```

build
query

convert to
SOLR query

perform
search

Custom query post processors

Interchangeable query converter

The Search Lifecycle – Search

powershot

build query

convert to SOLR query

perform search

q=(ean_string:(shoe*^101.0 OR shoe^101.4)) OR (code_string:(shoe*^91.0 OR shoe^91.4)) OR (name_text_en:(shoe*^51.2 OR shoe~^51.0 OR shoe^51.4)) OR (manufacturerName_text:(shoe^41.4 OR shoe~^41.0 OR shoe*^41.2)) OR (keywords_text_en:(shoe^21.4 OR shoe*^21.2 OR shoe~^21.0)) OR (categoryName_text_en_mv:(shoe^11.4 OR shoe~^11.0 OR shoe*^11.2))&fq=(catalogId:"apparelContentCatalog")&fq= (catalogVersion:Online)&start=0&rows=20&facet=true &sort=name_sortable_en_sortabletext asc,score desc &facet.mincount=1&facet.limit=50&facet.sort=count

The Search Lifecycle – Search Result

Custom result post processors

convert to product POJOs

convert to result POJOs

SOLR results

The Search Lifecycle – Search Result

Customizable using Converters and Populators

convert to product POJOs

convert to result POJOs

SOLR results

Contents

- **Overview**
- **Indexing**
- **Searching**
- **Commerce Search**
- **Server setup**

Hero Products

➡ Manageable top result products on category level

➡ Backoffice

➡ Service layer

    ➡ SolrHeroProductDefinitionDao

    ➡ SolrHeroProductFacade

```
<<catalogAware>>
SolrHeroProductDefinition
────────────────────────
-indexedType : SolrIndexedType
-category : Category
-code : String
-catalogVersion : CatalogVersion
```

heroProducts

*

*

```
Product
```

Commercesearchbackoffice

Boost Rules

➡ Boosting products on the search results

   ➡ In stock products should be shown first

   ➡ Cameras in brand Nikon are favored

➡ Enabled or disabled on SolrSort

➡ Configured on IndexedProperty

Boost Settings

Operator:	EQUAL_TO ▾	Property Value:	brand_10
Boost Factor:	20	Indexed Property:	brand - string - Yes - n/a 🔍

Search Profiles:

	Code	Indexed Type	
☐	digitalcameras-srch-profile	electronicsProductType - Product	🔍

Boost Rules – Operators and SolrSearchProfile

	Numeral properties		**String** *(not working with Solr Text fields)*
EQUAL_TO	LESS_THAN	GREATER_THAN	CONTAINS

Boost Settings

Operator:	EQUAL_TO ▾
Boost Factor:	20

Property Value:	brand_10
Indexed Property:	brand - string - Yes - n/a 🔍

Search Profiles:

	Code	Indexed Type	
☐	digitalcameras-srch-profile	electronicsProductType - Product	🔍

➡ CategorySolrSearchProfile (applicable for a specific category)

➡ GlobalSolrSearchProfile (enforced if no category level profile)

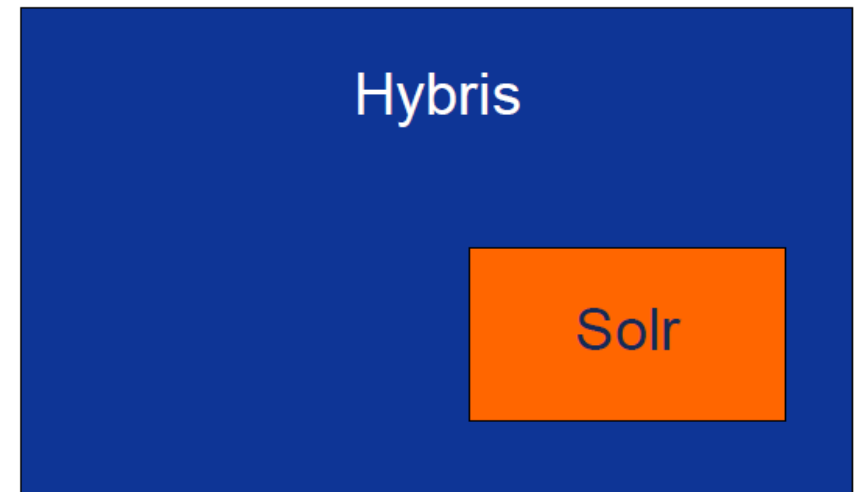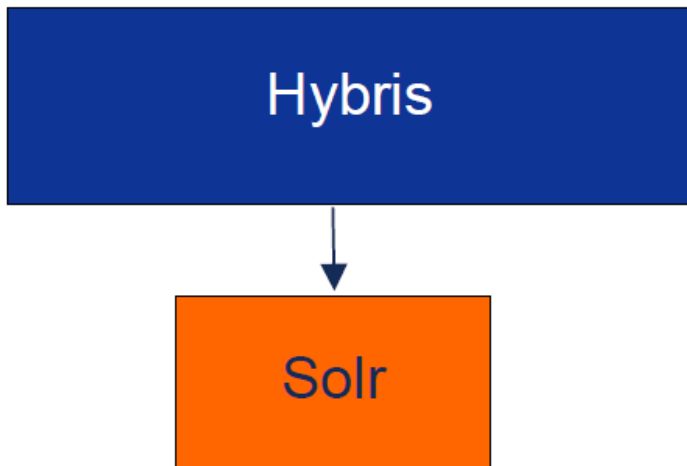# Backoffice – Boost Rules

Contents

▶ **Overview**

▶ **Indexing**

▶ **Searching**

▶ **Commerce Search**

▶**Server setup**

Solr Operation modes

➡ Solr runs in own VM

➡ Might run on own server

➡ Calls through HTTP

➡ Solr runs within the hybris platform

➡ Same VM

➡ Direct calls to Solr engine

Hybris → Solr

Hybris [Solr]

Solr Replication mechanism

➡ Multiple Solr instances

➡ One master (used for indexing)

➡ Many slaves

➡ Load balancing