ZOTONIC

SIMPLE STUFF THAT WORKS

A CMS framework in Erlang

Marc Worrell — WhatWebWhat

Overview

- Yet another CMS?
- Why Erlang?
- Inside Zotonic
- Future directions

Websites: a history

- First generation
  - Static text, images.
- Second generation
  - Database driven, templates, CMS.
- And now.
  - Highly interactive, realtime, data exchange, personalization

Our wish list

- CMS
- Framework
- Connectivity
- Fast
- Front-ender friendly
- Efficient use of hardware

Now: <? PHP ?>

- Slow
  - more code = slower
- Shared nothing
  - amnesia doesn't make it faster
- Big non threaded web server
  - forget long living connections

Now: Python et al

- One process per core
- Multithreading? Better Not
- No sharing of state and data
- Memcache is common state
- On failure your server crashes

Erlang?

- Website is communication hub
- Many kinds of data streams
- Many parallel connections
- Lots of short requests
- Long living connections
- This looks like a phone switch!

Why not Erlang?

- Esoteric language?
  - Great error/failure handling
  - Smallest language I've ever used
  - Mature
- String processing?
  - Not needed

ZOTONIC visit site »

Dashboard
Pages
Media
Access Control
Users
Comments
Menu
Categories
Predicates
Mailing lists
SEO
Modules
Config
API access
Log
System
Log Off

editing:
Zotonic's Typography article change

Modified moments ago.
By Site Administrator.

Basics

Title
Zotonic's Typography

Summary
This article demonstrates the typographic features that Zotonic has. It shows creating ordered and unordered lists, blockquotes, and different methods of embedding media, even even showing

Body text

Format

Demonstrating inline images

 This image is aligned to the left. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Cras rutrum purus eu risus suscipit semper. Quisque dolor velit, accumsan et vulputate vel, convallis a felis. Pellentesque pellentesque posuere turpis, sed consectetur risus blandit a. Mauris nunc nibh, mattis eu dapibus quis, volutpat at magna. Duis facilisis mauris vel nisi tempus ac tincidunt lectus hendrerit. Phasellus eleifend ultrices tempus. Phasellus imperdiet dictum orci sit amet euismod. Suspendisse in nulla nibh, id iaculis sapien. Ut dictum scelerisque magna nec convallis. Nullam eget justo nec lacus vulputate condimentum. Now comes a block image:

 This image is aligned to the right. Lorem ipsum dolor sit amet, consectetur adipiscing elit.

Publish this page

save | save & view | cancel

Published | Featured | Protect from deletion

delete | duplicate | »

Access control

Send to mailing list

Publication period

Date range

Page connections

This page is able to connect to others. For example you can connect it to an actor or a brand. Need more help?

About + add a connection

Author + add a connection

site administrator

Demo time!

ZOTONIC

What is in the box?

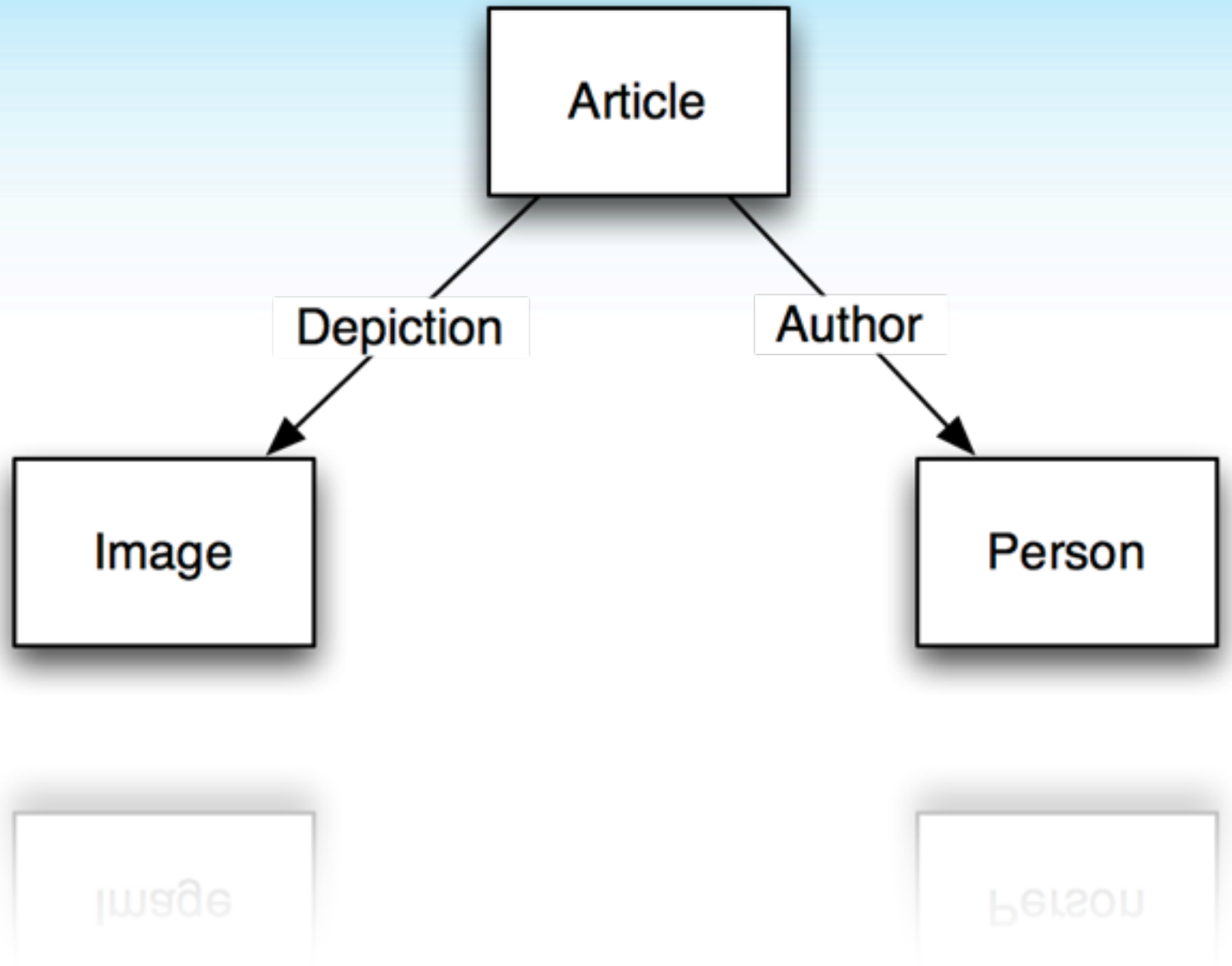
- Admin interface
- Member administration
- Log on/off, register, password reminder
- Page creation
- Comment system
- Easy menu creation
- Calendar
- Image/video handling
- Image manipulation
- Atom feeds
- XMPP PubSub
- API
- SEO, Solr, Twitter …

Getting technical

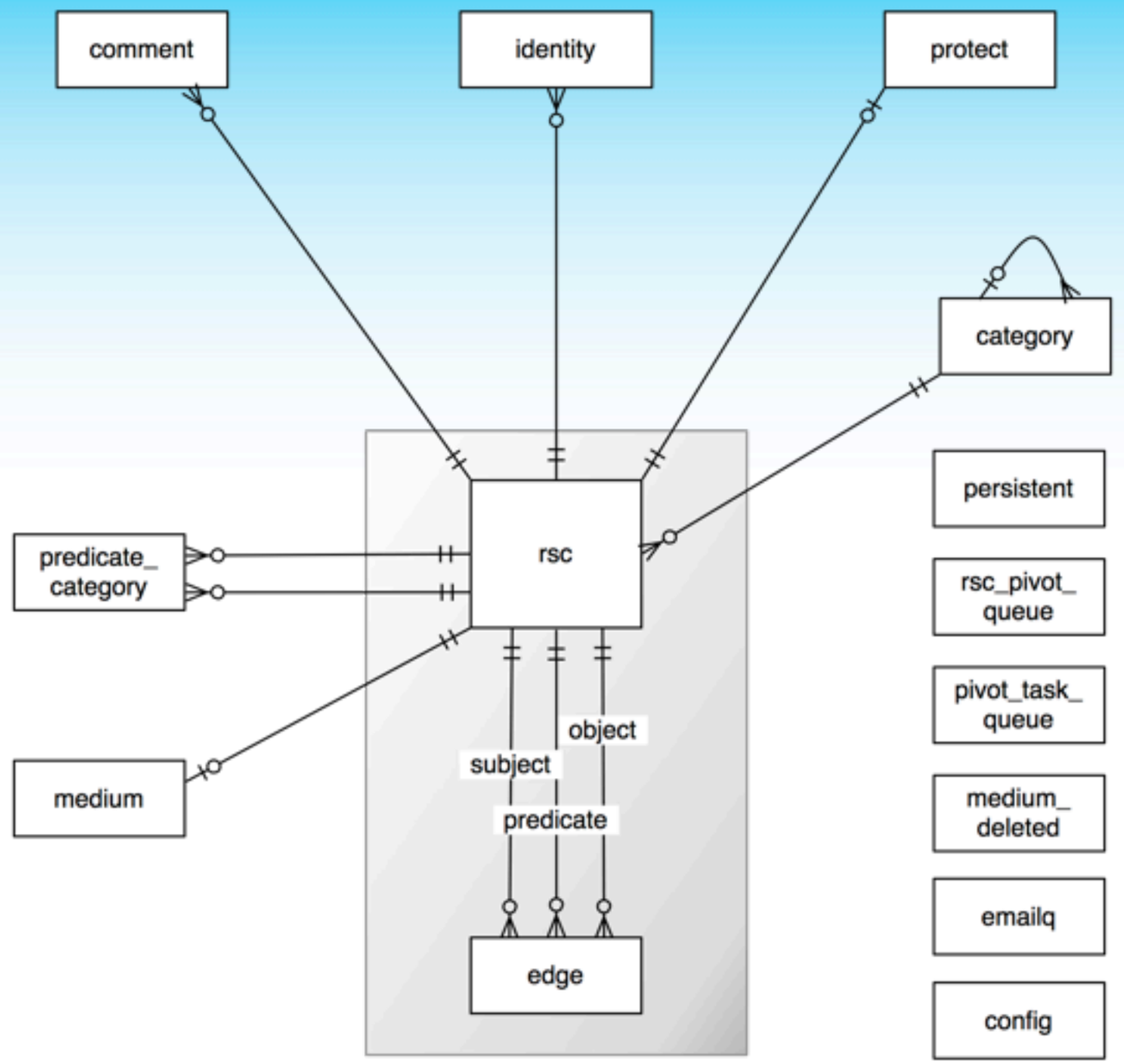
- Where we started
- Our data model
- Open source puzzle
- OTP hierarchy
- Modules
- URL dispatching
- The building blocks

Where we started

- We created the social network/ information management system Anymeta
- Frustration with PHP and MySQL
- Fast experience in low level stuff
- Rediscovered Erlang
- Inspired by Nitrogen



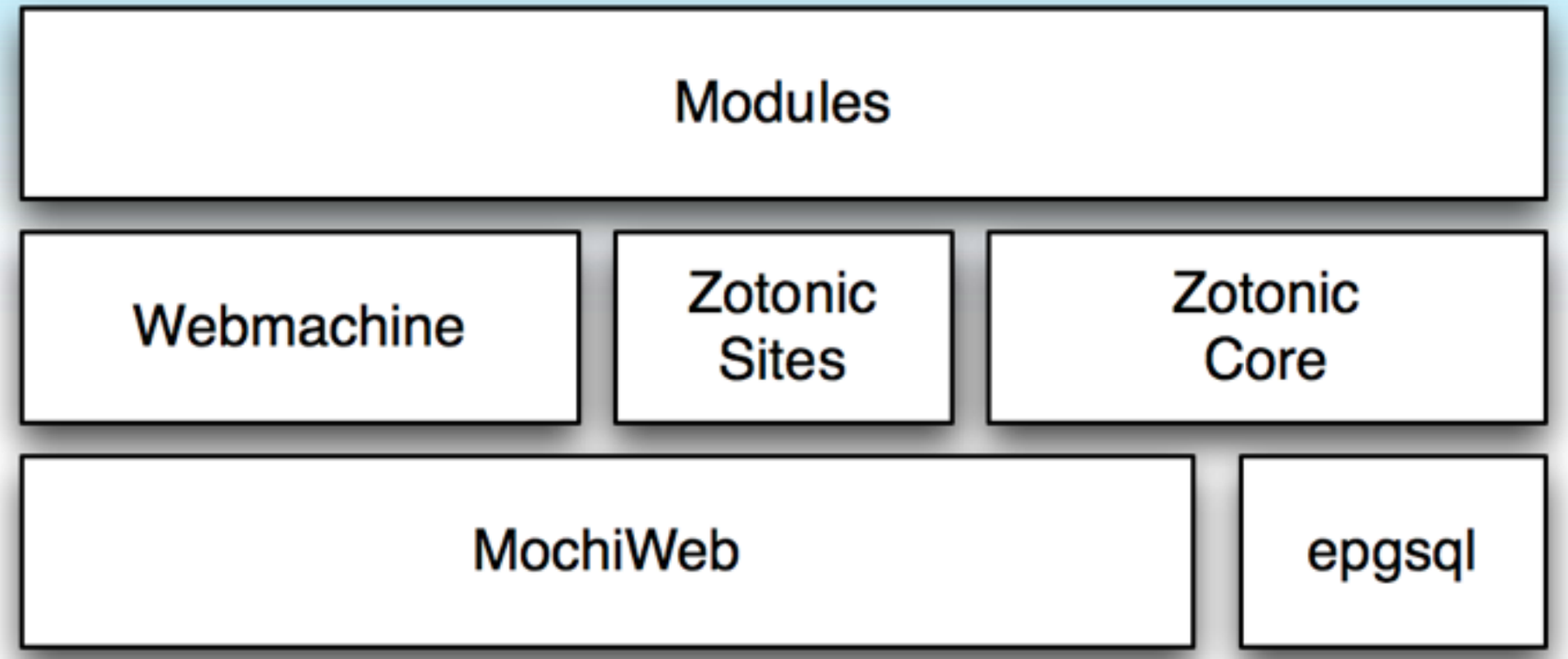
Simplified data model



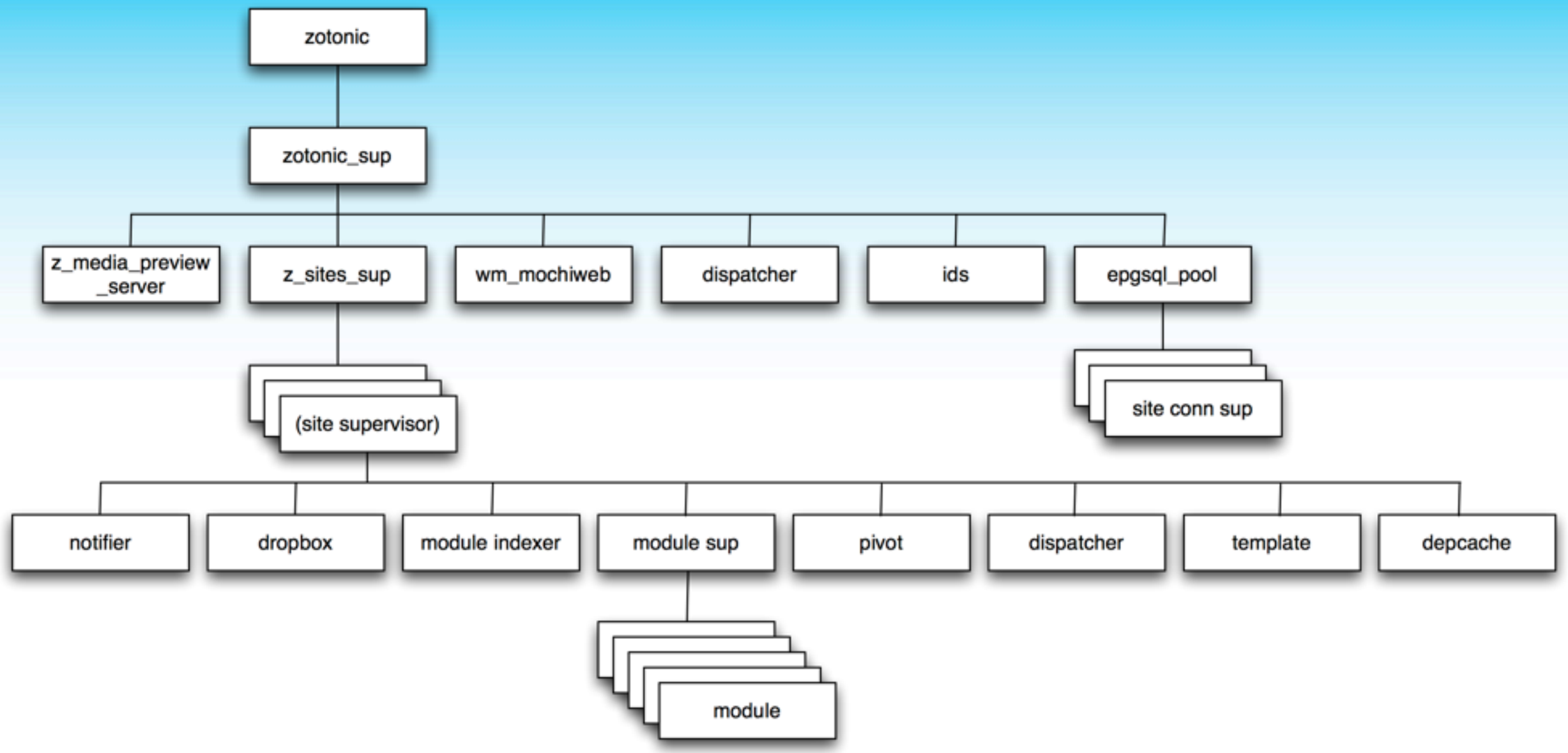
Complete data model

Open source puzzle

- Webmachine
- Nitrogen
- ErlyDTL
- Mochiweb, exmpp, erlang-gettext, erlang-oauth, esmtp
- PostgreSQL driver: epgsql



Simplistic diagram



OTP Hierarchy

Modules

- gen_server
- building blocks in directories
  - dispatch rules, resources, templates, css, javascript, images, translations, template filters, actions, validations, scomps, api services, models
- hooks into event system
- a site is a module

Notification system

- Is how modules extend and offer functionality
- Observe notifications
- Primitives:
  - notify, notify1, fold, map, first

URL Dispatching

- Dispatch rules per site
- Modules extend dispatch rules
- Dispatch rules have names

```
{page, ["page", id, slug],
        resource_page,
       [ {template, {cat, "page.tpl"}} ]}
```

The page resource

- Webmachine resource
- 404 check
- Authorization check and redirect
- Template selection

Templates

- Extended ErlyDTL
  - Expressions: {% if a + b > c %}
  - Data types: {latest cat='news'} [a,value,list]
  - Data access: m.rsc.[id].title
- Templates can be included by category
- Higher priority modules overrule

Template example

```
<ul>
{% for id in m.search[{fulltext cat='news' text=q.qs}] %}
  <li>
    <h3>
      <a href="{{ m.rsc[id].page_url }}">{{m.rsc[id].title}}</a>
    </h3>
    <p>{{ m.rsc[id].summary }}</p>
  </li>
{% empty %}
  <li>No news today.</li>
{% endfor %}
</ul>
```

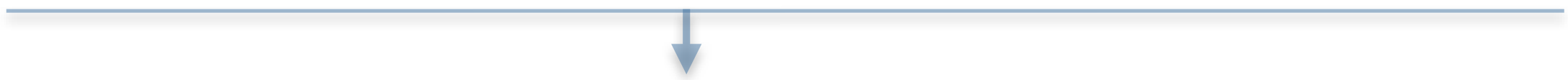
Scomps – screen components

- For when you need more logic than a template can handle
  - Erlang module
  - Cacheable
  - Example: `{% menu id=id %}`

Event (Ajax) handling

- Ajax postbacks
- Form submits
- Calls event/2 function

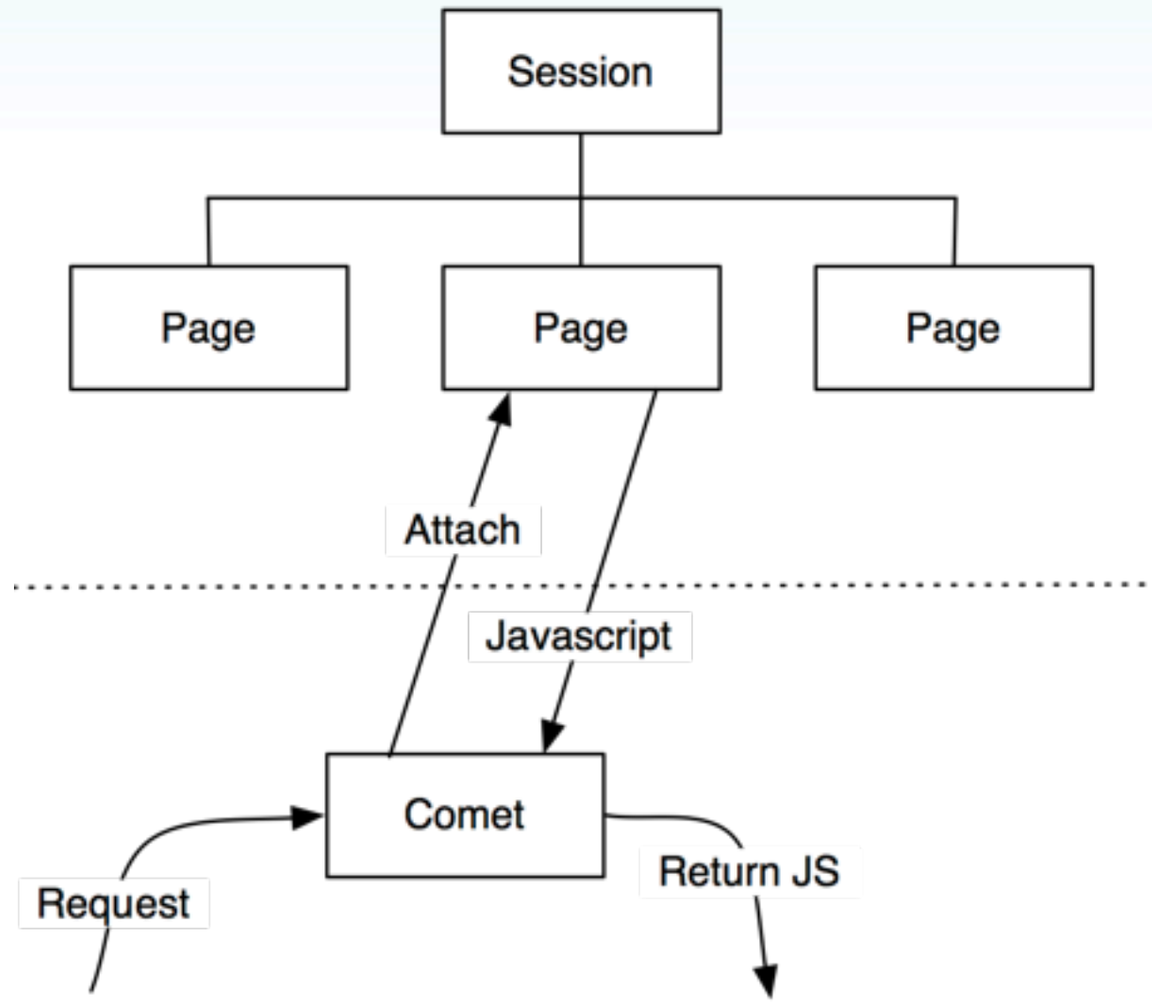
```
{% button postback={click foo="bar"} text="click me" %}
```



```
event({postback, {click, Args}, _Trigger, _Target}, Context) ->
  z_render:wire({alert, [{text,"hello"}]}, Context).
```

Push connections

- Uses either Comet or WebSockets
- Attaches to the page process
- Transports Javascript to the UA



API Services

- API method is an Erlang module
- `/api/mymodule/mymethod`
- in `/services` module directory

```
-module(service_mymodule_mymethod).
-svc_title("Say hello to the world.").
-svc_needauth(false).
-export([process_get/2]).

process_get(_ReqData, Context) ->
    z_convert:to_json([{message, “Hello World!”}]).
```

Performance optimizations

- Caching (do not hit the database)
- Prevent copying data
- Memo caching in process dictionary
- Pre-compute, store publishable html
- Share computations between requests

Compute less

- Parallel requests have similar computations
- Only one time calculated
- Lightweight and simple optimization against /. effect
- Uses memo functionality of depcache
- Kind of caching, with 0 expire

Future directions

- Scaling up… Elastic Zotonic
  - Distributed
  - Fault tolerant
  - Buzz word compliancy
- Information exchange hub
  - Publish & subscribe (XMPP, PubSubH…)

Elastic Zotonic

maXclass

- Who: Maximonster Interactive Things
- What: MaxClass, a social network for education
- Different from what you know

Elastic Zotonic Goals

- Scalable
- Robust
- Fault tolerant
- Low maintenance
- Low cost, less hardware
- Keep it simple s…

Elastic Zotonic Solution Direction

- Homogeneous boxes
- Distributed store
- Files in store
- Queues everywhere
- Dynamic indices
- Range queries
- Next/prev queries
- Full text queries
- Process request near the session
- Simple load balancing

Elastic Zotonic Software?

- Riak (cAP) & Riak Search
- Hibari (CAp)
- RabbitMQ
- ElasticSearch
- Sphinx
- Solr

Elastic Zotonic When?

- Release in Q4 2010
- Help will be welcome :-)

Thanks To …

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¿Questions?