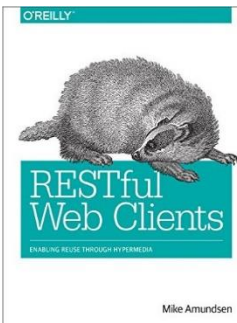


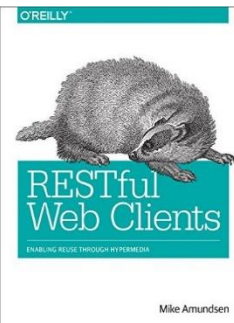
Hypermedia Clients

Mike Amundsen
API Academy
@mamund

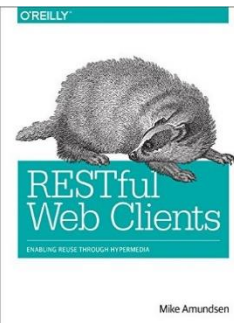


Highlights

- What is Hypermedia?
- What is a Hypermedia Client?
- What does it look like?

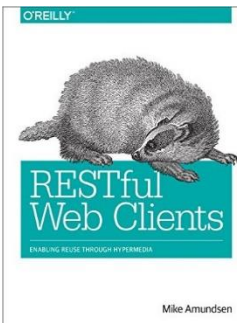


What is Hypermedia?



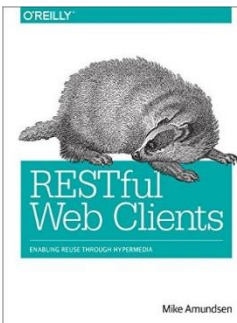
Roy T. Fielding

- “Architectural Styles and the Design of Network-based Software Architectures”, 2000
- Identified REST architectural style
- *"Hypermedia is defined by the presence of application control information embedded within, or as a layer above, the presentation of information. Distributed hypermedia allows the presentation and control information to be stored at remote locations."*



Roy T. Fielding

Hypermedia is control information



Analyzing Media Types

H-Factors

```
<html>
  <head>
    <title>H-Factor Sample</title>
  </head>
  <body>
    
    <p>
      <a href="..." class="home">Home</a>
    </p>
    <form action="..." class="search">
      <input name="search" value="" />
      <input type="submit" />
    </form>
  </body>
</html>
```



Analyzing Media Types

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```

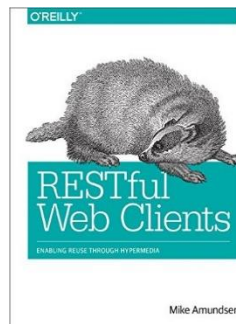
H-Factors



Analyzing Media Types

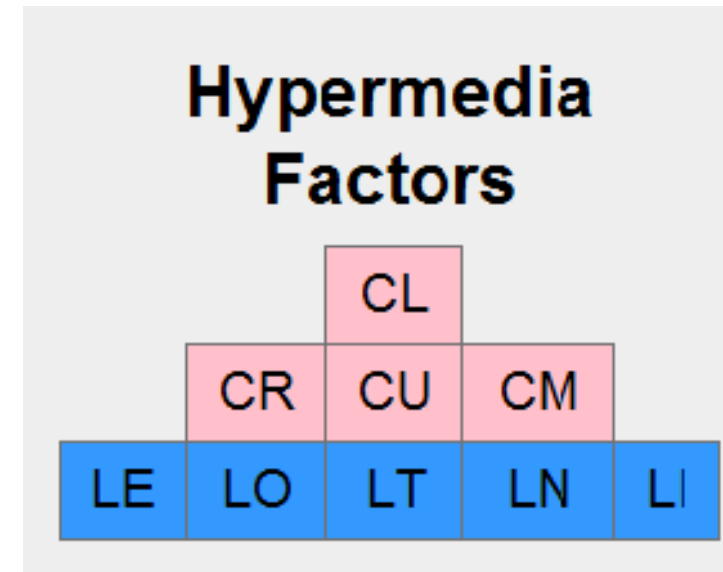
H-Factors

```
<html>
  <head>
    <title>H-Factor Sample</title>
  </head>
  <body>
    <LE src="..." class="logo" />
    <p>
      <LO href="..." class="home">Home</LO>
    </p>
    <LT action="..." class="search">
      <input name="search" value="" />
      <input type="submit" />
    </LT>
  </body>
</html>
```



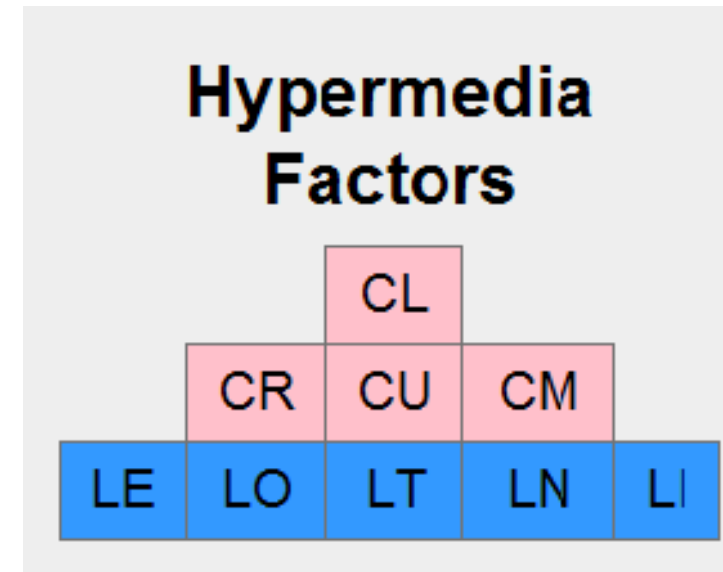
H-Factors

- There are five LINK Factors (LO, LE, LT, LI, LN)
- There are four CONTROL Factors (CR, CU, CM, CL)



H-Factors

- There are five **LINK** Factors (LO, LE, LT, LI, LN)
- There are four **CONTROL** Factors (CR, CU, CM, CL)



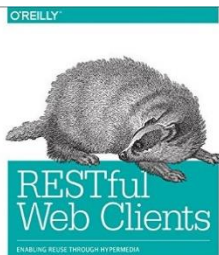
```
<a href="http://www.example.org/search" title="view search page">Search</a>
```

```

```

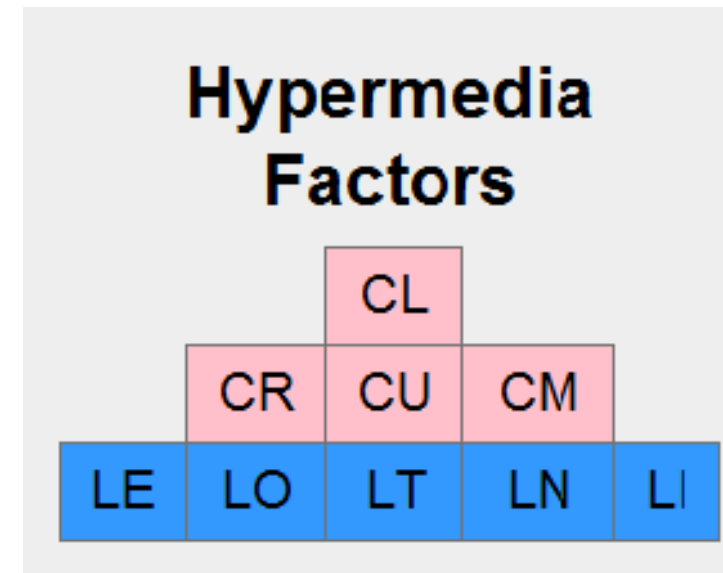
```
<form method="get">  
  <label>Search term:</label>  
  <input name="query" type="text" value="" />  
  <input type="submit" />  
</form>
```

```
<form method="post" action="http://www.example.org/m  
  
  <label>Keywords:</label>  
  <input name="keywords" type="text" value="" />  
  <input type="submit" />  
</form>
```



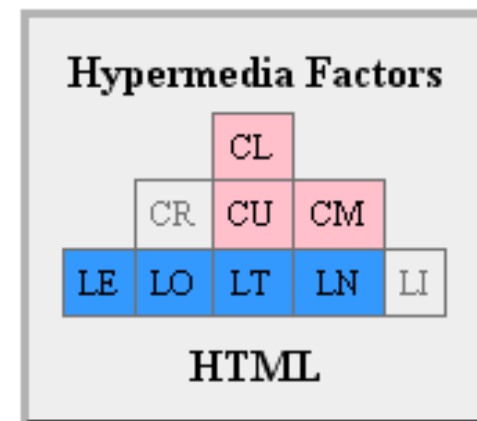
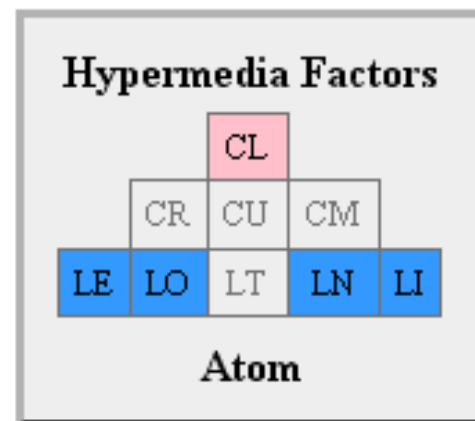
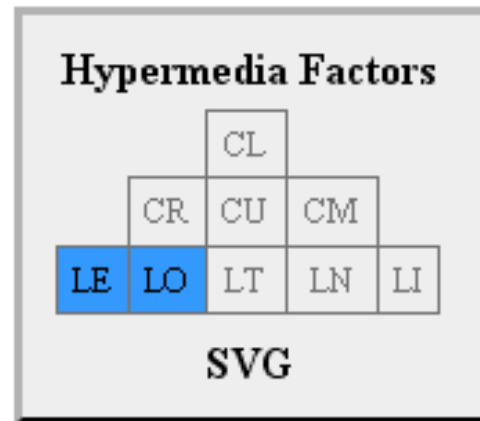
H-Factors

- There are five LINK Factors (LO, LE, LT, LI, LN)
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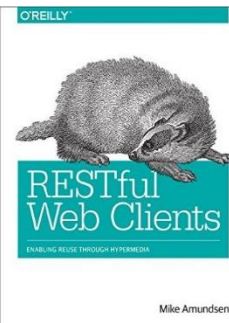
H-Factors

- A pre-defined collection of H-Factors is called a “Media Type”
- Each media type has it’s own “H-Factor” signature.

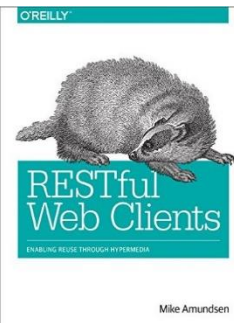


Roy T. Fielding

Hypermedia is control information

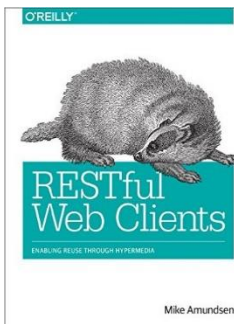


What is a Hypermedia Client?



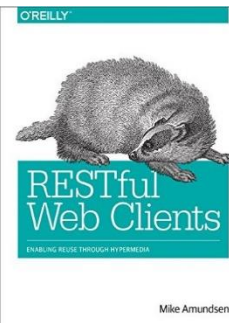
What is a Hypermedia Client?

A client that is able to determine possible protocol-level choices at runtime using only the links and forms in the message itself as a guide.

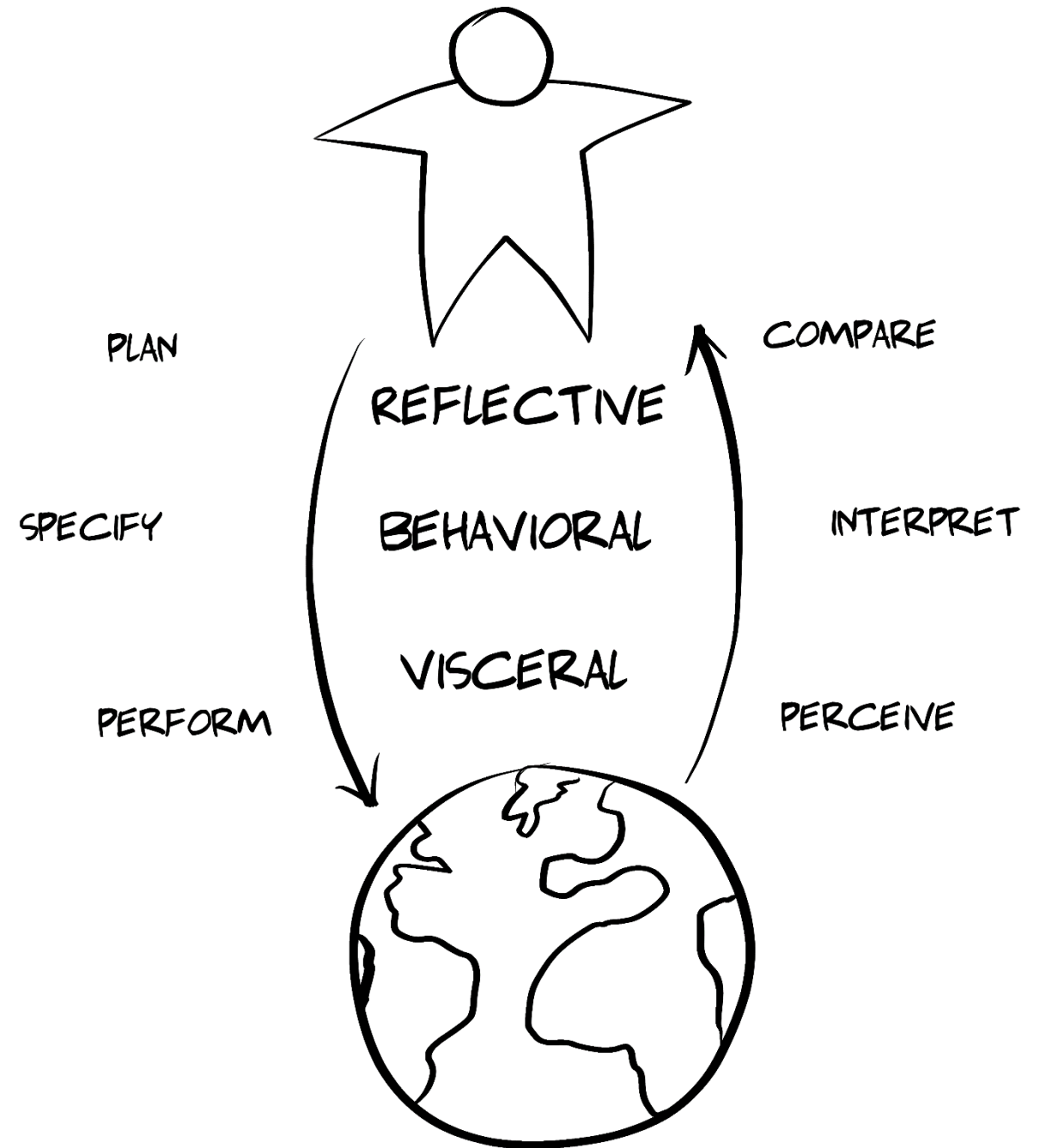


Some things to keep in mind...

*Hypermedia clients are based on the
“Action Lifecycle”*



Donald Norman's Action Lifecycle



Hypermedia clients

Typically hypermedia clients have almost no long-term memory.

Hypermedia clients' memories last for a single request/response cycle.

Clients MAY save a past response, parse it, store it, and recall it later.



Faithful Hypermedia Clients (FHCs)

- FHCs simply pass along whatever the server returns; usually to a human.
- FHCs MAY make some decisions on how to display the returned representation
- FHCs only need a starting URL and a (human) driver.

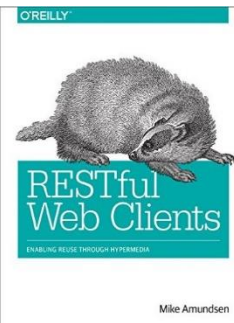


Guide for implementing an FHC

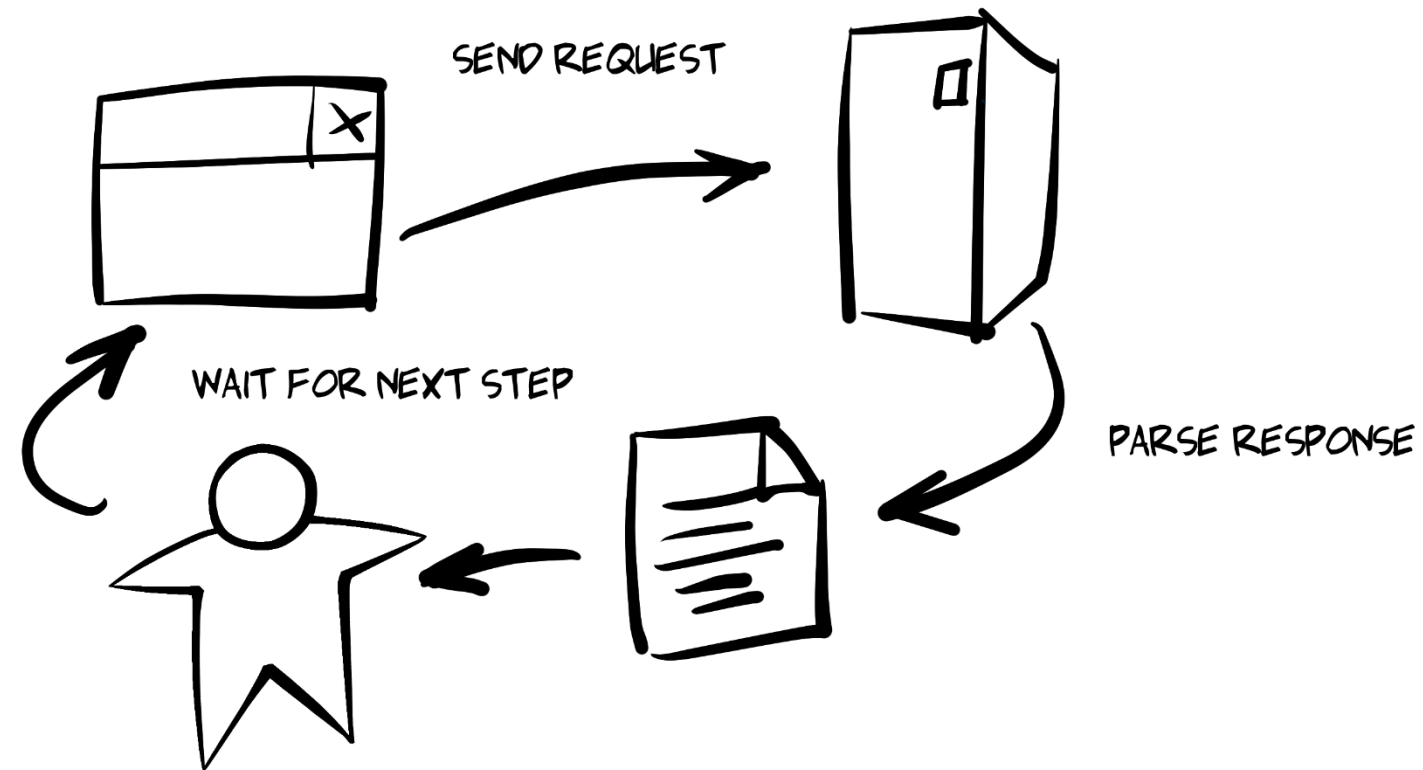
- Process the **structure** semantics
in order to render view
- Process the **protocol** semantics
in order to support available transitions
- Process the **domain** semantics
in order to inform human of choices & results.



What Does it Look Like?



Primary Loop



RPW in Code

```
30 // init library and start
31 function init(url) {
32     if(!url || url==='') {
33         alert('*** ERROR:\n\nMUST pass starting URL
34     }
35     else {
36         g.url = url;
37         req(g.url,"get");
38     }
39 }
40
41 // primary loop
42 function parseCj() {
43     dump();
44     title();
45     content();
46     links();
47     items();
48     queries();
49     template();
50     error();
51     cjClearEdit();
52 }
53
```


TPS - Tasks

Mike Amundsen

rwcbok12.herokuapp.com/files/cj-client.html

HomeTasksUsers

itemEditDelete

ID1I9fz7bhaho

Titleextensions

Tagsforms testing

Complete Flagtrue

Assigned Usercarol

Assign User

Mark Completed

Mark Active

itemEditDelete

ID1m80s2qgsv5

TitleRun client-side tests

Tagstest

Complete Flagtrue

Assigned Useralice

Add Task

Title

Tags

Completefalse

Submit

Queries

Completed Tasks

Completetrue

Submit

Active Tasks

Summary

- Hypermedia is **control information** in the message
- Hypermedia Clients are **aware of and use** the control information
- Hypermedia Clients implement the RPW Loop (Request, Parse, Wait)
- We'll build a hypermedia client today.



Hypermedia Clients

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