Seaside: An Innovative Web Application Framework

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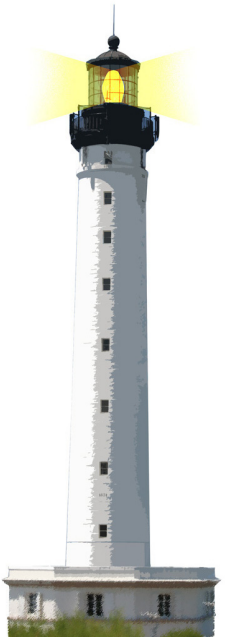
W4S08

Pharo

http://www.pharo.org



Seaside

- A powerful, innovative and flexible framework
- Dedicated to build complex Web applications
- Live coding and debugging
- Support reusable Web components
- Secure by default
- Web 2.0 support (Ajax, Reef, ...)
- REST integration

Books and Tutorials

- Seaside `http://www.seaside.st`
- Seaside book `http://book.seaside.st`
- Seaside tutorial
  `http://www.swa.hpi.uni-potsdam.de/seaside/`
- Seaside tutorial
  `http://seaside.gemtalksystems.com/tutorial.html`
- TinyBlog tutorial
- Community: register to seaside mailing list and ask questions

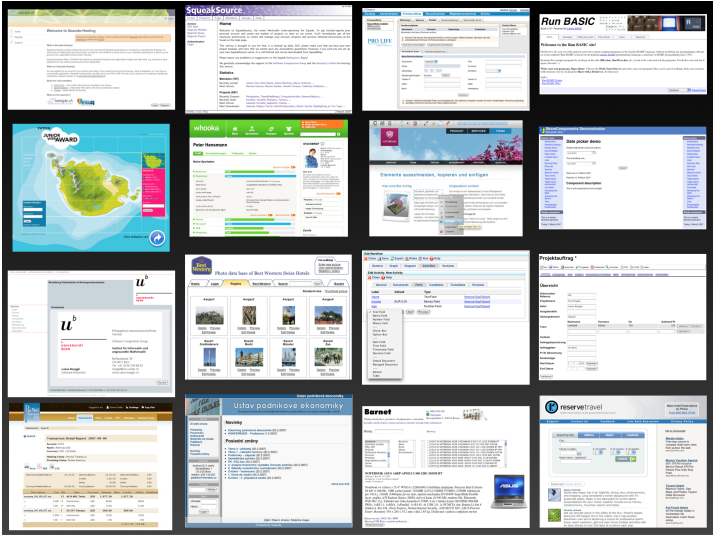
Seaside Little History

- Developed by A. Bryant and J. Fitzell
- Enhanced by L. Renggli and P. Marshall
- In production since 2002
- Actively maintained by J. Brichau, S. Eggermont (web site under full rewrite)
- Foundation of many Pharo success stories
- `http://www.pharo.org/success`

Seaside in a Nutshell

- Define reusable and stateful components
- Use a DSL for rendering components
- Compose components
  - build coarser-grained components by encaspulation
  - schedule components with `call:` and `answer:` messages
- A web application is just a root component
- Debug your application on the fly
- Use metadata to generate forms

Seaside in Production Since 2002



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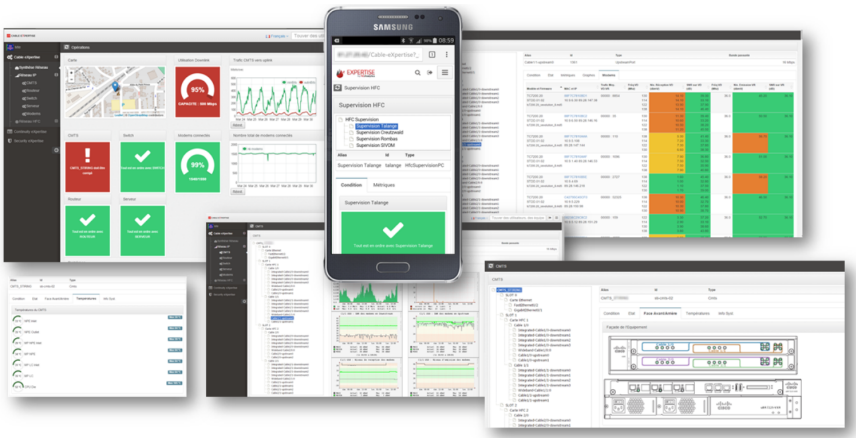

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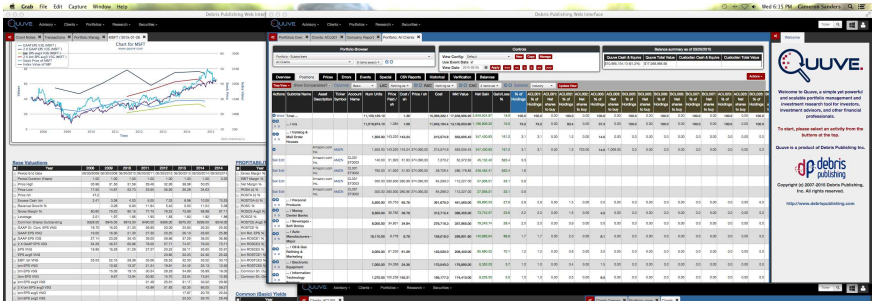
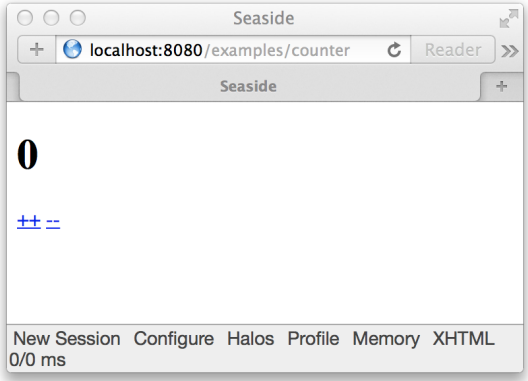


Seaside Components

- A component is:
  - an instance of a subclass of WAComponent
  - a reusable and stateful part of a Web page
  - rendered in HTML ( )
- A Web application has a root component

```
WAAdmin register: WACounter asApplicationAt: 'counter'.
```

The Counter Web Application



WACounter

```
WAComponent subclass: #WACounter
  instanceVariableNames: 'count'
  classVariableNames: ''
  package: 'Seaside−Examples−Misc'.

WACounter >> initialize
  super initialize.
  count := 0

WACounter >> increase
  count := count + 1

WACounter >> decrease
  count := count − 1
```

From Components to Valid HTML

- All components respond to renderContentOn:
- This method converts a component to valid HTML
- This message is automatically sent to components by Seaside

HTML Rendering

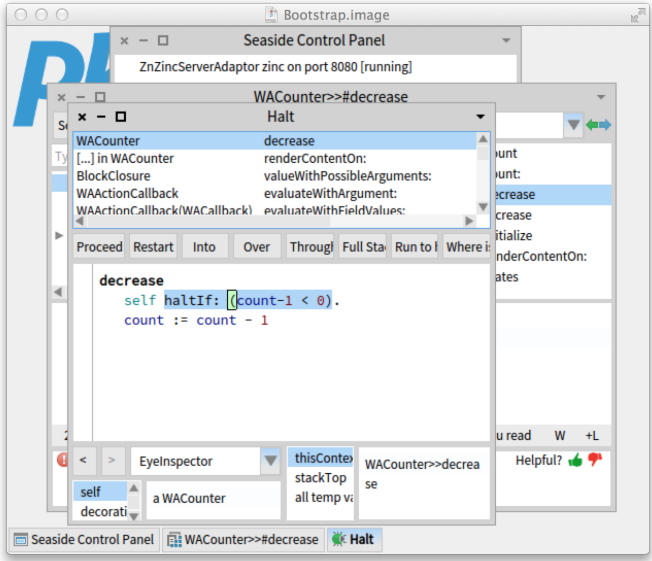
- renderContentOn: is dedicated to HTML generation
- parameter named html (WAHtmlCanvas) defines a DSL like API to generate valid HTML

```
WACounter >> renderContentOn: html
  html heading: count.
  html anchor
    callback: [ self increase ];
    with: '++'.
  html space.
  html anchor
    callback: [ self decrease ];
    with: '--'
```

Live Debugging

```
WACounter>>decrease
  self haltIf: (count−1 < 0).
  count := count − 1
```

Walking the Application Stack



Back Button

Pressing the **back button** of the browser desynchronizes server and client
Example:

- Increment the counter 5 times (count = 5)
- Press the **back button** => the displayed value is 4
- Increment the counter => the displayed value is 6

How to make it work properly?

A Counter Dealing with Back Button

Just declare the component state to be preserved

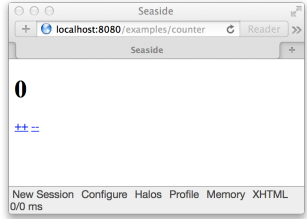
```
WACounter >> states
    ^ Array with: self
```

Plain Code in Callbacks

```
WACounter >> renderContentOn: html
  html heading: count.
  html anchor
    callback: [
      count odd
        ifTrue: [ self increase ]
        ifFalse: [
          self inform: 'Even number!'.
          count := count + 2]
    ];
    with: '++'.
  html space.
  html anchor
    callback: [ self decrease ];
    with: '--'
```

Callback Execution

Pressing ++



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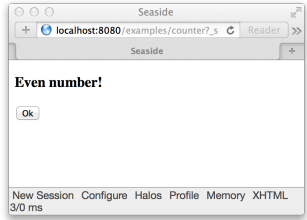
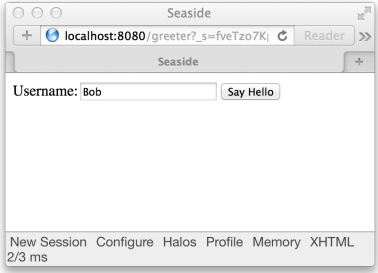


A Greeter Application



Callbacks with the User Value

A Greeter component

```
Greeter >> renderContentOn: html
  html form: [
    html text: 'Username:'.
    html textInput
      callback: [ :value | username := value ].
    html submitButton
      callback: [ self inform: 'Hi ', username ];
      text: 'Say Hello'. ].
```

Did you see?!

- **No** manual request parsing
- **No** XML configuration files
- **No** file/page
  - don’t think in terms of pages
  - use components
- **No** hardcoding of next page
- **Live Debugging**
  - use the debugger to modify objects and proceed to generate the HTML response

Conclusion

- A Web application = a root component
- A component renders itself in HTML (renderContentOn:)
- An extensible DSL helps to easily generate HTML

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