Building a Data Access Layer for Your Data Using Sinatra + Ruby + MySQL

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The dream of developing fast, efficient, applications without detailed knowledge of the database....

Way Back Machine

- Old school database design
  - Business logic goes into stored procedures
  - Developers do not touch the tables directly
  - Many applications can access the same procs, reusing code
  - Applications can be somewhat modular

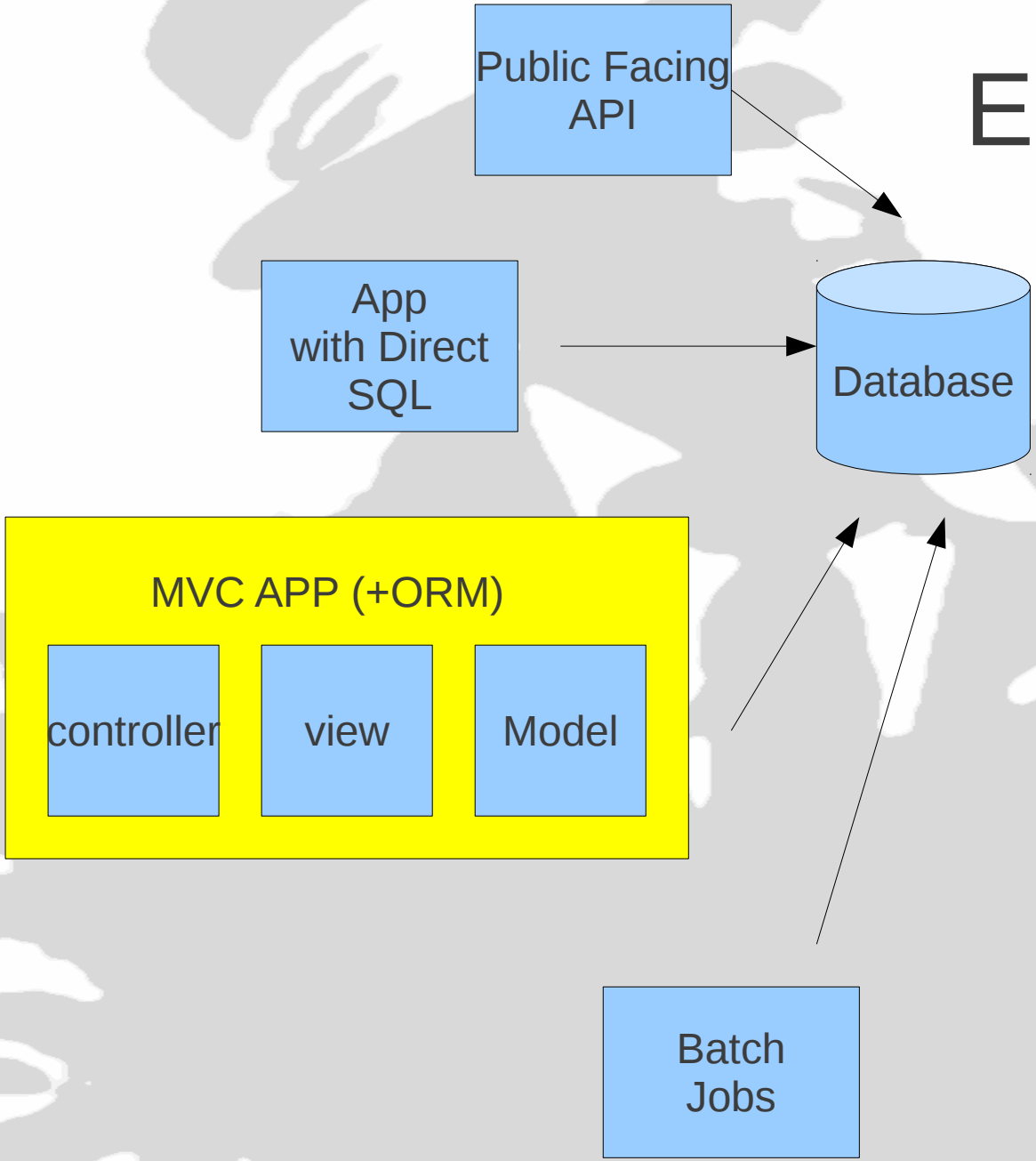
The rise of ORM's

- Object Relational Mapping tools are still very popular
  - They hide the complexity of the database
  - They make data interactions seem intuitive in code
  - They generate sql for you
- They have issues
  - Generated SQL is often less then optimal
  - Many times models are not shared across applications

Development Today

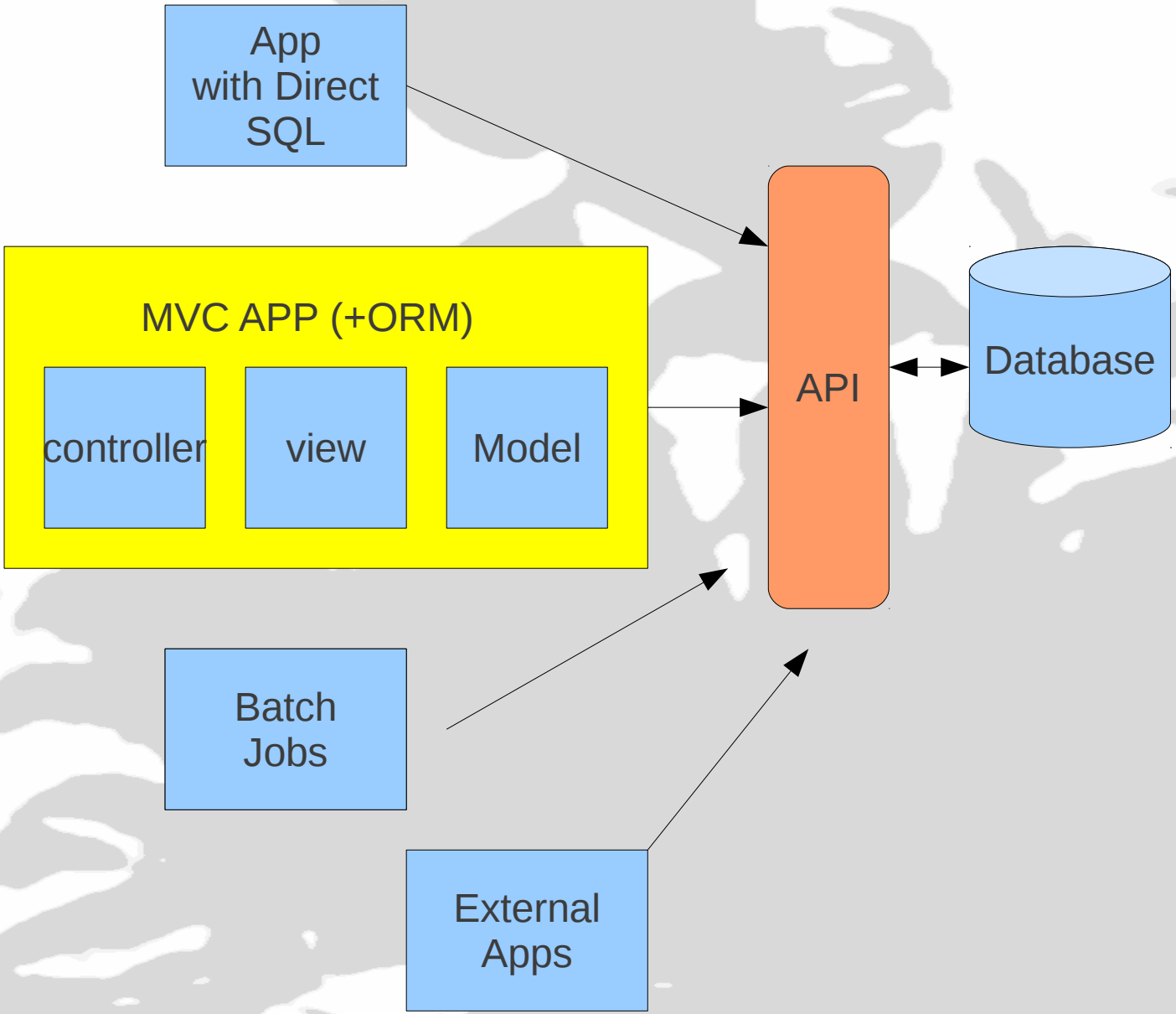
- Many people have the following already
  - Web Services
  - A web front-end/ui
  - Make heavy use of Javascript
  - Have lots of data to display
  - Have more then 1 application using the same database

Complex Environments



- Database changes cascade to multiple applications
- Business logic built for 1 application often is duplicated or ignored in another application

Modular design



What is Sinatra?

A really tiny web framework for building apps in Ruby.

Read all about it:
http://www.sinatrarb.com/
http://sinatra-book.gittr.com/

How To Get started

- Linux Machine
  - RVM (Ruby Version Manager) http://beginrescueend.com/
  - Ruby installed (any version is ok, I prefer 1.9.2)
  - Your favorite database driver/connection library
    - Mysql gem, mysql2 gem, active record, sequel, etc.
  - Other gems depending on your needs:
    - Xmlsimple
    - Json
    - etc

Hello World

Api.rb

```
require 'rubygems'
require 'sinatra'

get '/' do
  "Hello world, it's #{Time.now} at the server!"
end
```

How do you run it?

```
>>ruby Api.rb -p 9000
```

Point your web browser to localhost:9000

Thats it!

Demo of Hello World

Returning MySQL Data

```
require 'rubygems'
require 'mysql2'
require 'sinatra'


@@mysqlclient = Mysql2::Client.new(:host => "localhost", :username => "root", :database => "information_schema")


get '/' do
  "Hello world, it's #{Time.now} at the server!"
end

get '/tables/' do
   res = Array.new
   result = @@mysqlclient.query("SELECT * FROM tables",:as => :array)
   result.each do | row |
         res.push(row)
   end
   return res.to_s
end
```

Demo: Getting MySQL Data Back

Can do the Same Thing With AR

```
require 'rubygems'
require 'mysql2'
require 'active_record'
require 'sinatra'

get '/' do
  "Hello world, it's #{Time.now} at the server!"
end

get '/tables/' do
   MyAPI.get_tables()
end


class MyAPI < ActiveRecord::Base
  class << self

   dbconfig = {
    :adapter  => "mysql2",
    :host     => "localhost",
    :username => "root",
    :password => "",
    :database => "information_schema"
    }
   ActiveRecord::Base.establish_connection(dbconfig)
```

```
  def get_tables()
     query='select * from tables';
     self.connection.select_all(query).to_s
  end

end
end
```

Demo: Getting MySQL Data Back

Format the Data!

```
require 'rubygems'
require 'mysql2'
require 'active_record'
require 'sinatra'
require 'csv'
require 'sinatra/respond_to'
require 'json'
require 'xmlsimple'

Sinatra::Application.register Sinatra::RespondTo

get '/' do
  "Hello world, it's #{Time.now} at the server!"
end

get '/tables' do
   format_response MyAPI.get_tables()
end

def format_response (package)
    respond_to do |wants|
    wants.txt { package.to_s }
    wants.csv { package.to_csv }
    wants.xml { package.to_xml }
    wants.json {  package.to_json  }
    end
end
```

```
class MyAPI < ActiveRecord::Base
  class << self

   dbconfig = {
    :adapter  => "mysql2",
    :host     => "localhost",
    :username => "root",
    :password => "",
    :database => "information_schema"
    }
   ActiveRecord::Base.establish_connection(dbconfig)


  def get_tables()
      query='select * from tables';
      self.connection.select_all(query)
  end

end
end
```

Demo: Json/XML Formatting!

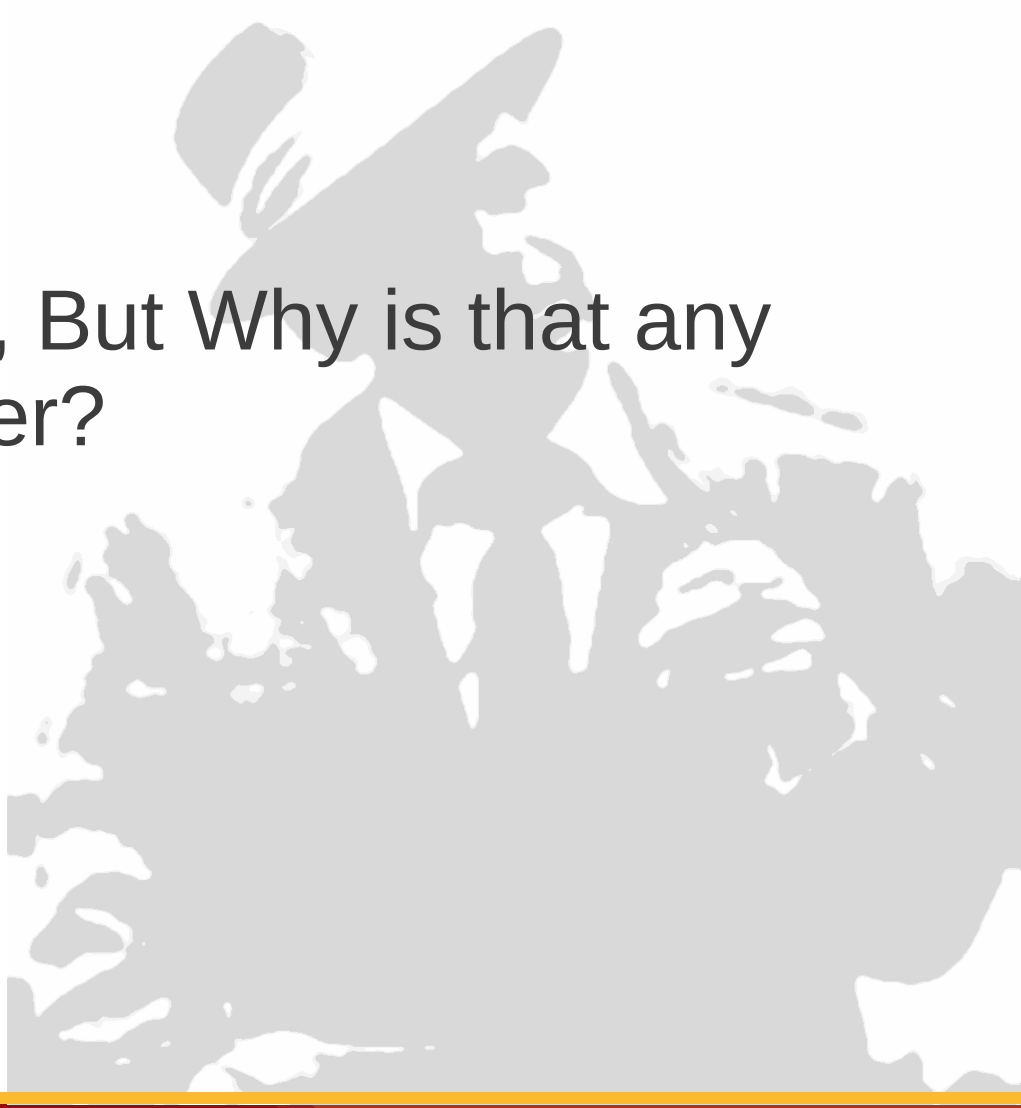
Filtering Data

```
get '/tables/?:schema?/?:table?' do
   format_response MyAPI.get_tables(params)
end
```

```
def get_tables(params)
      where = "where 1=1"
      if ! params[:schema].nil?
          where = "#{where} and TABLE_SCHEMA = '#{params[:schema]}'"
      end
      if ! params[:table].nil?
          where = "#{where} and TABLE_NAME = '#{params[:table]}'"
      end
      query="select * from tables #{where}";
      if params[:no_header]
         self.connection.select_rows(query)
      else
        self.connection.select_all(query)
      end
end
```

Demo: Data Filtering!

Thats All Great and all, But Why is that any Easier?

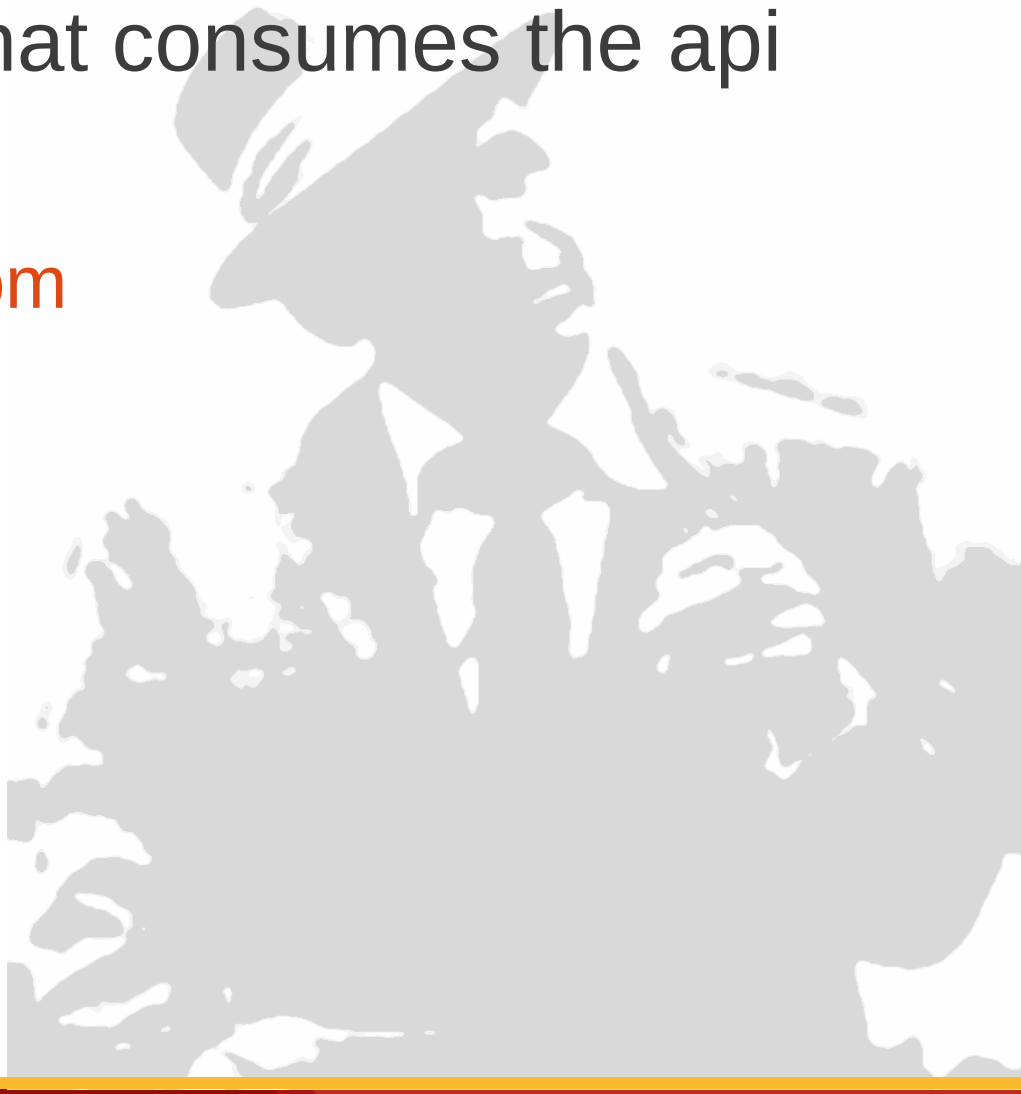


Consuming the API

- JSON can be consumed and used natively in many different programing languages
- You can build very feature rich Javascript only applications
- Many popular javascript graphing libraries can easily consume and graph data passed back from the API

Demo: Putting It Together

- Javascript application that consumes the api
  - http://datatables.net/
  - http://www.highcharts.com



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