

E2E тестирование React-приложений

О себе

- Разработчик
- СКБ Контур
- Тимлидил фронтенд двух проектов

React

E2E тесты решают

React + E2E



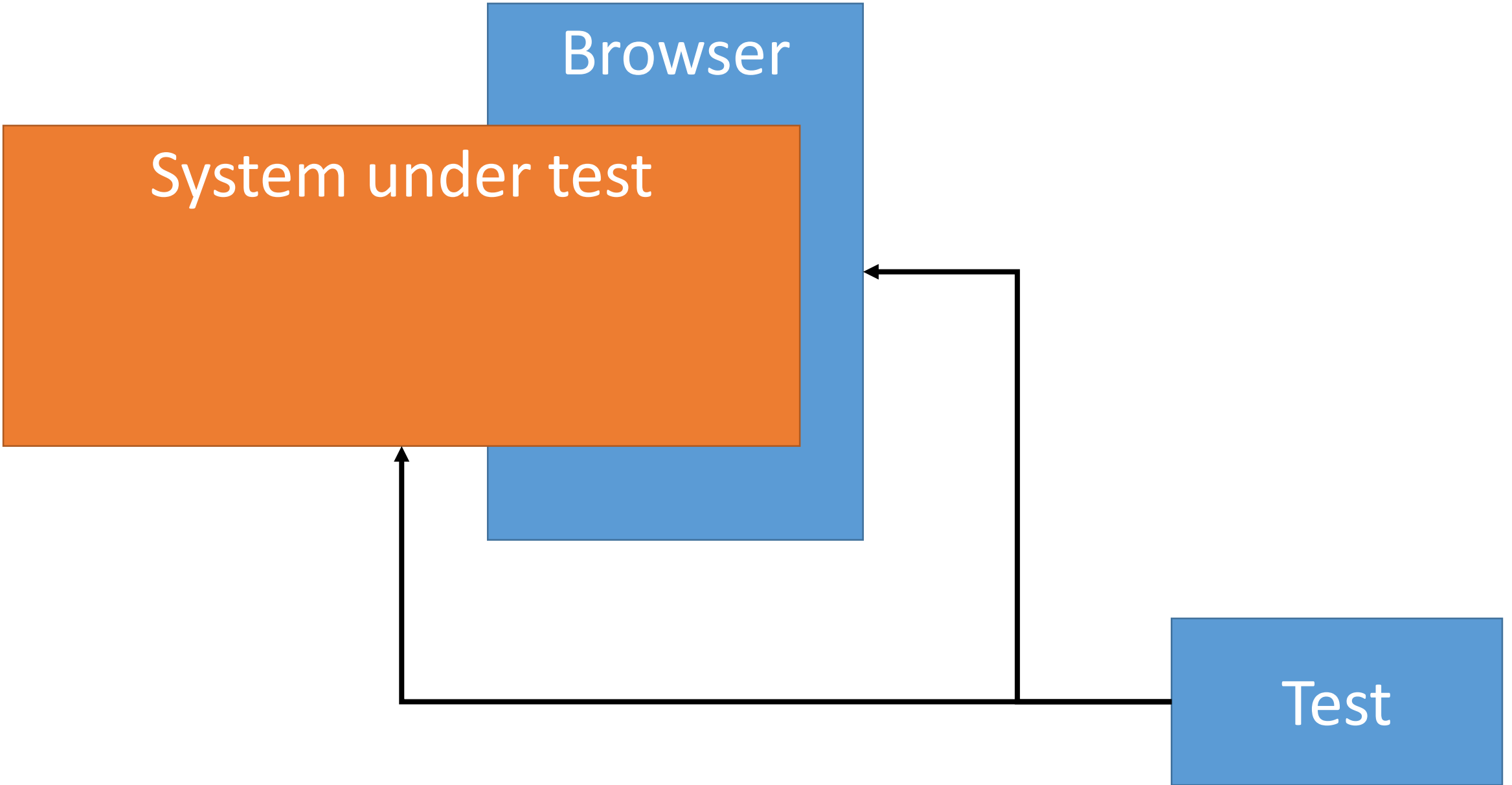
План

- Основы E2E тестирования
- Селекторы
- Селекторы + React и что тут можно сделать
- Примеры, плюсы-минусы
- Инструментарий
- Неожиданный поворот!

Browser

System under test

Test





Elements

Console

Sources



3



```
<!DOCTYPE html>
<html class="page">
  <head>...</head>
  <body>
    <script src="https://localhost.testkontur.ru:11090/static/public/scripts/polyfill.min.js"></script>
    <script src="https://localhost.testkontur.ru:11090/v1/client.js"></script>
    <div id="pageContent" class="candy-container">...</div>
    <script type="text/javascript">...</script>
    <div></div>
    <div>...</div>
  </body>
</html> == $0
```

Input 1

Input 2

html.page

Styles

Computed

Layout

Event Listeners

DOM Breakpoint

Filter

:hov



Селекторы



div.LabeledInput 250 × 53

Input 1

Input 2



Elements

Console

Sources



```
<!DOCTYPE html>
<html class="page">
  <head>...</head>
  <body>
    <script src="https://localhost.testkontur.ru:11090/static/public/scripts/polyfill.min.js"></script>
    <script src="https://localhost.testkontur.ru:11090/v1/client.js"></script>
    <div id="pageContent" class="candy-container">
      <div style="padding-top: 200px; margin: 0px auto; width: 200px;">
        <div class="LabeledInput" style="display: inline-block;">...
      </div>
      <br>
      <br>
      <div class="LabeledInput" style="display: inline-block;">...
    </div>
  </div>
  <script type="text/javascript"></script>
```

html.page body div#pageContent.candy-container div div.LabeledInput

Styles

Computed

Layout

Event Listeners

DOM Breakpoints



Filter

:hov .cls



`div.LabeledInput`

label 43.94 × 19

Input 1

Input 2



Elements

Console

Sources



2



```
<!DOCTYPE html>
<html class="page">
  <head>...</head>
  <body>
    <script src="https://localhost.testkontur.ru:11090/static/public/scripts/polyfill.min.js"></script>
    <script src="https://localhost.testkontur.ru:11090/v1/client.js"></script>
    <div id="pageContent" class="candy-container">
      <div style="padding-top: 200px; margin: 0px auto; width: 200px;">
        <div class="LabeledInput" style="display: inline-block;">
          <label data-testid="Label">Input 1</label> == $0
          <br>
          <label class="react-ui-k7ev96">...</label> flex
        </div>
        <br>
        <br>
        <div class="LabeledInput" style="display: inline-block;">...
```

... html.page body div#pageContent.candy-container div div.LabeledInput ...

Styles

Computed

Layout

Event Listeners

DOM Breakpoints



Filter

:hov .cls



```
div.LabeledInput label[data-testid=Label]
```

In input.react-ui-12sjgkn 228 × 20

Input 2



Elements

Console

Sources

»

2



```
<script src="https://localhost.testkontur.ru:11090/v1/client.js"></script>
<div id="pageContent" class="candy-container">
  <div style="padding-top: 200px; margin: 0px auto; width: 200px;">
    <div class="LabeledInput" style="display: inline-block;">
      <label data-testid="Label">Input 1</label>
      <br>
      <label class="react-ui-k7ev96"> flex
        <span class="react-ui-1dz8sqb">...</span> flex
        <span class="react-ui-1uzh48y"> flex
          ::before
          <input class="react-ui-12sjgkn" type="text" value> == $0
        </span>
        <span class="react-ui-xzqvt8">...</span> flex
      </label>
    </div>
    <br>
    <br>
```

... dInput label.react-ui-k7ev96 span.react-ui-1uzh48y input.react-ui-12sjgkn ...

Styles

Computed

Layout

Event Listeners

DOM Breakpoints

»

Filter

:hov .cls



Поле должно быть заполнено

Input 1

Input 2

Elements Console Sources RTS Watch

```
<div id="pageContent" class="candy-container">
  <div style="padding-top: 200px; margin: 0px auto; width: 200px;">
    <div class="LabeledInput" style="display: inline-block;">
      <label data-testid="Label">Input 1</label>
      <br>
      ...
      <label class="react-ui-woul0j">...</label> flex == $0
      <noscript data-render-container-id="60270d7ac1527"></noscript>
    </div>
    <br>
    <br>
    <div class="LabeledInput" style="display: inline-block;">...</div>
  </div>
  <script type="text/javascript">...</script>
  <div></div>
  <div>...</div>
  <div class="react-ui" data-rendered-container-id="60270d7ac1527">...
</div>
</body>
</html>
```

... y div#pageContent.candy-container div div.LabeledInput label.react-ui-woul0j ...

Styles Computed Layout Event Listeners DOM Breakpoints Properties

Filter :hov .cls +

Input 1

Input 2



Elements



Components

3 3



Search (text or /regex/)



FormObjectProvider

Context.Provider

ExternalLayoutEventsMerger

LocalizerProvider

Context.Provider

CandyThemeWrapper

ThemeProvider

ThemeProvider

EmotionThemeContext.Provider

ThemeContext.Provider

EmotionGlobal ForwardRef

Form

BaseForm

div

LabeledInput

br

br

LabeledInput

LabeledInput



Input 1

Input 2



Elements



Components



3

3



Search (text or /regex/)



```


LabeledInput
    div
      label
      br
      Tooltip
        ThemeContext.Consumer
          ThemeContext.Provider
            RenderLayer
              CommonWrapper
                CommonWrapper
                  Popup
                    ThemeContext.Consumer
                      RenderContainer
                        RenderInnerContainer
                          Input


```

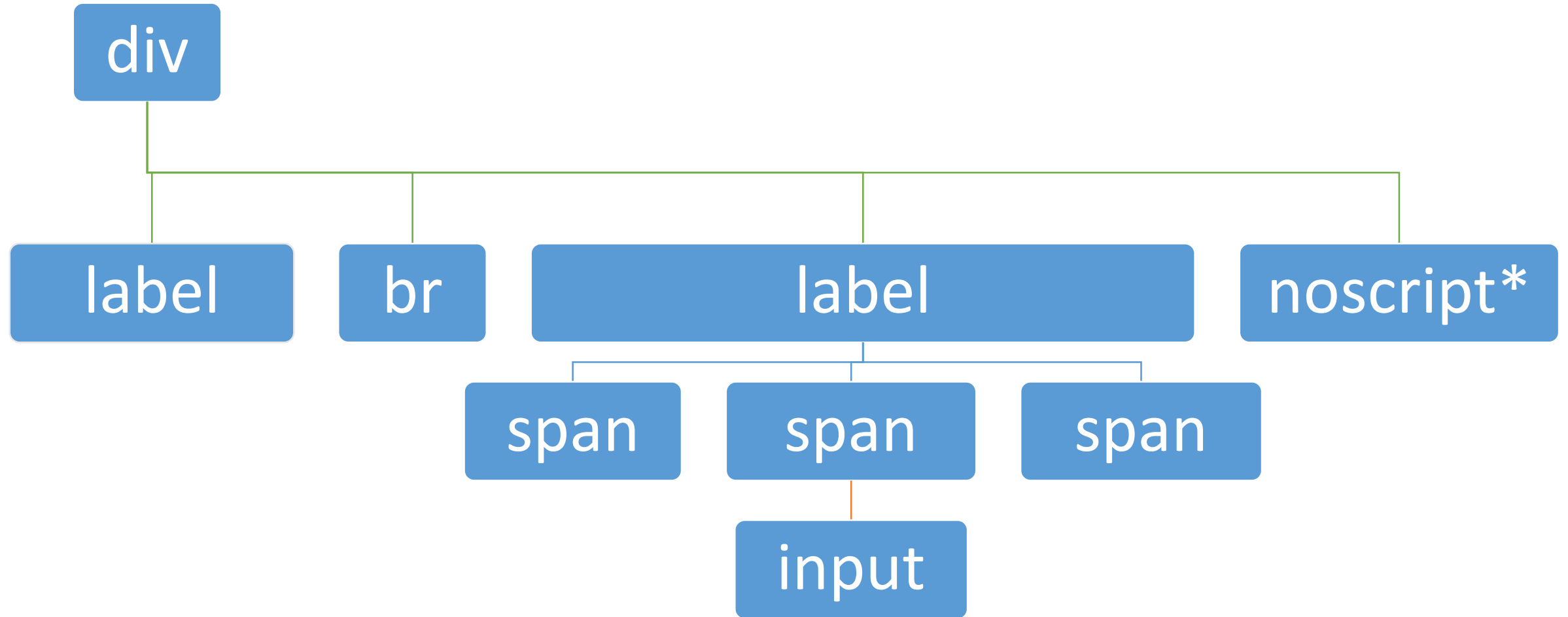
br

br

Input



react-test-selectors



```
function LabeledInput(props: LabeledInputProps) {  
  return (  
    <div>  
      <label>{props.label}</label>  
      <br />  
      <Tooltip render={() => "Поле должно быть заполнено"}>  
        <Input  
          value={props.value}  
          onChange={props.onChange}  
          error={props.value === ""} />  
      </Tooltip>  
    </div>  
  );  
}
```

LabeledInput

div

label

br

Tooltip

Input

Portal

label

noscript*

span

span

span

≈800 тестов

уникальных



Elements

Console

Sources

RTS Watch



top ▾



Filter

Default levels ▾

No Issues



> rts.querySelector("LabeledInput").getDomElements()

< ▼ (2) [div.LabeledInput, div.LabeledInput] ⓘ

▶ 0: div.LabeledInput

▶ 1: div.LabeledInput

length: 2

▶ [[Prototype]]: Array(0)

>

div.LabeledInput 250 × 53

Input 1

Input 2



Console

What's New

Network request blocking

Issues





top ▼



Filter

Default levels

```
> rts.querySelector("LabeledInput").getDomElements()
```

```
< ▼ (2) [div.LabeledInput, div.LabeledInput] ⓘ
```

```
  ▶ 0: div.LabeledInput
```

```
  ▶ 1: div.LabeledInput
```

```
    length: 2
```




Elements

Console

Sources

RTS Watch



top ▾



Filter

Default levels ▾

No Issues



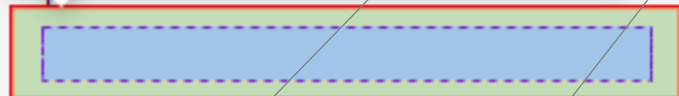
```
> rts.querySelector("LabeledInput Input").getDomElements()
< ▼ (2) [Label.react-ui-k7ev96, Label.react-ui-k7ev96] ⓘ
  ▶ 0: Label.react-ui-k7ev96
  ▶ 1: Label.react-ui-k7ev96
    length: 2
  ▶ [[Prototype]]: Array(0)
>
```



label.react-ui-k7ev96

250 × 34

Input 1



Input 2



top ▾



Filter

Default levels ▾

```
> rts.querySelector("LabeledInput Input").getDomElements()
< ▼ (2) [Label.react-ui-k7ev96, Label.react-ui-k7ev96] ⓘ
  ▶ 0: Label.react-ui-k7ev96
```

Скорость

Меньше энтропия

Теперь разработчикам не
надо расставлять testid!!1

Ну или надо, но совсем чуть-чуть



Нельзя потрогать?

Отладка?

А если баги?



Elements

Console

RTS Inspect



12



Pick element (Alt + Shift + S)

<input />

Rendered by

<label />

<CommonWrapper />

<ThemeContext />

<Input />

<RenderInnerContainer />

<RenderContainer />

<ThemeContext />

<Popup />

<CommonWrapper />

<CommonWrapper />

<RenderLayer />

< />

<ThemeContext />

<Tooltip />

<div />

<LabeledInput />

<div />

<BaseForm />

<Form />

Props

value: "test"

onValueChange: "function () {}"

error: false

size: "small"

Input 1

test

Input 2

a55-bd67699c939a/drafts/a5d8ffb2-1a1c-437a-bca3-1a320c4609d3/edito...



Elements

Console

Sources

RTS Watch

RTS Inspect

Network



1



Pick element (Alt + Shift + S)

<TextOverflowHint />



Props



Доступ к свойствам



Elements

Console

Sources

RTS Watch



top ▾



Filter

Default levels ▾

No Issues



```
> rts.querySelector("Input[error=true]").getProps()
< ▼ {value: '', error: true, size: 'small', onChange: f} ⓘ
  error: true
  ▶ onChange: f ()
  size: "small"
  value: ""
  ▶ [[Prototype]]: Object
```

>

Input 1

Input 2

Границы применимости

- React
- Любой язык / фреймворк
- Мягкое внедрение



Так вот...

```
export class InputControl extends ControlBase {  
    protected readonly internalInputElement =  
        control(HtmlInputControl).as("input").in(this);  
  
    protected readonly internalCandyInput =  
        control(InternalCandyInputControl).as("Input[bindingPath]");  
  
    protected getInternalInputElement(): HtmlInputControl {  
        return this.internalInputElement;  
    }  
  
    public get value(): Promise<string> {  
        return this.getInternalInputElement().value;  
    }  
}
```

```
export class Title104816Unit extends UnitBase {  
    public readonly кпп =  
        control(InputControl).path("Файл/Документ/СВП/НПЮЛ/КПП").in(t  
  
    public readonly иннЮл =  
        control(TextControl).path("Файл/Документ/СВП/НПЮЛ/ИННЮЛ").in(  
  
    public readonly номКорп =  
        control(InputControl).path("Файл/Документ/НомКорп").in(this);
```

```
private readonly signerRadioGroup =  
    boundedControl(RadioGroup)  
        .prop("bindingPath", "ПрПодп").in(this);
```

```
private readonly signerRadioGroup =  
    boundedControl(RadioGroup)  
        .prop("bindingPath", "ПрПодп").in(this);
```



```
private readonly signerRadioGroup =  
    boundedControl(RadioGroup)  
        .prop("bindingPath", "ПрПодп").in(this);
```

```
private readonly input = boundedControl(Input).in(this);
```

```
return this.input.pick(x => x.error);
```

Стабильность

PageObject из коробки



react-test-selector.github.io

Вопросы

- Детали реализации
 - Навигация по дереву из репозитория react
 - react experimental selectors
- Альтернативы
 - testing-library?
 - testcafe + react?
 - react-test-utils?



react-test-selector.github.io