Nitrogen | Web Framework For Erlang

Nitrogen and Riak by Example

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"50 line code snippets are useful,
but how do you build
a real application?"

Problem / Use Case

Slide-focused conference call with a prospective client or investor:

“Should I try to use Webex, or just email the slides?”

“The file is 5MB, what if their email server blocks it?”

“Should I send this as a .pdf, .ppt, .pptx, or Keynote?”

“Slide 3 will have no impact without an explanation.”

“I hope they don’t read slide 10 out of context.

“Is the audience even paying attention, or are they reading ahead?”

Solution: Web Slideshow Tool

Step 1 - Upload Your Slides

- Accepts .ZIP containing images, text, code.
- Accepts .PDF (requires Ghostscript)

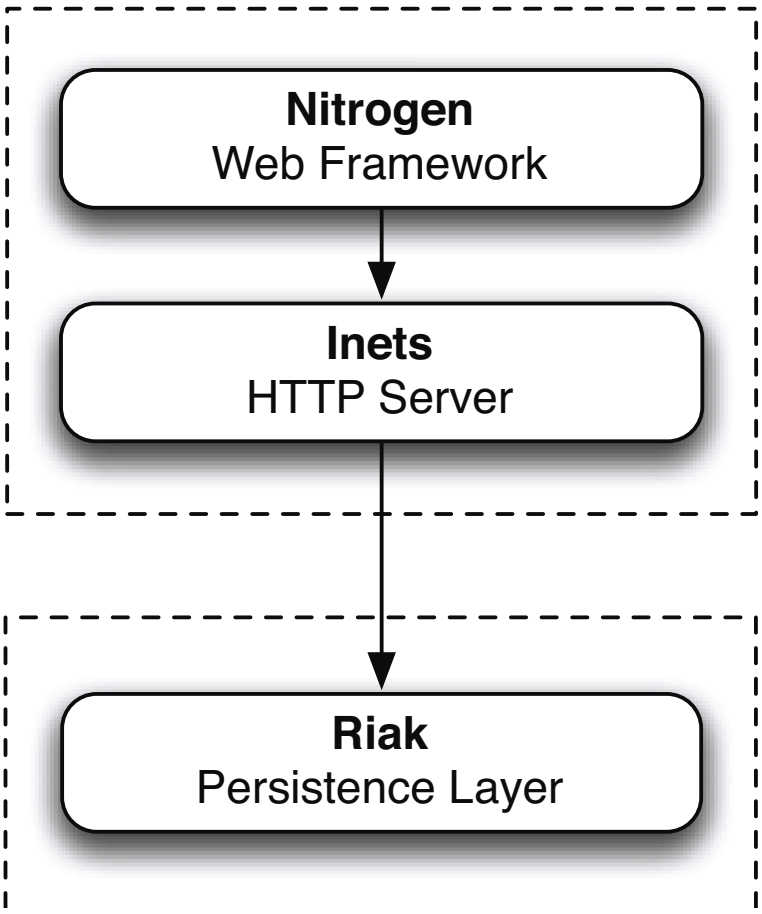
Step 2 - Share a URL

- Via email, chat, etc.

Step 3 - Page Through Slides

- When you advance a slide, everybody in the audience sees the same thing.
- Near-Instant feedback if somebody disconnects.

Components



Nitrogen Web Framework For Erlang

Nitrogen: The Basics

Put elements on a page

```
#link { id=myLink, text="Login" }
```

Listen for Events

```
wf:wire(myLink,
  #event { type=click, postback=click})
```

When an Event Happens, Update the Page

```
wf:update(myPanel,
  #span { text="You clicked!" })
```

Nitrogen: Web 2.0 in Erlang

Rapid Development

- ~40 built-in elements, ~15 actions, 8 validators
- One-line Ajax and Comet
- Abstraction layer for JQuery features:
  - Effects, Sorting, Drag and Drop

Extensible

- Create custom elements and actions

Powerful

- Streaming File Uploads
- APIs for session state, page state, cookies, security

Riak: The Basics

Store Data

```
Obj = riak_object:new(Bucket, Key, Value),
ok = Client:put(Obj, 3)
```

Retrieve Data

```
{ok, Obj} = Client:get(Bucket, Key, 2)
```

Schema Agnostic

Bucket and Key are both binaries

Value can be any term

Riak: Inspired by Dynamo

Scalable

- Add a machine: Gain capacity, speed, and reliability.
- Remove a machine: blocks of data (partitions) are moved to rebalance the cluster.

Reliable & Resilient

- When a machine dies, the other nodes cover for it. (Hinted handoff.)
- Conflicting edits are either last write wins, or can bubble up to your application, if desired.

Riak: Inspired by Dynamo

Flexible

- Tune N per bucket (Number of data replicas.)
- Tune R and W per operation. (How many replicas must respond?)
- Swappable storage engines. Choose one that fits your data.

Riak: Innovation

Map/Reduce for Deep Queries

- Streaming, multi-stage maps and reduces
- The code runs where the data is stored

Linked Data

- A link is a pointer from one object to another
- HTTP interface to traverse links to get related objects

Riak: Innovation

Eventing System

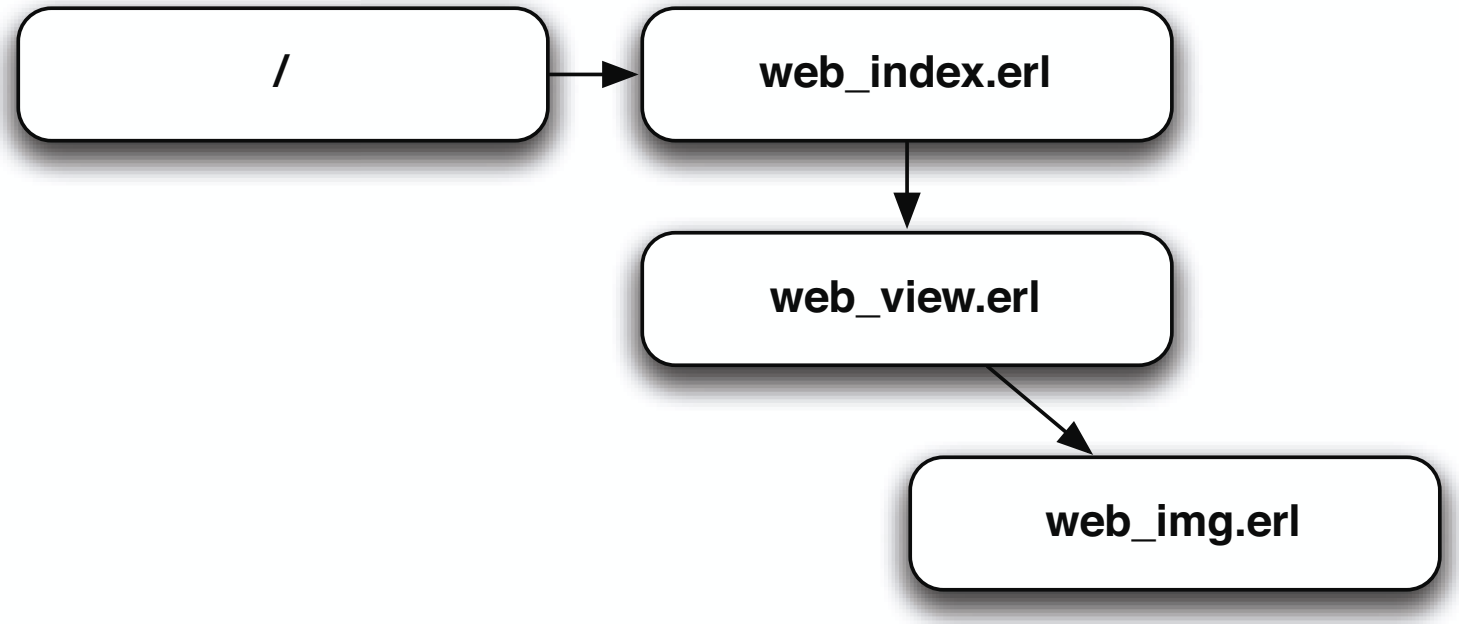
- Subscribe to events using a matchspec

Multi-Lingual

- Erlang, Javascript, Java, Ruby, PHP, Python, & HTTP

Back to our application...

Structure



web_index.erl

Nitrogen Concepts

- Template
- Upload and Upload Event
- Flash
- Redirect

Riak Concepts

- Connect a Client
- Objects, Buckets, and Keys
- Put

web_view.erl

Nitrogen Concepts

- Custom Elements
- Comet
- Session
- Series ID

Riak Concepts

- Get

slide_list_element.erl

Nitrogen Concepts

- Sorting
- Click Events / Actions

slide_controls_element.erl

Nitrogen Concepts

- KeyPress Events / Actions

web_img.erl

Nitrogen Concepts

- Content Types
- Path Info

Riak Concepts

- Get an Object

Sample Code http://github.com/rklophaus/caster

Nitrogen http://nitrogenproject.com
@nitrogenproject

Riak http://nitrogenproject.com
@justinsheehy, @argv0,
@hobbyist, @jrecursive, @rklophaus

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