

The background of the slide is a rich, deep red color with a subtle, vertical pleated texture, resembling a stage curtain. The lighting is slightly darker at the top and bottom edges, creating a sense of depth and focus on the central text.

Hibernate Search

Hardy Ferentschik, Red Hat
Sanne Grinovero



Own experience



Own experience

Build tool	Ant/Maven
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Own experience

Build tool	Ant/Maven
Container	Tomcat/JBoss



Own experience

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Own experience

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Business logic	JPA/Hibernate
Search	?



“LIKE” queries

```
title = (title == null) ? "%" : "%" + title.toLowerCase() + "%";
actor = (actor == null) ? "%" : "%" + actor.toLowerCase() + "%";

em.createQuery(
    "select distinct p from Product p JOIN p.actors a " +
    "where lower(p.title) like :title " +
    "and lower(a.name) LIKE :actor order by p.title")
    .setParameter("title", title)
    .setParameter("actor", actor));
```

SQL shortcomings

SQL shortcomings

Wildcard / word search	%hibernate%
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SQL shortcomings

Wildcard / word search	%hibernate%
Approximation	hybernate

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Proximity	'Java' close to 'Persistence'

SQL shortcomings

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Result scoring	

SQL shortcomings

Wildcard / word search	%hibernate%
Approximation	hybernate
Proximity	'java' close to 'Persistence'
Result scoring	
Multi-"column" search	

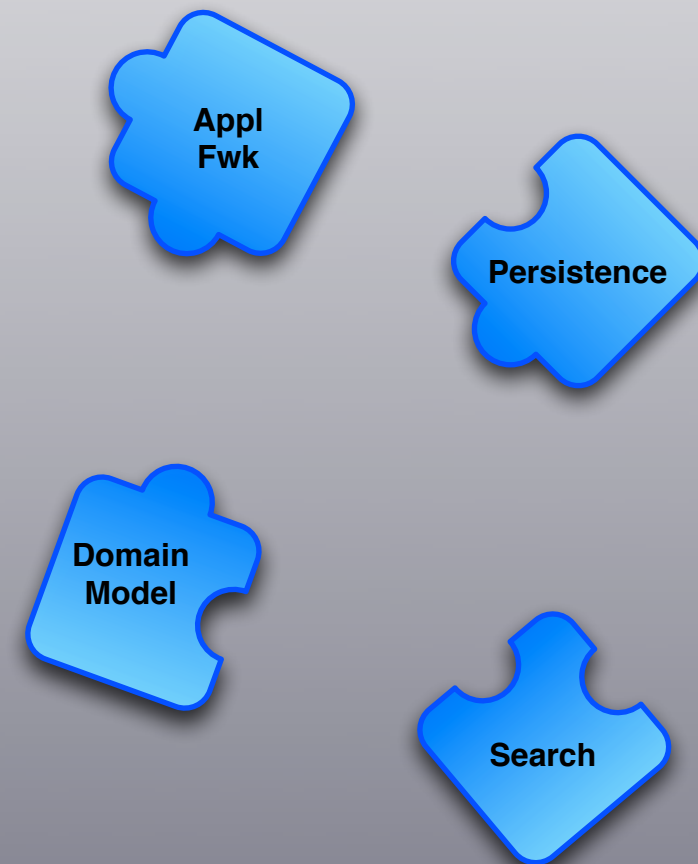


Lucene

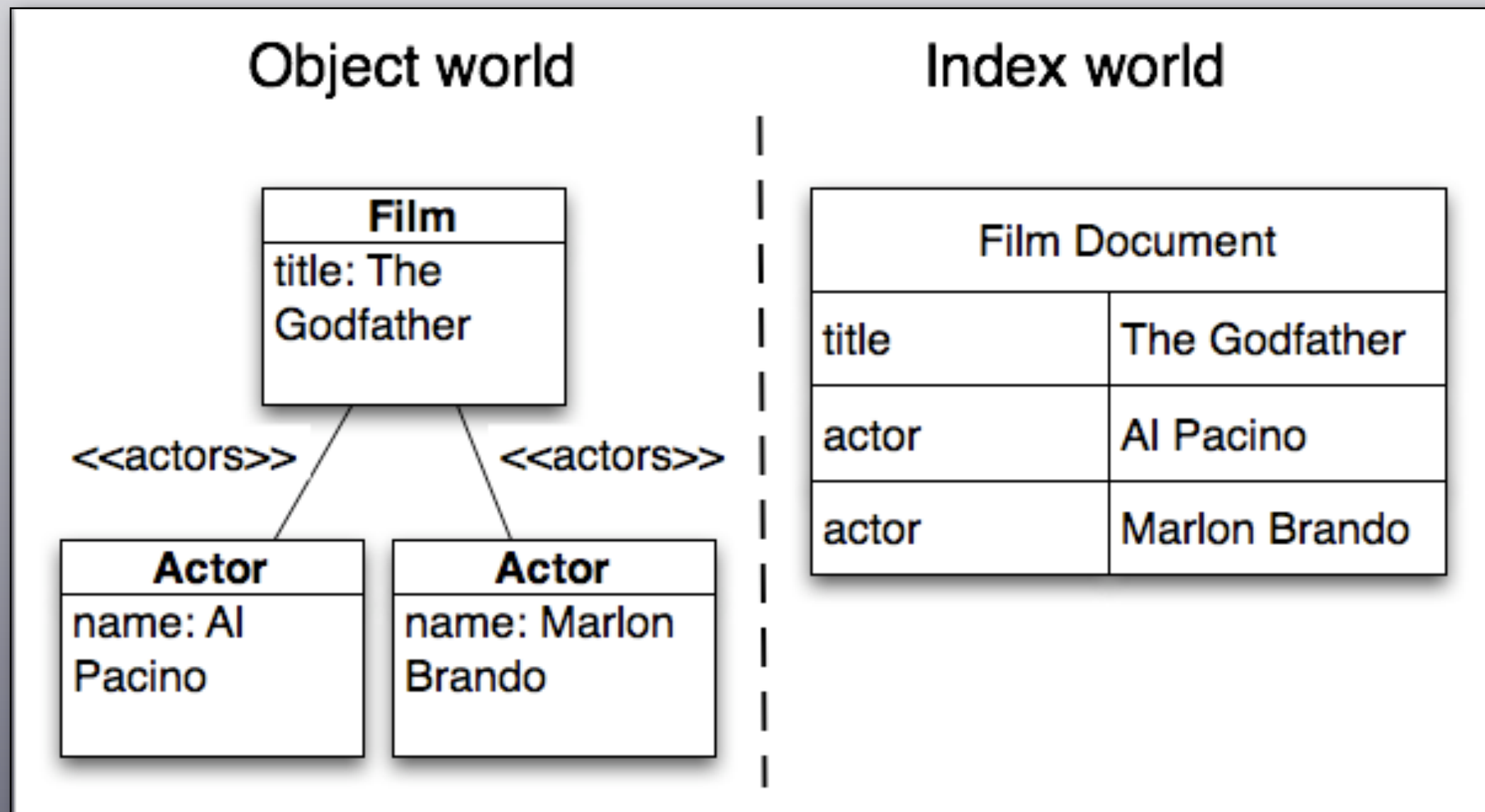
- ❑ Powerful fulltext search engine
- ❑ Open Source
- ❑ In the TOP 10 of downloaded Apache projects

Lucene DIY

- ❑ Structural mismatch
- ❑ Synchronization mismatch
- ❑ Retrieval mismatch



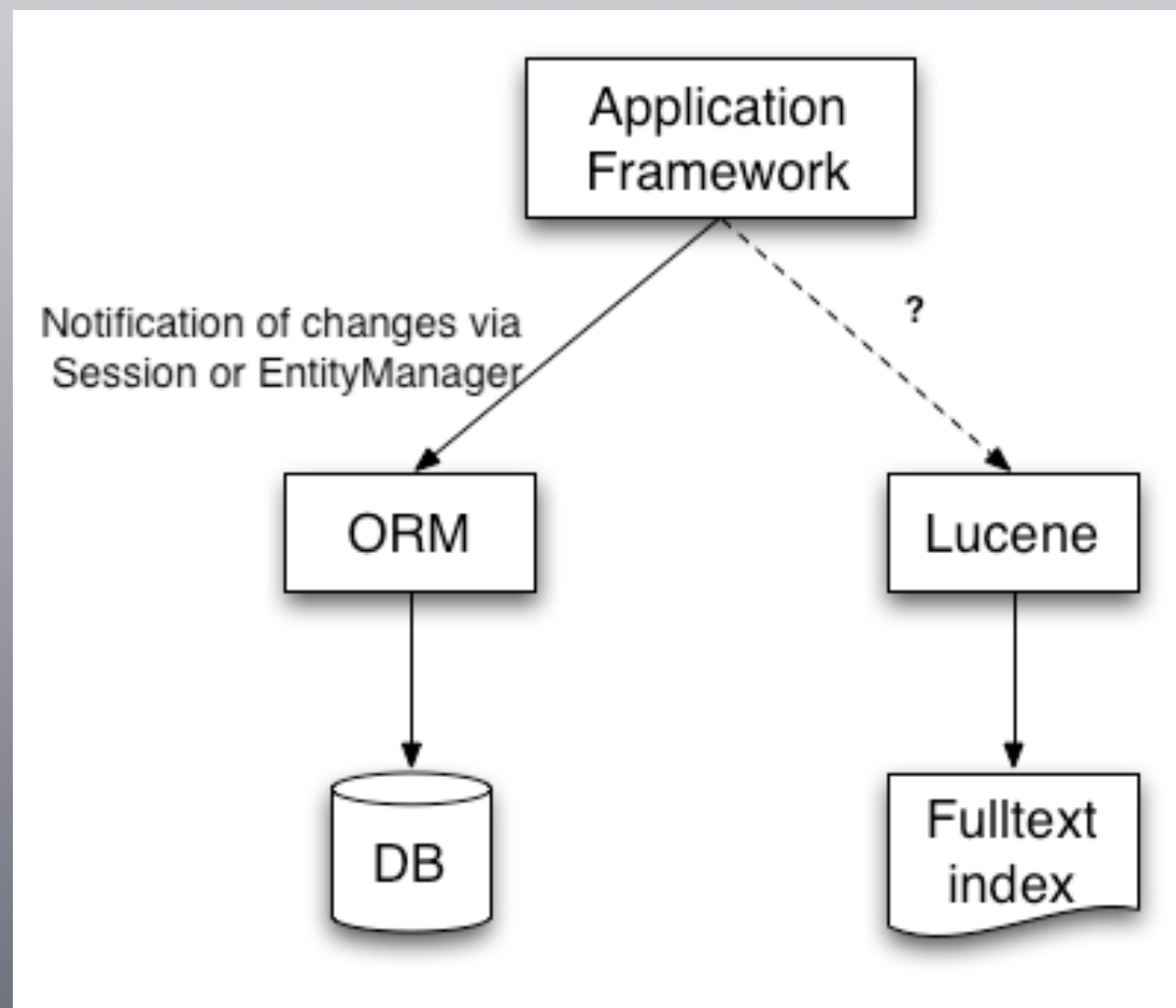
Structural Mismatch



Retrieval Mismatch

- Index contains Documents not Objects
- Even if you re-hydrate you don't have managed objects

Synchronization mismatch





DO NOT

ENTER

HIBERNATE SEARCH in Action

Emmanuel Bernard
John Griffin

MEAP Unedited Draft

 MANNING





 HIBERNATE

سورة

Configure

- Enable Search via event listeners
- Add Backend options

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- Enable Search via event listeners
- Add Backend options

```
<property name="hibernate.search.default.indexBase"  
value="/var/lucene/indexes" />
```

Annotate

```
@Entity
public class Essay {
    ...
    @Id
    public Long getId() { return id; }

    public String getSummary() { return summary; }

    @Lob
    public String getText() { return text; }

    @ManyToOne
    public Author getAuthor() { return author; }
}
```


Annotate

```
@Entity @Indexed
public class Essay {
    ...
    @Id
    public Long getId() { return id; }

    public String getSummary() { return summary; }

    @Lob
    public String getText() { return text; }

    @ManyToOne
    public Author getAuthor() { return author; }
}
```

Annotate

```
@Entity @Indexed
public class Essay {
    ...
    @Id
    public Long getId() { return id; }

    @Field
    public String getSummary() { return summary; }

    @Lob
    public String getText() { return text; }

    @ManyToOne
    public Author getAuthor() { return author; }
}
```

Annotate

```
@Entity @Indexed
public class Essay {
    ...
    @Id
    public Long getId() { return id; }

    @Field
    public String getSummary() { return summary; }

    @Lob @Field
    public String getText() { return text; }

    @ManyToOne
    public Author getAuthor() { return author; }
}
```

Annotate

```
@Entity @Indexed
public class Essay {
    ...
    @Id
    public Long getId() { return id; }

    @Field
    public String getSummary() { return summary; }

    @Lob @Field
    public String getText() { return text; }

    @ManyToOne @IndexedEmbedded
    public Author getAuthor() { return author; }
}
```


Search

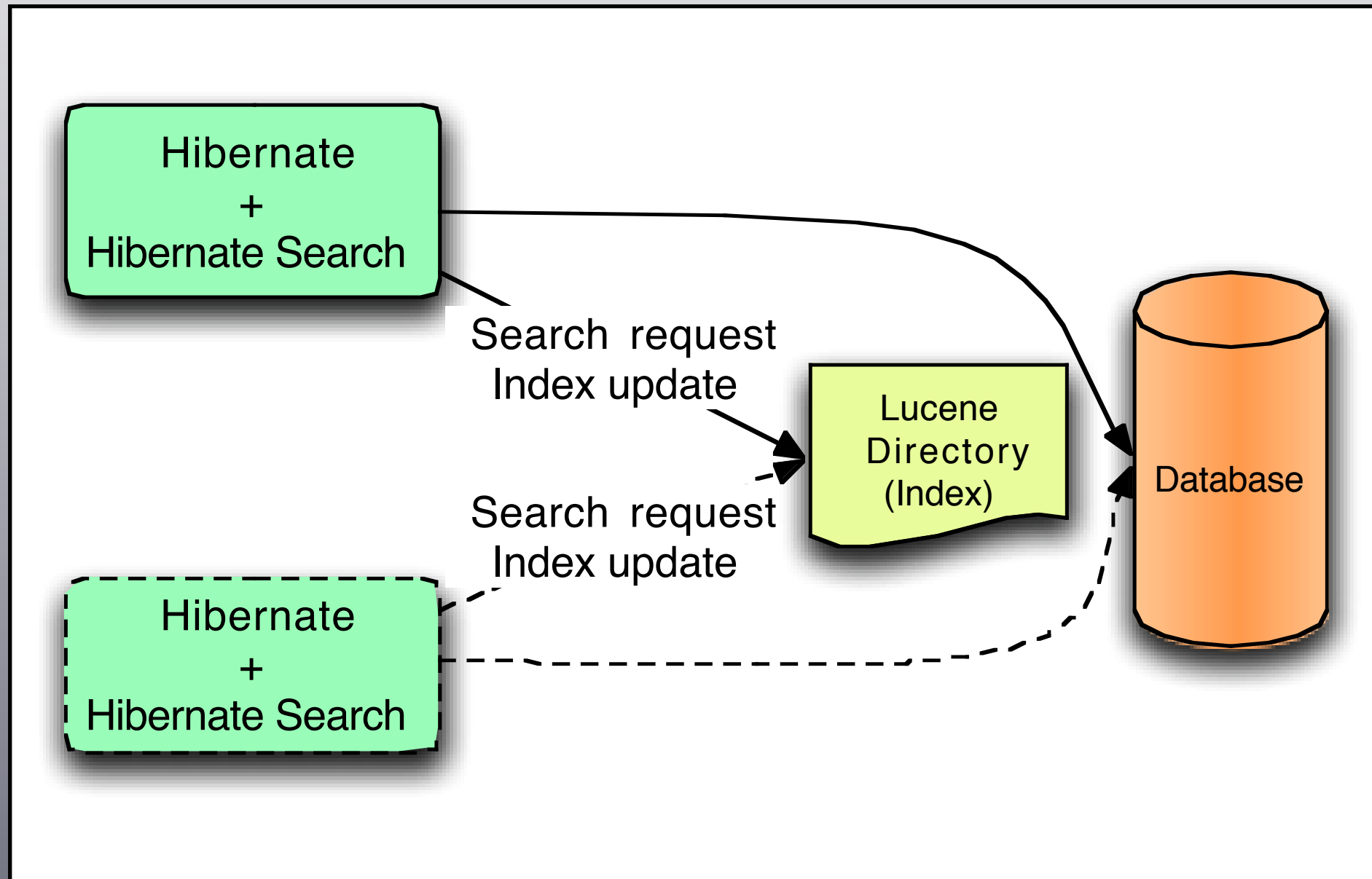
```
String[] productFields = {"title", "actors.name"};

// Lucene
QueryParser parser = new MultiFieldQueryParser(productFields,
                                                new StandardAnalyzer());
Query luceneQuery = parser.parse(searchQuery);

// Hibernate Search
FullTextEntityManager ftEm = Search.
    getFullTextEntityManager((EntityManager)em);
FullTextQuery query =
    ftEm.createFullTextQuery( luceneQuery, Product.class );

List<Product> items = query.getResultList();
```

Architecture



A background of red curtains with a central opening. The curtains are tied back on both sides, creating a stage-like appearance. The text "The perks" is centered in the opening.

The perks

Analyzers

- Take text as an input, **chunk** it into individual words and optionally applying a chain of **filter operations** on the tokens.



Analyzers

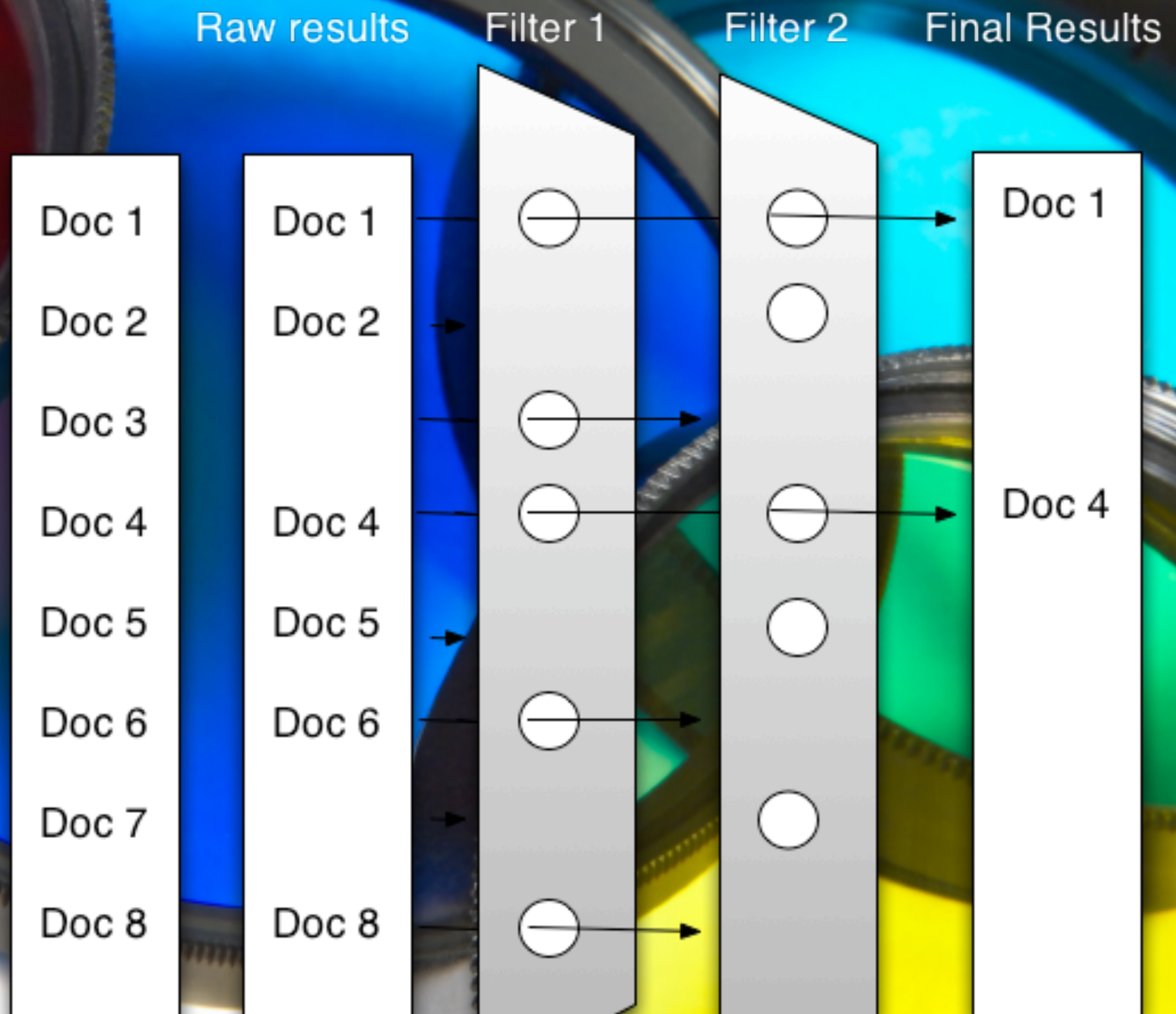
- Take text as an input, **chunk** it into individual words and optionally applying a chain of **filter operations** on the tokens.
- Benvenuti al Javaday => benvenuti javaday



Example

```
@Entity
@Indexed
@AnalyzerDef(name = "customanalyzer",
  tokenizer = @TokenizerDef(factory=StandardTokenizerFactory.class),
  filters = {
    @TokenFilterDef(factory = LowerCaseFilterFactory.class),
    @TokenFilterDef(factory = SnowballPorterFilterFactory.class,
      params = {@Parameter(name = "language", value = "English")})
  })
public class Book {
  ...
  @Field(index=Index.TOKENIZED, store=Store.NO)
  @Analyzer(definition = "customanalyzer")
  private String title;
  ...
}
```

Filters



Example

```
@Entity
@Indexed
@FullTextFilterDefs ( {
    @FullTextFilterDef (name="bestDriver",
                        impl=BestDriversFilter.class) ,
    @FullTextFilterDef (name="security",
                        impl=SecurityFilterFactory.class)
})
public class Driver { ... }
```

```
...
fullTextQuery = s.createFullTextQuery( query, Driver.class );
fullTextQuery.enableFullTextFilter("bestDriver");
fullTextQuery.enableFullTextFilter("security").
    setParameter( "login", "andre" );
fullTextQuery.list();
...
```

Example

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@Entity
@Indexed
@FullTextFilterDefs ( {
    @FullTextFilterDef (name="bestDriver",
                        impl=BestDriversFilter.class) ,
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fullTextQuery = s.createFullTextQuery( query, Driver.class );
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Example

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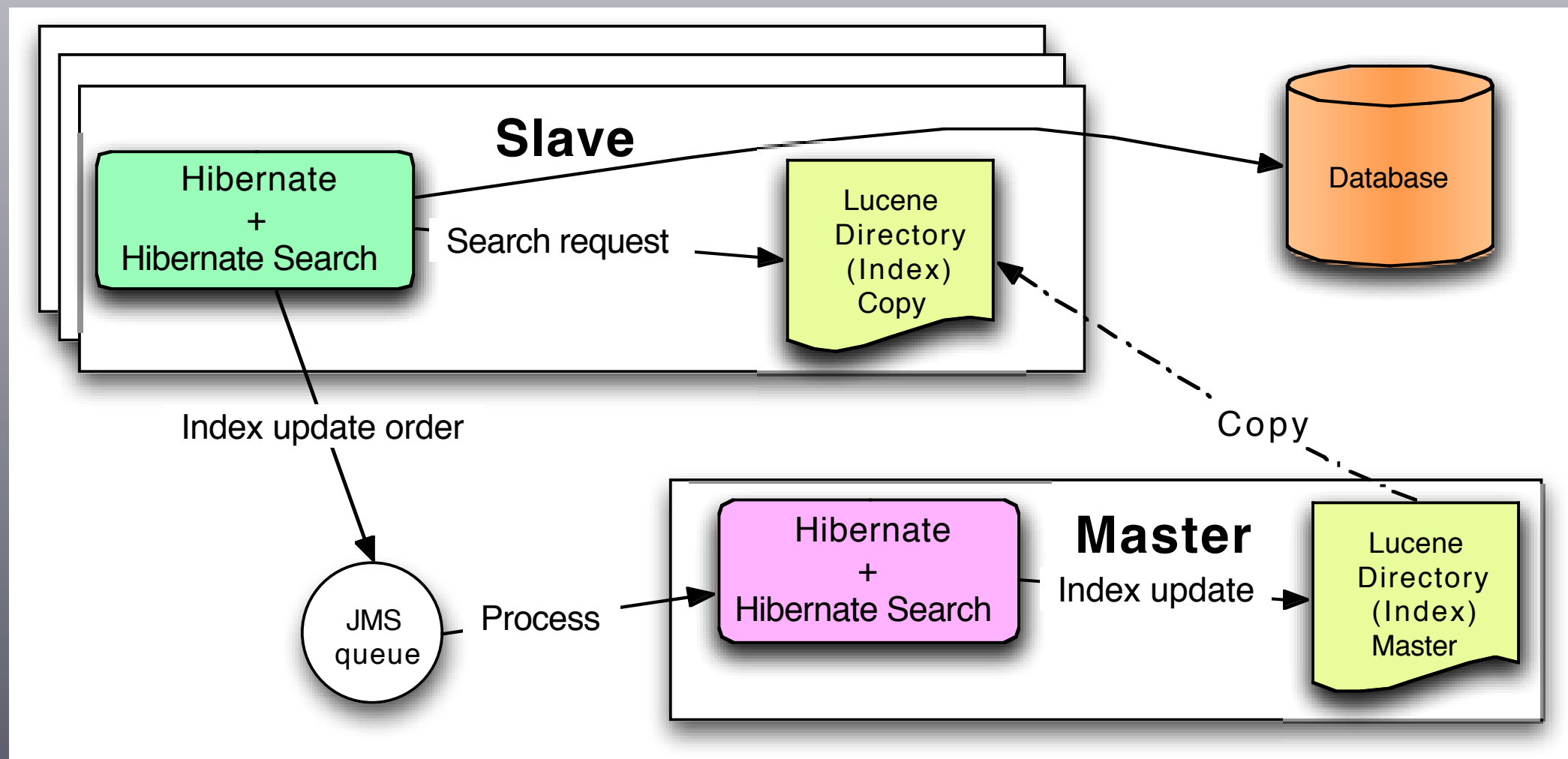
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fullTextQuery = s.createFullTextQuery( query, Driver.class );
fullTextQuery.enableFullTextFilter("bestDriver"); ←
fullTextQuery.enableFullTextFilter("security"). ←
    setParameter( "login", "andre" );
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```

Not to mention

- Projections
- Clustering

Not to mention

- Projections
- Clustering



A background of red curtains with a central opening. The curtains are gathered at the top and bottom, creating a stage-like appearance. The word "Demo" is centered in the opening.

Demo

A background of rich red, vertically pleated curtains. The curtains are pulled back at the top corners, creating a dark, shadowed opening in the center. The lighting is soft, highlighting the texture and folds of the fabric.

Q&A

More Info

- Hibernate Search
 - <http://search.hibernate.org>
 - Hibernate Search in Action
- Apache Lucene
 - <http://lucene.apache.org>
 - Lucene In Action
- <http://in.relation.to>
- <http://forum.hibernate.org/viewforum.php?f=9>
- hardy.ferentschik@redhat.com

