

# VERTICAL REUSABILITY THROUGH COMPONENTS

# ABOUT ME

- Software Engineer
- PHP since 11 years
- CI
- CleanCode
- DevOps
- TDD
- Shipping
- Bullet points

# WORKING FOR

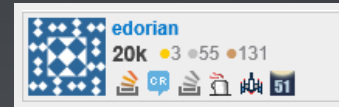


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We help researchers build reputation and accelerate scientific progress.

On their terms.

# GET IN TOUCH



- **stackoverflow:**
- **Twitter:** @\_edorian
- **G+ / Xing:** Volker Dusch
- **IRC (freenode):** edorian
- **Mail:** php@wallbash.com

# I'M HERE BECAUSE I...

- want to tell you how we are growing our website
- think this way structuring code and development effort is awesome
- am really happy with it and I want to tell you about the ideas behind it

# VERTICAL REUSABILITY THROUGH COMPONENTS

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# ACTUALLY: IT DOES WHAT IT SAYS ON THE TIN

An application architecture optimized for maximum code and  
component re-use

"Architecture" as in: "how to structure your code"





Rajiv Gupta

M.D., Ph.D.

Massachusetts General Hospital - Department of Radiology



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Massachusetts General Hospital

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Boston, MA, USA

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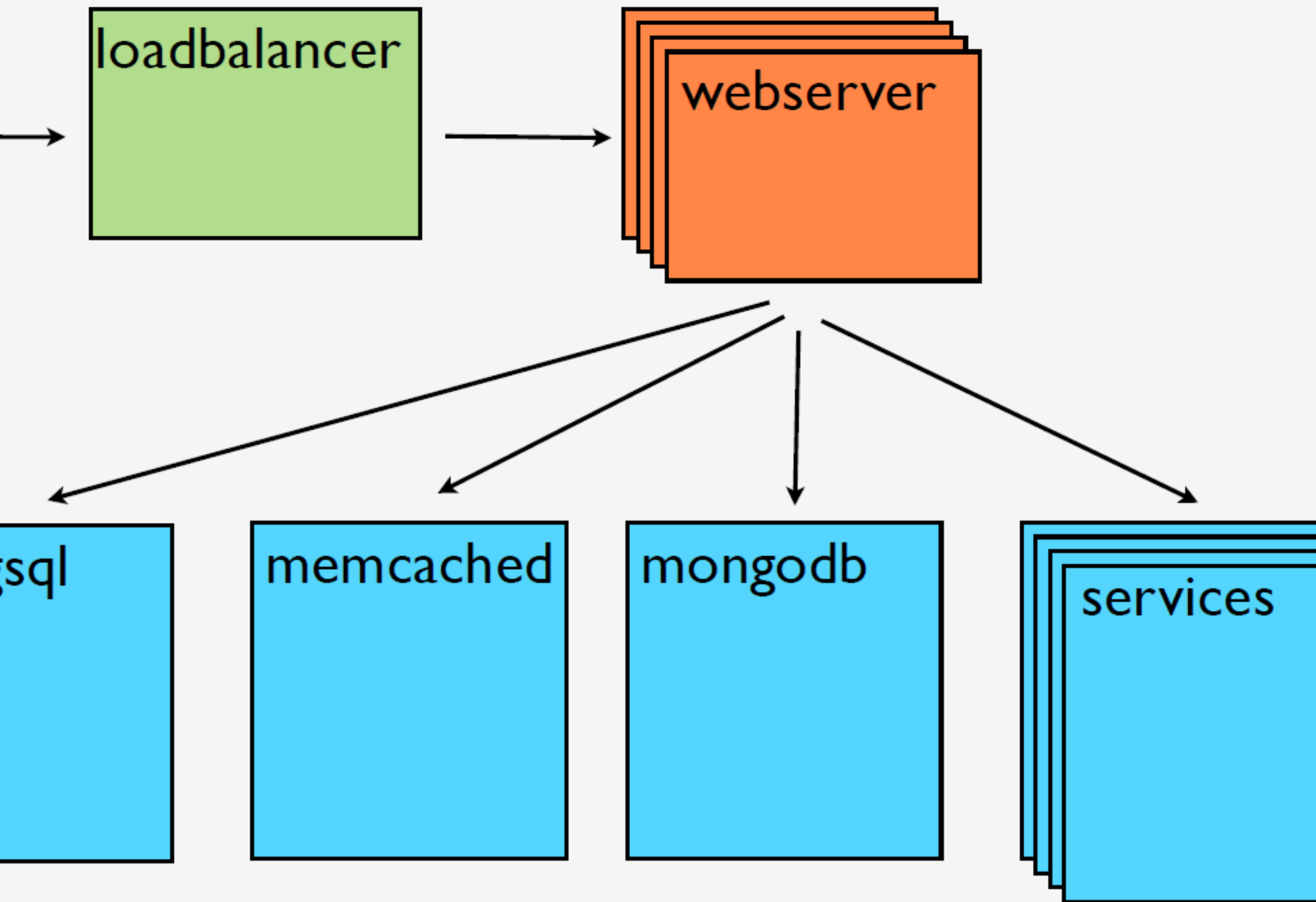
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# IT WAS YOUR CLASSIC PHP APPLICATION

- ""MVC""
- Doctrine1 models and lazy queries in the views
- PHP Templates
- Controllers
- Complicated routing
- Lots and lots of legacy



# AND SO THEY REFACTORED

- Enable reuse
- Higher developer convenience
- Improve performance
- Reduce loading times

# SPLITTING THE PAGE INTO SELF-CONTAINED COMPONENTS

Every element on the page can live for its own without the context it's in!

Sounds crazy?



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# AJAX INTERACTIONS ARE PART OF THE DEAL!

Every component, or "widget", can be addressed and rendered separately

# JAVASCRIPT IS PART OF THE WIDGET

The JS code to bind dom events and manipulate the component is included



# TEMPLATES

Written in mustache and can be rendered on the server or the client

- Reuse of templates between client and server
- Templates are stored in our CDN and cached in the client
- Only data is transmitted and rendered on the client side
- V8js

# MUSTACE

```
<div id="{{widgetId}}" class="question">
  <h2>{{#title}}</h2>
  <p>{{#content}}</p>
  {{#showComments}}
    Comments:
    {{#comments}}
      <hr>
      {{{.}}}
    {{/comments}}
  {{/showComments}}
</div>
```

# DEMO

- pageload
- ajax interaction
- pushstate

# Widget

```
graph TD; subgraph Widget; direction TB; PC[PHP Controller] --- PData[Providing data]; MT[Mustache Template] --- DData[Displaying data]; JVC[JavaScript view class] --- HBE[Handling browser events]; end
```

PHP Controller

Providing data

Mustache  
Template

Displaying data

JavaScript  
view class

Handling browser events

# WIDGET CAN CONTAIN WIDGETS

A component in a component in a component in a component  
in a component

---

## PAGE

- Put "profile header for \$userId" on top
  - Put "main profile content for \$userId" to the left
  - Put "secondary profile content for \$userId" to the right
- 

## SECONDARY PROFILE CONTENT

- Render a list of:
  - "Affiliation for \$userId"
  - "Skill teaser of \$userId"
  - "Top co authors of \$userId"
  - "People following \$userId"



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# PERFORMANCE

- Widgets are self contained
- Widgets need data
- Sloooooooooowww?



# ASK DON'T FETCH

- Widgets define requirements
- No fetching of data, only asking for what is needed
- We needed a declarative syntax for those requirements

# REQUIREMENT TYPES

- RequestDataRequirement: Enforce input from request or context
- EntityRequirement: Get Doctrine2 entities
- ServiceRequirement: Talk to a service
- WidgetRequirement: Include another component

Widget

Widget

Widget

Widget

Preparer

Resolver

Resolver

Services

Connector Interfaces

Connector Implementations

# CONNECTOR TYPES

- Postgres
- Mongo
- REST Services using HTTP-Futures

```
public $account;
public $skillMapping;

public function collect() {
    $that = $this;
    return new RequirementCollection(array(
        new RequestDataRequirement('accountKey', 'accountKey'),
    ), function () use ($that) {
        return new RequirementCollection(array(
            new EntityRequirement(
                'account',
                Account::$CLASS,
                array('key' => $that->accountKey)
            )
        ), function () use ($that) {
            // ...
        }
    )
}
```

```
return new RequirementCollection(array(
    new ServiceRequirement(
        'skills',
        SkillService::$CLASS,
        'getSkillByAccountId',
        array('accountId' => $that->account->getId())
    ), function () use ($that) {
        $requirements = array();
        foreach ($that->skills as $skill) {
            $requirements[] = new WidgetRequirement(
                'skillWidgets',
                Skill::$CLASS,
                array('skillId' => $skill->getId())
            );
        }
        return new RequirementCollection($requirements);
    }
));
```

# WOOOO - THAT LOOKS HORRIBLE!

- Just pretend it is javascript!
- Just pretend it is markup!
- Actually it is really really flexible
- and you get used to it quite fast
- PHP 5.5 will make this a lot nicer





```
yield [  
    new ServiceRequirement(  
        'skills',  
        SkillService::class,  
        'getSkillById',  
        array('accountId' => $that->account->getId())  
    )  
];  
$requirements = array();  
foreach ($that->skills as $skill) {  
    $requirements[] = new WidgetRequirement(  
        'skillWidgets',  
        Skill::class,  
        array('skillId' => $skill->getId())  
    );  
}  
yield $requirements;  
}
```

# BENEFITS

- Enables developers to only focus on their components
- Easy reuse
- Very save refactoring due to limited impact
- Defined way to interact with services
- Business logic has an easy to find place and doesn't end up in components
- All display logic in PHP because mustache is awesome(-ly simple).

# LOAD COMPONENTS ASYNCHRONOUSLY

Instead of rendering a complex part of the page during the initial request:

```
<div id="placeholder"></div>
<script>loadWidget('/aboutMe', function(w) {
w.render({ replace : '#placeholder' });
})
```

# DEMO

- async pageload
- fetch components
- rerender widgets with new data
- only transmit data in json with cached templates on the client

# EASY ERROR HANDLING

Issue in one component? Deactivate it and log the errors. The page still works fine

# NOZZLE - AN ADAPTION OF FACEBOOKS BIG PIPE

```
<!-- html, head, scripts, css, body tag -->
<div id="widget-page-header">...</div>
<div id="widget-profile">
  <div id="profile-header">...</div>
  <div id="PLACEHOLDER-profile-left-column"></div>
  <div id="PLACEHOLDER-profile-right-column"></div>
</div>
<!-- flush content: js includes and css parsing starts -->
<script>// Lots of inline js
```



# LINKS

Evolution of Code Design at Facebook:

<http://www.infoq.com/presentations/Evolution-of-Code-Design-at-Facebook>

BigPipe:

[https://www.facebook.com/note.php?note\\_id=389414033919](https://www.facebook.com/note.php?note_id=389414033919)

# IS IT OPEN SOURCE?

- No
- Way too specific to our architecture and technologies
- Tailored to our way of working together
- Buuuut

# PARTLETS

The same ideas implemented by one of our engineers

- Open Source
- PHP 5.5
- <https://github.com/P2EE/partlets>
- <https://github.com/P2EE/baserequirements>
- <https://github.com/P2EE/preparables>

# SAMPLE PROJECT RUNNING IN SILEX:

Shows off very basic concept and usage

- PHP
- Twig
- Very simple require.js powered views

<https://github.com/P2EE/silex-partlet-demo>

# EXAMPLE CODE

```
class Home extends SilexPartlet {
    protected $block;
    public function collect() {
        yield [
            new PartletRequirement(
                'block',
                News::class
            )
        ];
    }
    public function getData() {
        return [
            'block' => $this->block
        ];
    }
}
```

# THANK YOU!

@BastianHofmann

One of the creators of the framework at ResearchGate - Also I took a couple of his slides :)

<https://speakerdeck.com/bastianhofmann/marrying-front-with-backend>

---

@woodworker

Creator of the open source draft of our widgets

<http://martin.holzhauer.eu/p2ee/2013/09/29/partlet-silex-demo.html>

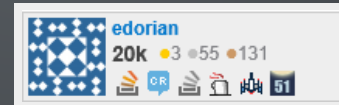
# QUESTIONS?

<https://joind.in/9307>

---

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- IRC (freenode):  
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