The Hydra Framework as a Series of Diagrams
High Level (Rough Conceptual)

UI Layer: Ruby on Rails

Back End

Read

Create, Update, Delete

Solr

Hydra

Blacklight

Fedora

Blacklight for Stored Objects

Solr Index of Stored Objects

Object Storage

(any) Solr Index
Ruby on Rails

**Rails** is a Ruby gem that provides an MVC framework for writing web applications.

- **Views:** UI presentation
- **Controllers:** UI flow of control
- **Models:** Interface to stored data
- **SQL database:** Data storage
**Blacklight** is a Ruby-on-Rails gem that provides a web discovery interface for a Solr index.

Solr is external to Blacklight, but required (much as a SQL database is required for a Ruby-on-Rails application).
Your Blacklight Application

Your Rails Application

Blacklight

Views
Controllers
Models

Your Solr

Your SQL database

Your Your Data
High Level (Rough Conceptual, again)

UI Layer: Ruby on Rails

Back End

Read

Create, Update, Delete

Solr

Blacklight

Hydra

Fedora

(read) Solr Index

Blacklight Leveraged for Stored Objects

Solr Index of Stored Objects

Object Storage
**HydraHead Gem – part 1**

**HydraHead** is a Ruby-on-Rails gem that provides a web interface for creating, updating, and deleting Fedora objects.
HydraHead Gem – part 2

HydraHead utilizes the Blacklight gem for the UI pieces related to discovery (i.e. read only)
Your Hydra Head/Application – part 1

Your SQL database

Your Hydra Head

Your Rails Application

HydraHead

Blacklight

Views

Controllers

Models

Your Solr

Your Fedora

Your Data
ActiveFedora Gem - part 1

ActiveFedora is akin to the ActiveRecord gem in a Rails application – it provides the implementation of the logic between the models and the data storage.

- **Views**: UI presentation
- **Controllers**: UI flow of control
- **Models**: which data, which behaviors
- **Model Logic Implementation**
- **SQL database**
- **Fedora**
- **Data storage**
HydraHead utilizes the ActiveFedora gem to interact with Fedora
Solrizer and Rubydora Gems

The **Solrizer** and **Rubydora** gems allow Ruby access to the Rest APIs for Solr and Fedora.
**Solrizer-Fedora Gem**

Solrizer-Fedora extends the Solrizer gem to work with Fedora objects.

Ruby access to Rest API

External Application

![Diagram](image)

Solr

Fedora

Rubydora

Solrizer-Fedora

Rest API

Solrizer

Rest API
ActiveFedora Gem – part 2

ActiveFedora utilizes Rubydora to interact with Fedora and Solrizer-Fedora to keep Solr in sync with Fedora.

The Solrizer-Fedora gem extends Solrizer gem.
**HydraHead Gem – part 4**

*HydraHead* requires *ActiveFedora* which in turn requires additional Hydra framework gems.
OM Gem

OM (Opinionated Metadata) eases translation between raw XML and ruby objects. OM also provides a way to map the resulting ruby object data into Solr.
OM and ActiveFedora (Simplified)

Fedora datastreams can have XML content

**OM** can be used to parse XML datastream content and map the content to Solr. The **OM** mappings become part of the **ActiveFedora** data models.
ActiveFedora Gem – part 2 (again)

No XML content, so no use of OM gem
Hydra Backend Gems

Updates to Fedora content must be reflected in both Solr and Fedora
HydraHead is a Ruby-on-Rails gem that utilizes the Blacklight gem to read and display Solr documents, the ActiveFedora gem to express Fedora objects in Ruby, the Solrizer-Fedora gem for ease of syncing Fedora and Solr, and other gems and their dependencies as needed.
Your Hydra Head/Application – part 2

- Your Rails Application
  - Blacklight
    - Models
    - Controllers
    - Views
  - HydraHead
- Your Solr
  - Solrizer
  - Solrizer-Fedora
- Your SQL Database
- ActiveFedora
- Rubydora
- Your Fedora
- Your Data
Core Hydra-Framework Code maintained by the Hydra Community

- (Rubydora)
- Solrizer
- Solrizer-Fedora
- OM
- ActiveFedora
- HydraHead
- (Used, by not maintained by Hydra Community: Blacklight, Solr, Fedora, ...)
Additional Hydra-Framework Code maintained by the Hydra Community

• Hydra-Jetty
• JettyWrapper
Jetty — Java Web Server and Servlet Container

Jetty: Java Web Server and Servlet Container
(note that Solr and Fedora are both written in java and utilize java servlets)

Hydra-Jetty
Jetty with Solr and Fedora pre-installed

JettyWrapper
Ruby — start/stop jetty, etc.
(convenient for automated testing)
Solr and Fedora can be in the same web application or separate web applications. Solr is also implemented in Ruby and other languages, so it doesn’t need to be in a
Your Hydra Head/Application using Hydra-Jetty

Your SQL database

Your Rails Application

HydraHead

Views
Controllers
Models

Blacklight

Your Hydra Head/ApplicaQon using Hydra-Jetty

Your Solr

Your Fedora

Your Data

Hydra-Jetty

Solrizer

Solrizer-Fedora

Rubydora