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A Web Widget Platform

Enrique Paz

Senior Backend Developer

13/06/2013

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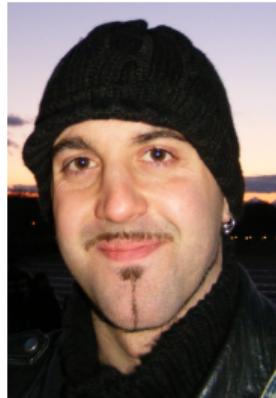
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Contributions



- Passionate Erlang developer
- Testing enthusiast
- Love beautiful code!

Spilgames

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Contributions

- Gaming Platform
- Serving data to 190+ countries world-wide
- 180+ million unique users per month
- Multiple Platforms: Desktop, Mobile Native & Web
- 300+ employees
- Offices in The Netherlands & China
- Revenue: Advertising & EUM

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Brands and Sites

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- **5 Brands/Channels** for target audiences
- **1-15 Sites** for different geographical regions
- Strong domains
 - ▶ www.spel.se for teens in Sweden
 - ▶ www.ojogos.pt for families in Portugal and Brazil
 - ▶ ...

Gaming Portals

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GirlsGoGames.co.uk

Free online Games for girls on GGG.co.uk



SIGN UP FOR FREE! OR SIGN IN

Search Games

SEARCH

GGG.co.uk

Home

Games for girls

Popular

Game Albums

Social Games

Award Games

Creation Games

High-Score Games

Mobile games

Sara's Cooking

Class

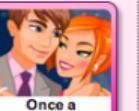
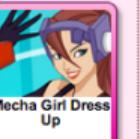
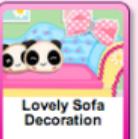
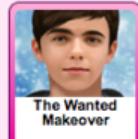
Adventure Games

Animal Games

Cooking Games

Games for girls

Like 8.6k



Rainbow Unicorn#



Harness all the colours of the rainbow to make this unicorn glow!

1 2 3

PLAY NOW! ▶

Popular

1 Celebrity Spa

2 ...

Architectural Overview

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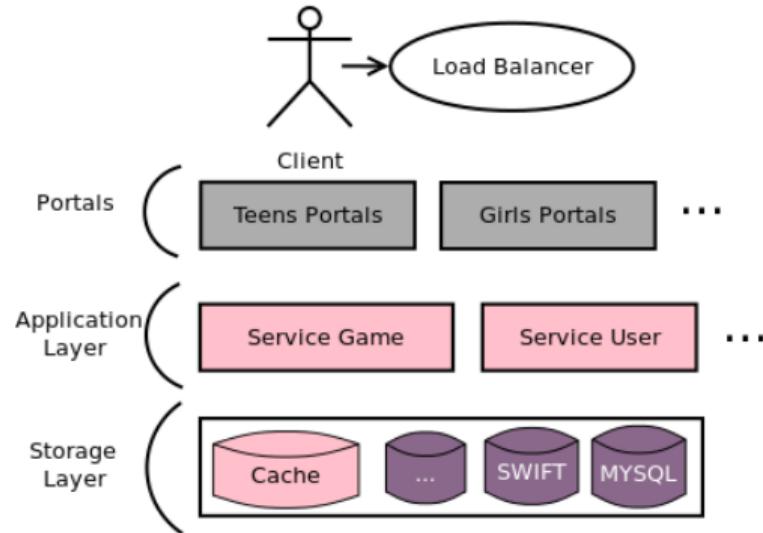
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Contributions

- Monolithic portals per brand
- Static pages with lots of AJAX calls
- Architectural layers developed independently



The Good

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- Ability to develop per brand and site
- Acceptable performance
- Clear layer separation
- Fast growth

The Bad

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Contributions

- Inability to share features between brand codebases
- Aggressive multi-level caching needed to perform decently
- Lots of logic on the client
- Developers can't switch brands easily
- Long time to market

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Isolation & Performance

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Contributions

- Isolated requests, features and crashes
- Feature toggling on runtime
- Decent number of requests/s with linear scalability
- Technology aligned application and storage layers



Increase Development Speed

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Contributions

- Only one modular codebase
- Small features, easy to deploy and rollback
- Changes testable in isolation

What's out there

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Contributions

- MVC Frameworks (Chicago Boss, Zotonic...)

- ▶ (+) Nice layer separation
- ▶ (+) Mature solutions
- ▶ (+) Easy to use

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Summary

Contributions

- MVC Frameworks (Chicago Boss, Zotonic...)
 - ▶ (+) Nice layer separation
 - ▶ (+) Mature solutions
 - ▶ (+) Easy to use
- But...
 - ▶ (-) Feature isolation not key in their design
 - ▶ (-) A VC framework fits better (abstracted model)

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The screenshot shows the homepage of Spel.se, a Swedish online game portal. At the top, there's a navigation bar with links for 'HEM', 'BÄSTA SPELEN', 'SOCIALA SPEL', 'ACTION', 'ÄVENTYR', 'SKICKLIGHET', 'RACING', 'SPORT', 'FLERA SPELARE', 'MER →', and a search bar. The main content area features a large banner for the game 'FARMERAMA' with the tagline 'HET PAK GAAT ERAF!'. Below this, there are three main sections: 'SENASTE SPELEN' (Recent Games) showing 'Otursförföljd tjuv', 'Adam och Eva', 'Min första makeover', 'Kamikaze-grisar', 'Ögonkirurg', 'Cyklande streckgubbe', 'Svamp-Bob Fyrkant kör...', 'Feta bilar 3', and 'Saras kockskola: Kyckli...'; 'MEST SPELADE' (Most Played Games) listing 'Galaxy Life', 'Ögonkirurg', 'Cyklande streckgubbe', 'Svamp-Bob Fyrkant kör...', 'Street Sesh', 'Anfallsstyrkans hjalt...', 'Bubble Shooter', 'Goodgame Gangster', 'Feta bilar 3', and 'Snigeln Bob'; and 'RECENTLY PLAYED' showing 'Click the Bolt' and 'Stickman Free...'. On the right side, there are 'Recommended games' and 'Most played games' sections, both featuring the 'FARMERAMA' game.

Widgets

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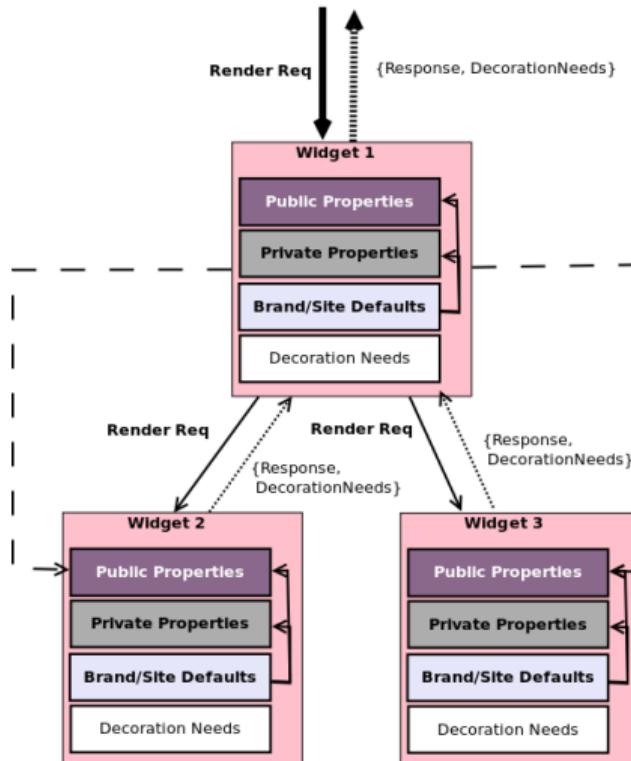
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Contributions

- Isolated
- Independent Erlang applications
- Use ErlyDTL for the view
- Specification in the .app.src
- Can only use what they specify



Widgets: declaring everything

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Contributions

- Children
- Public properties
- Private properties
- Themes
- JS decoration
- CSS decoration

```
{env, [
  {children, [wdg_game_list_breadcrumb]},
  {interface, [
    {page, "1"},
    {pageSize, "20"}
  ]},
  {private_interface, [
    {template, wdg_game_list},
    {css, ["wdg_game_list"]},
    {js, ["init.js"]},
    {games, []},
    {pagination_bar, []}
  ]},
  {themes, [
    {"teens", [
      {template, wdg_game_list_teens},
      {css, ["teens/wdg_game_list_teens"]},
      {js, ["teens/init.js"]}
    ]}
  ]},
  {js_modules, []},
  {js_event_config, [
    {listen, ['system.user.search.request']},
    {emit, []}
  ]}
]}
```

Widget Libraries

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Contributions

- Widget type definitions
- Widget behaviour
- Wrappers for common actions
- Connection to the application layer
- ErlyDTL custom tags



Widget Platform

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Contributions

- Widget dependencies
- Path to widget mapping
- Erlang web server
- Request Flow
- Global error pages



NGINX Virtual Host declaration

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- Domain mapping
- Widget static files
- Static error pages
- URL rewriting



Request Flow

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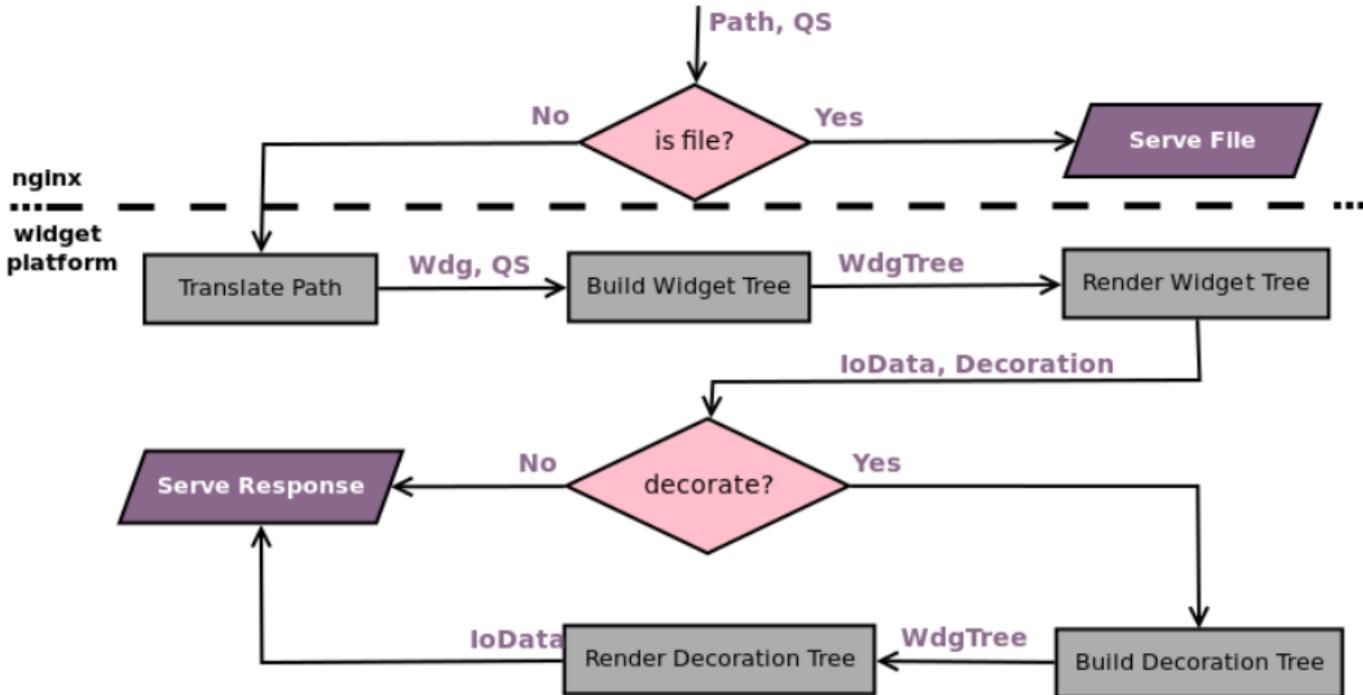
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Sets Of Widgets In One Platform

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- Allows the creation of small deltas
- Different prearranged sets can be requested
- Different sets can be built per request

Master & Slaves In 1 VM

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- The platform master node runs:
 - ▶ A web server
 - ▶ A management interface
 - ▶ A specific set of widgets

Master & Slaves In 1 VM

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Contributions

- The platform master node runs:
 - ▶ A web server
 - ▶ A management interface
 - ▶ A specific set of widgets
- Each slave node runs:
 - ▶ Its own specific set of widgets

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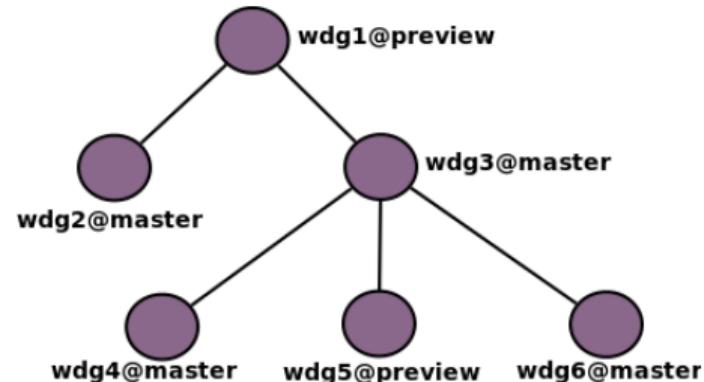
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- Widgets can be called in any node
- Widgets can fail
- Widgets can be disabled



Managing Widgets

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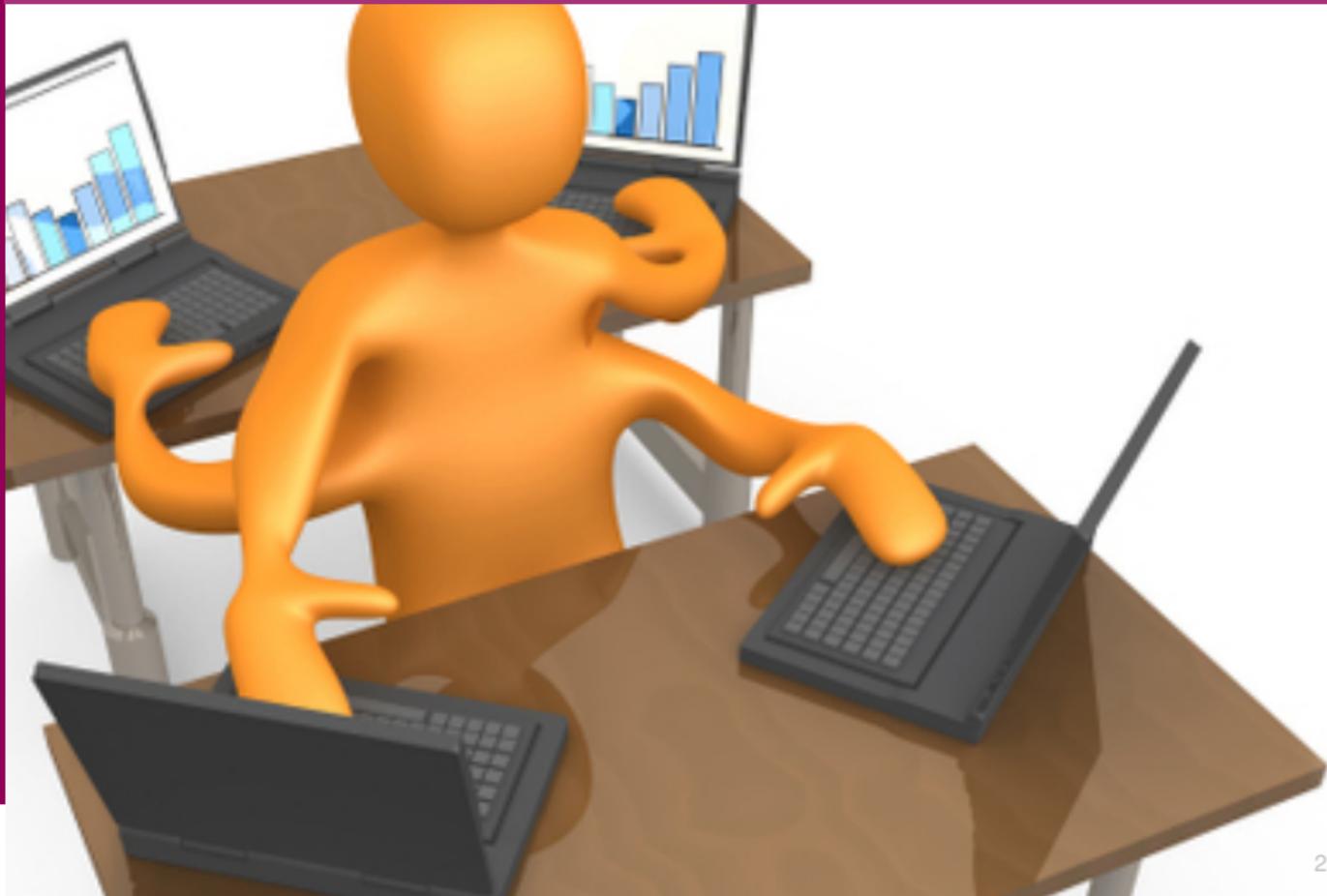
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The Need For A Widget Manager

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- To manage widgets and versions in the platform nodes
- To keep the clustered platforms in sync
- To make changes in the cluster in an easy way

How does it work

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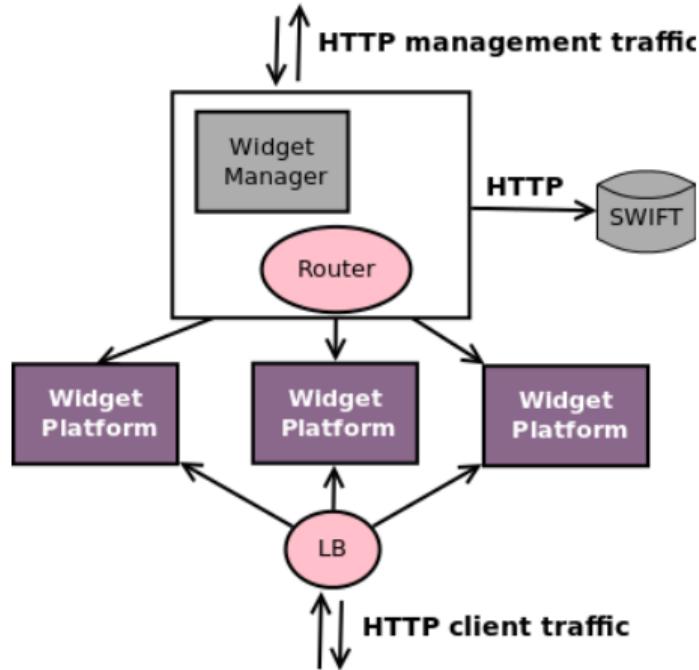
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- SWIFT as a central widget repository
- HTTP interface with simple GUI
- Uses the platform management interface:
 - ▶ List nodes
 - ▶ List widgets in a node
 - ▶ Enable/disable widget in a node
 - ▶ Change widget version in a node
- Enforces configuration to new cluster members



What's in the Future?

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Lessons Learned

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- Reinforce the concepts adoption often
- Review, review, review
- Measure performance from early stages



Coming in H2

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- Native widget to backend connectivity
- Per widget render timeout
- In req caching of the BE calls
- Performance analysis and improvements
- Router to be open sourced

What We've Used

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- ErlyDTL
- Cowboy
- Lager
- Rebar
 - ▶ (*) semantic versioning, i.e. [">=1.3.1", "<2.0.0"]
 - ▶ (*) shared dependencies
 - ▶ (*) xref fixes
- Lhttpc
- Estatsd

Questions?

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See You Around!

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Thanks!