



Software Design

Explorable DOM

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14.02.2017

Project Idea

■ Goals

- Bridge gap between object/code structure and UI
- Alternative layout of UI
- Project meta information into user interface

■ Approach: Different views on DOM



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Chart 2

Related Work

Tilt 3D



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Chart 3

A large rectangular box with a maroon border and a yellow inner border. The word 'Demo' is centered in white text within the yellow area.

Demo

Combine Rendered View and Tool

Rendered view

1. Lorem ipsum dolor sit amet, consectetur adipiscing elit.
2. Aliquam tincidunt mauris eu risus.
3. Vestibulum auctor dapibus neque.

DOM Inspector

Dummy 1

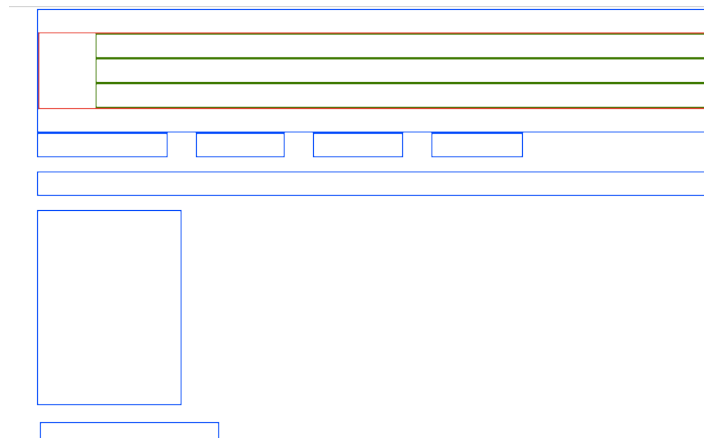
Dummy 2

Dummy 3

[HPI - Website](#)



Tool elements

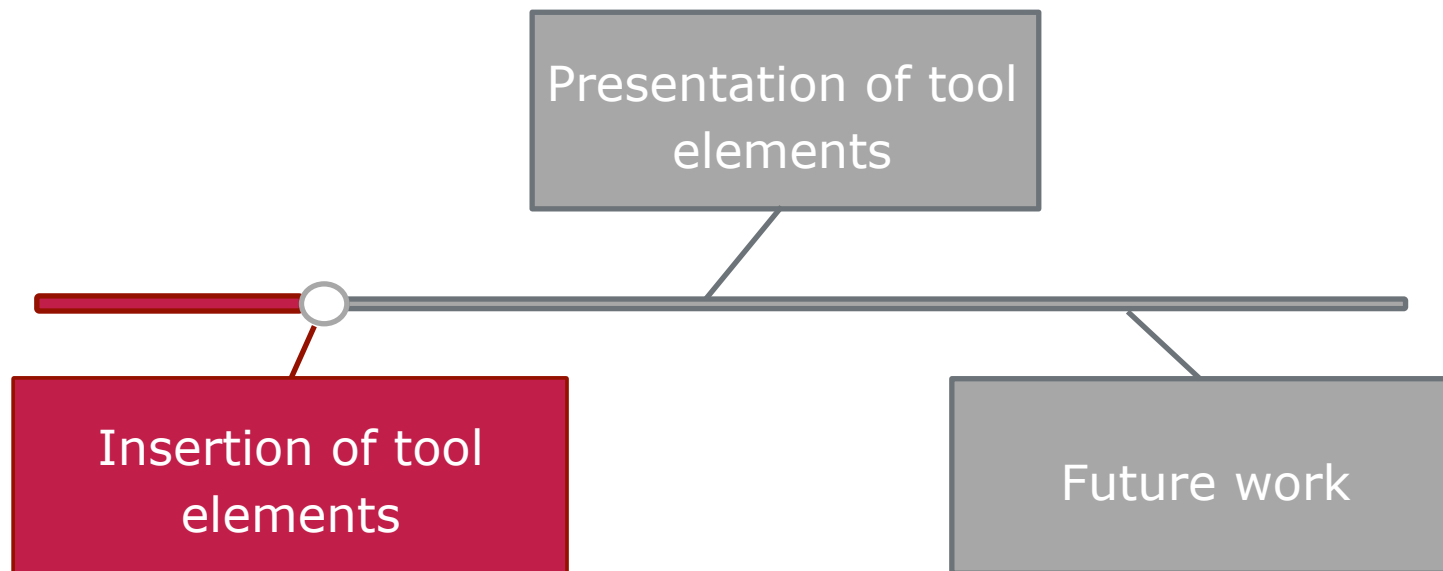


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Chart 5

Outline



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Chart **6**

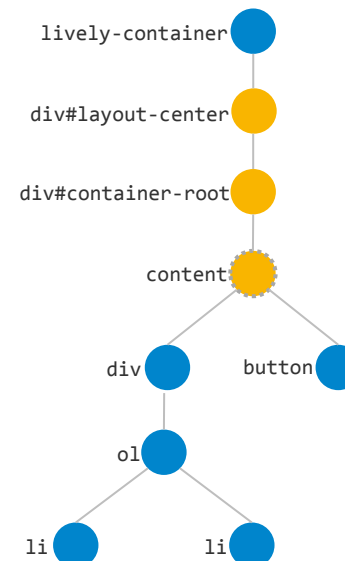
DOM Insertion

Goal: Keep browser behaviour

Textual representation

```
<body>
  <lively-window>
    <lively-dom-inspector>
      <lively-container id="main-content">
        #shadow-root (open)
          <div id="example">
            <ol class="testlist">
              <li>...</li>
              <li>...</li>
            </ol>
          </div>
          <button>...</button>
        </lively-container>
      </lively-dom-inspector>
    </lively-window>
  </body>
```

Composed/Rendered tree



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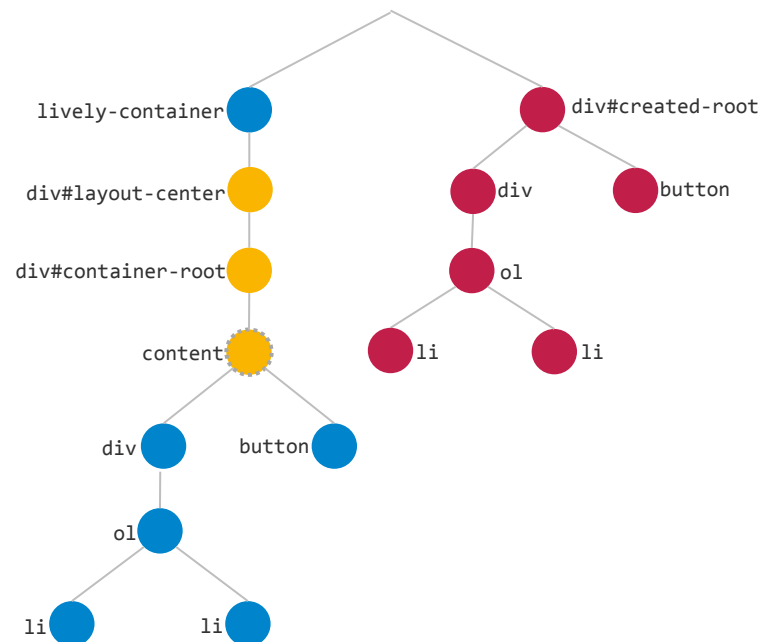
DOM Insertion

Outside The Lively Container

Textual representation

```
<lively-container id="main-content">
  #shadow-root (open)
    <div id="example">
      <ol class="testlist">
        <li>...</li>
        <li>...</li>
      </ol>
    </div>
    <button>...</button>
  </lively-container>
  <div id="created-root">
    <!-- tool elements inserted here -->
  </div>
```

Composed/Rendered tree



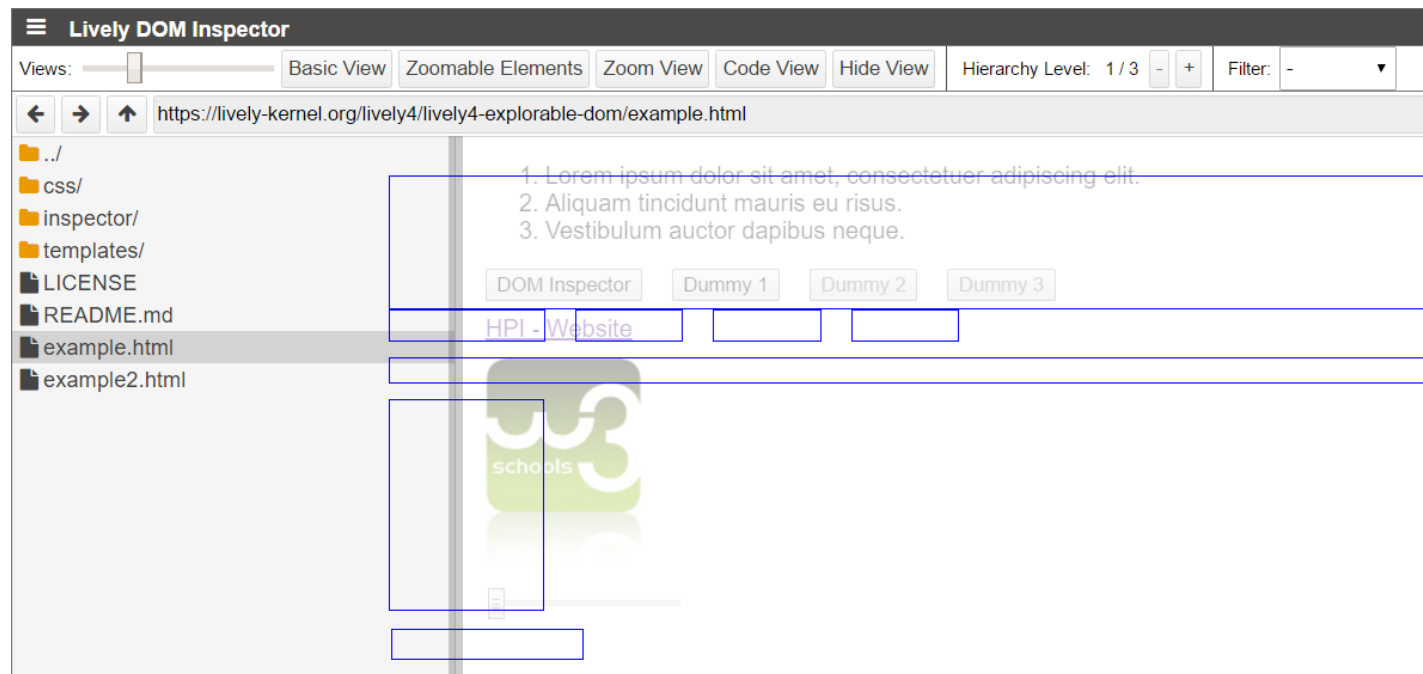
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Chart 8

DOM Insertion

Outside The Lively Container



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Chart 9

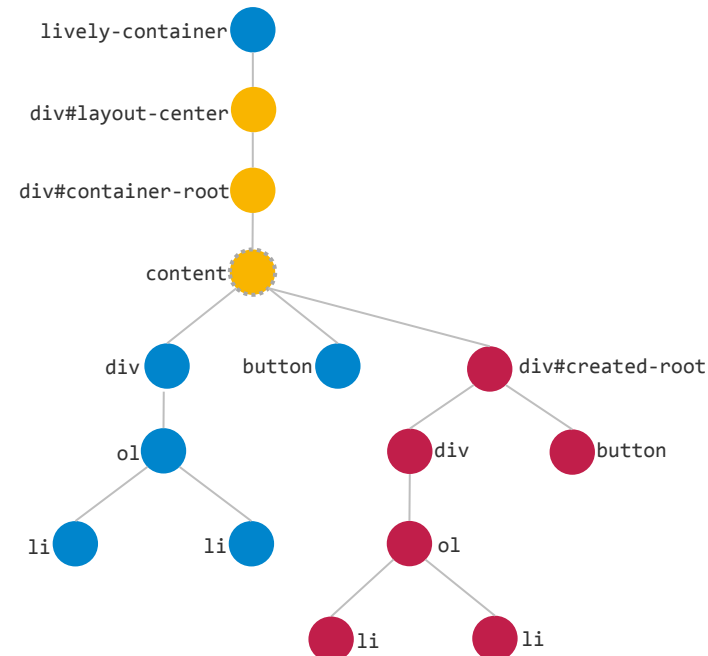
DOM Insertion

On Content-level

Textual representation

```
<lively-container id="main-content">
  #shadow-root (open)
    <div id="example">
      <ol class="testlist">
        <li>...</li>
        <li>...</li>
      </ol>
    </div>
    <button>...</button>
    <div id="created-root">
      <!-- tool elements inserted here -->
    </div>
</lively-container>
```

Composed/Rendered tree



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Chart 10

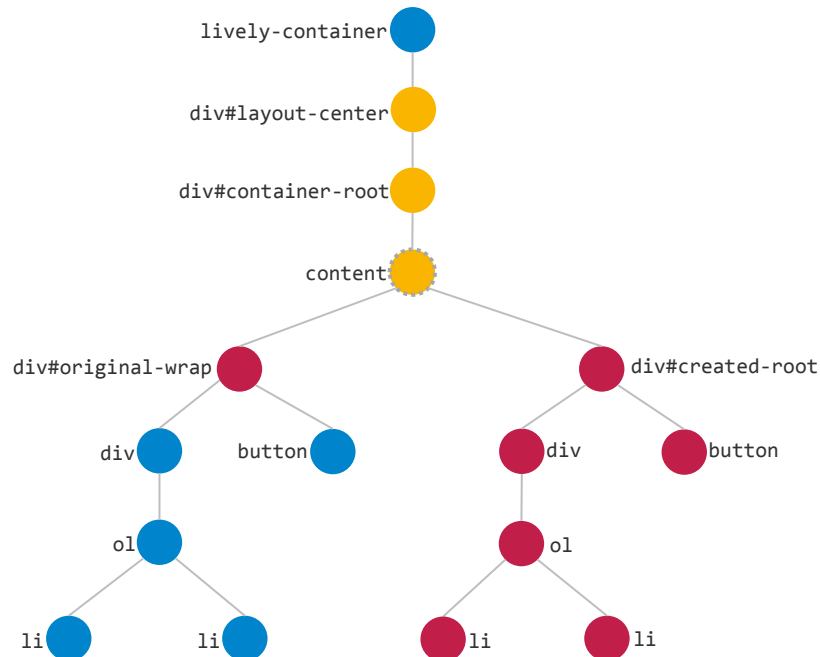
DOM Insertion

On Content-level: Wrap Original Elements

Textual representation

```
<lively-container id="main-content">
  #shadow-root (open)
  <div id="original-wrap">
    <div id="example">
      <ol class="testlist">
        <li>...</li>
        <li>...</li>
      </ol>
    </div>
  </div>
  <button>...</button>
  <div id="created-root">
    <!-- tool elements inserted here -->
  </div>
</lively-container>
```

Composed/Rendered tree

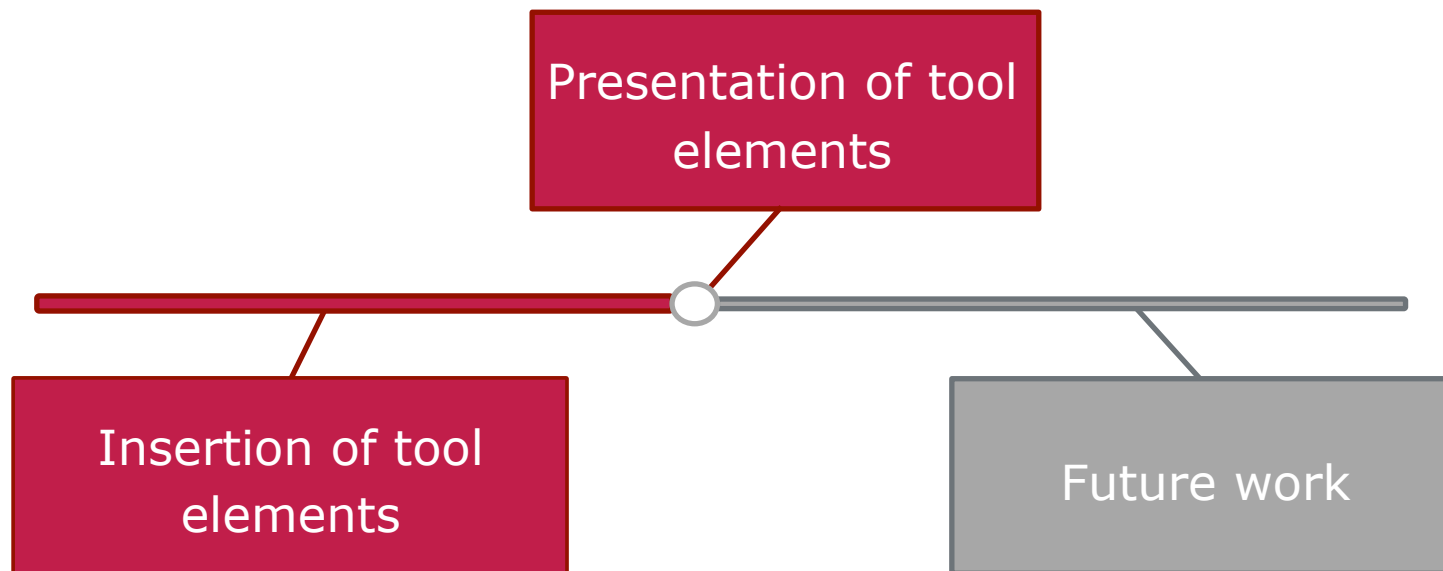


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Chart 11

Outline



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Chart **13**

Presentation of Tool Elements

Positioning



Absolute

Relative
(Inherent tags)

Relative
(DIVs)

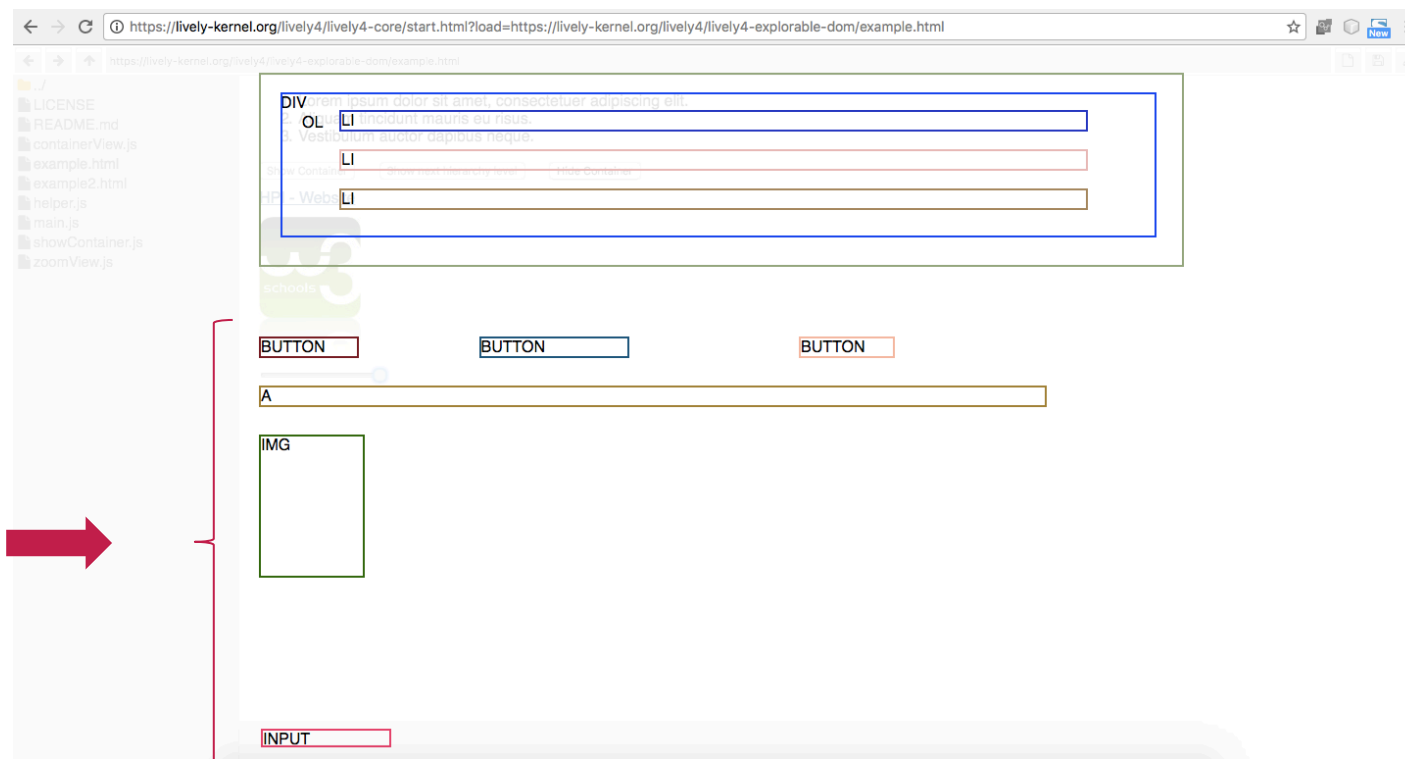
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Chart **14**

Presentation of Tool Elements

Absolute Positioning



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Chart 15

Presentation of Tool Elements

Positioning

Absolute

Relative
(Inherent tags)

Relative
(DIVs)

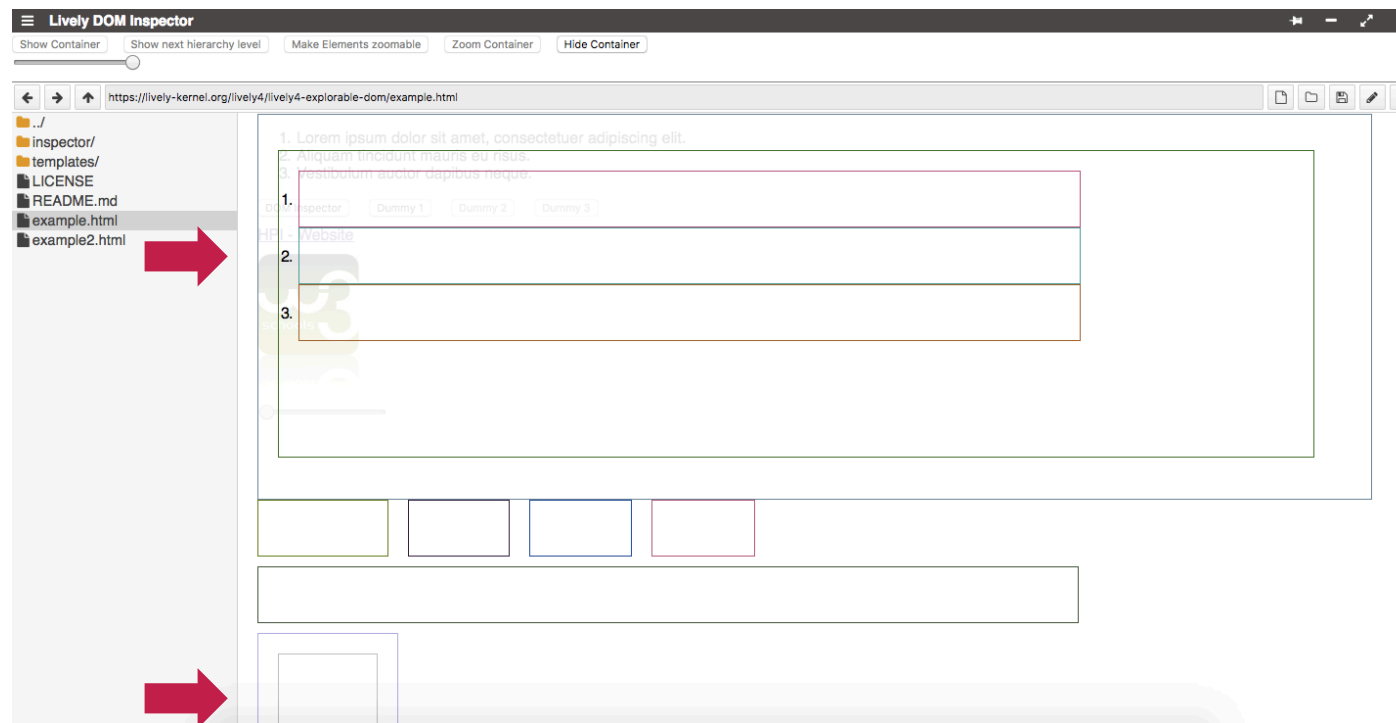
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Chart **16**

Presentation of Tool Elements

Relative Positioning (Inherent Tags)



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Chart 17

Presentation of Tool Elements

Positioning

Absolute

Relative
(Inherent tags)

Relative
(DIVs)

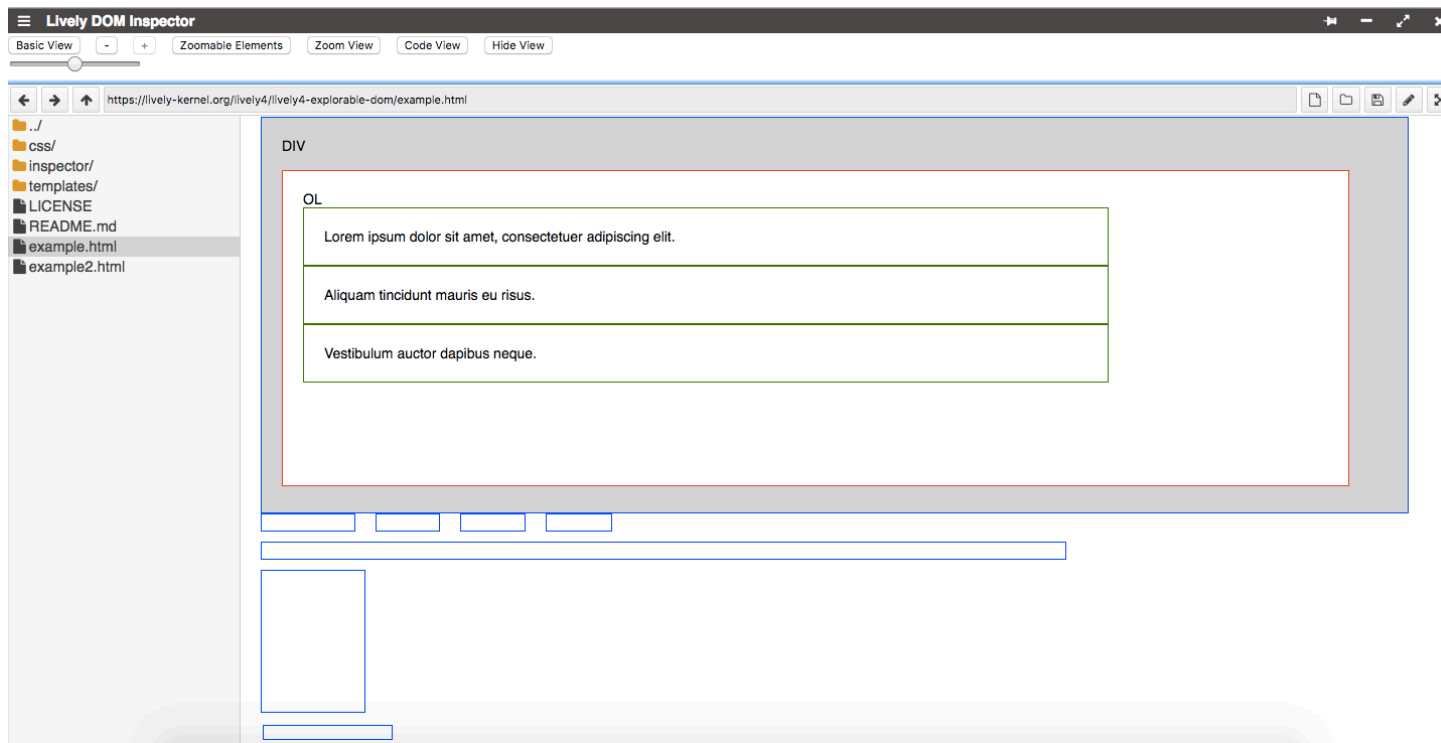
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Chart **18**

Presentation of Tool Elements

Relative Positioning (DIVs)



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Chart **19**

Presentation of Tool Elements

Relative Positioning (DIVs)

- Browser specific stylings

Entry Header 1	Entry Header 2	Entry Header 3	Entry Header 4
Entry First Line 1	Entry First Line 2	Entry First Line 3	Entry First Line 4
Entry Line 1	Entry Line 2	Entry Line 3	Entry Line 4
Entry Last Line 1	Entry Last Line 2	Entry Last Line 3	Entry Last Line 4

vs.

Entry Header 1	Entry Header 2	Entry Header 3	Entry Header 4
Entry First Line 1	Entry First Line 2	Entry First Line 3	Entry First Line 4
Entry Line 1	Entry Line 2	Entry Line 3	Entry Line 4
Entry Last Line 1	Entry Last Line 2	Entry Last Line 3	Entry Last Line 4

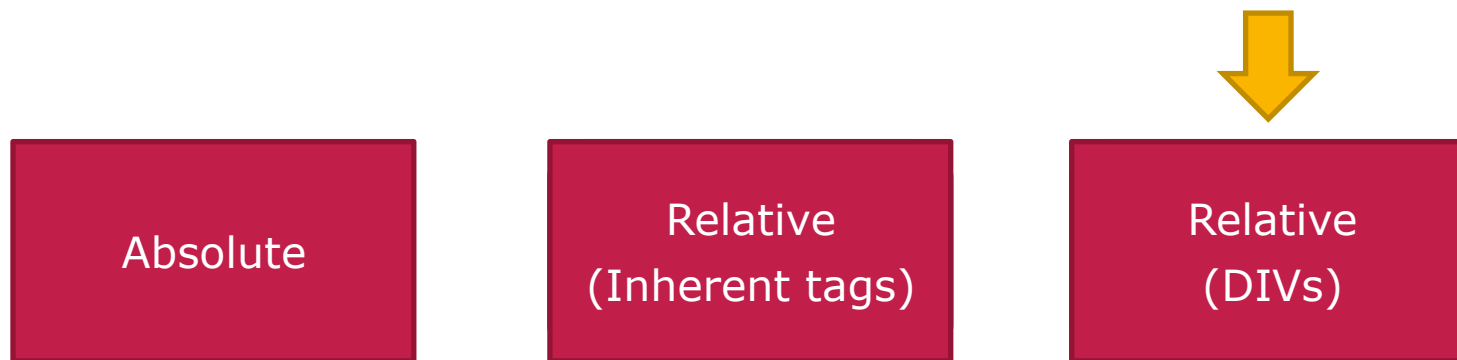
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Chart **20**

Presentation of Tool Elements

Evaluation of Possible Solutions

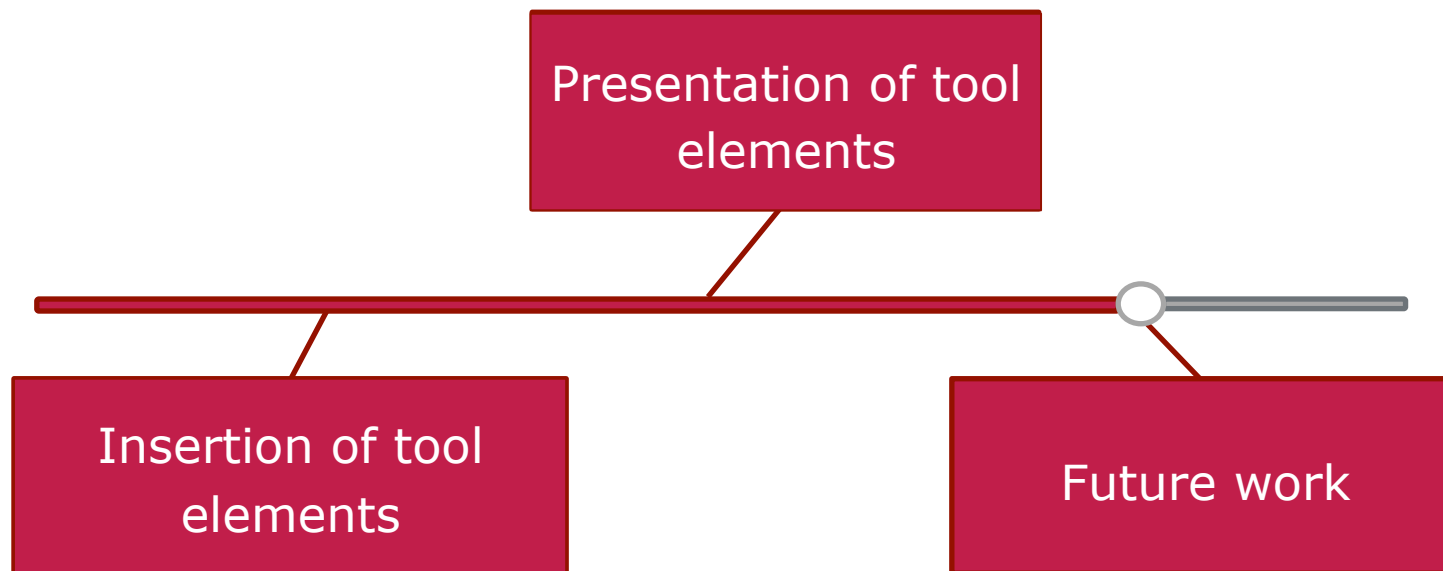


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Chart **22**

Outline



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Chart 23

Event Handling

Show original attached
events

Problem: It is not possible to
get all events from an element
programmatically.

Handle events on tool
elements

Problem: Created elements
catch the events for the originals
since they cover them.

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Chart **24**

Projectional Editing of Object Structure



```
id="header" class="group">
  id="articleheader">
  id="secondary" class="group">
    <div id="contentarea" class="
      - <div id="content" class="
          <h2 class="heading">W
          + <div class="article">
        </div>
      - <div id="links">
          <h2 class="heading">L
```

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Chart 27

Conclusion

- Bridge gap between object/code structure and UI
 - Stepwise transfer from rendered page to code
 - Visualize DOM structure
 - Explore different aspects of the page in single views
- Easier to understand relation between code and the resulting layout



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Chart 28



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