
JavaOne™

Building HTML5 Web Apps with Avatar (CON7042)

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Program Agenda

- What is Avatar?
- Syntax, syntax and more syntax
- Avatar by example
- Advanced concepts
- Conclusion

What is Avatar?

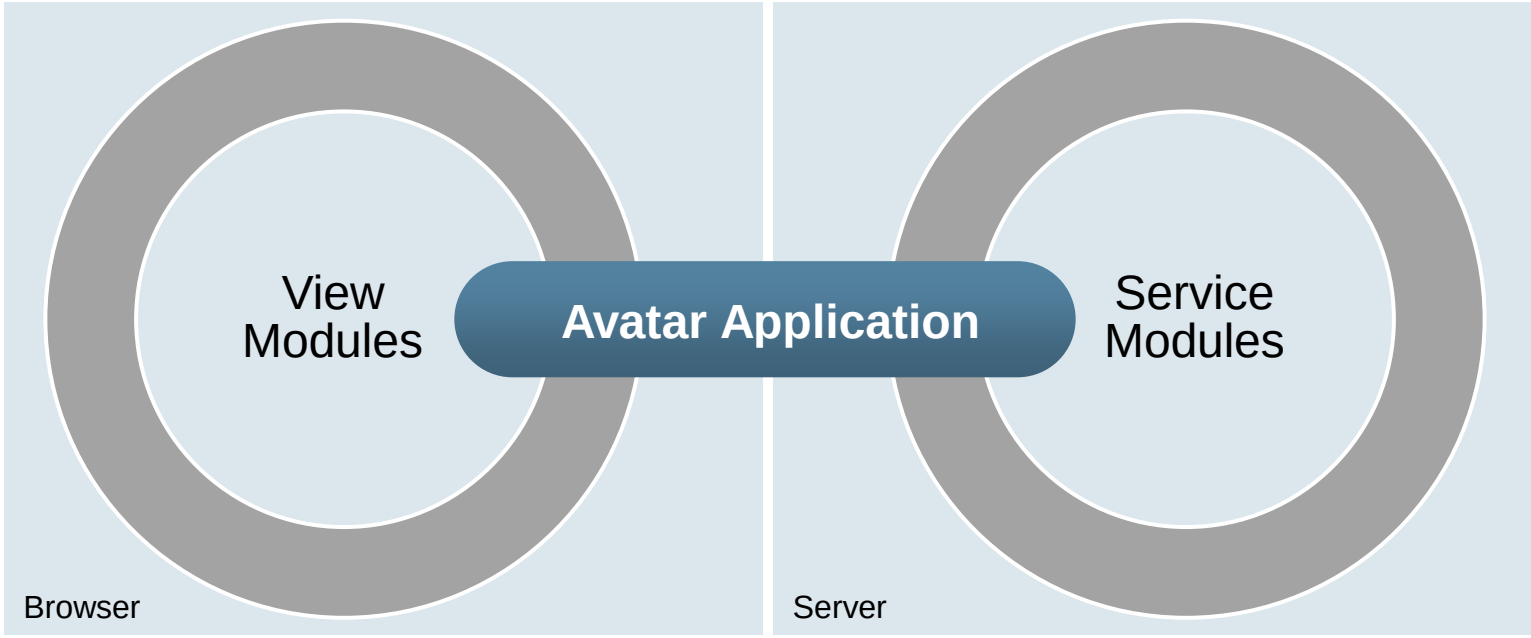
What is Avatar?

Avatar in a nutshell

Avatar is a modular, end-to-end web development framework for building enterprise mobile and desktop applications using JavaScript, HTML5 and a thin-server architecture.

Modular and End-to-End

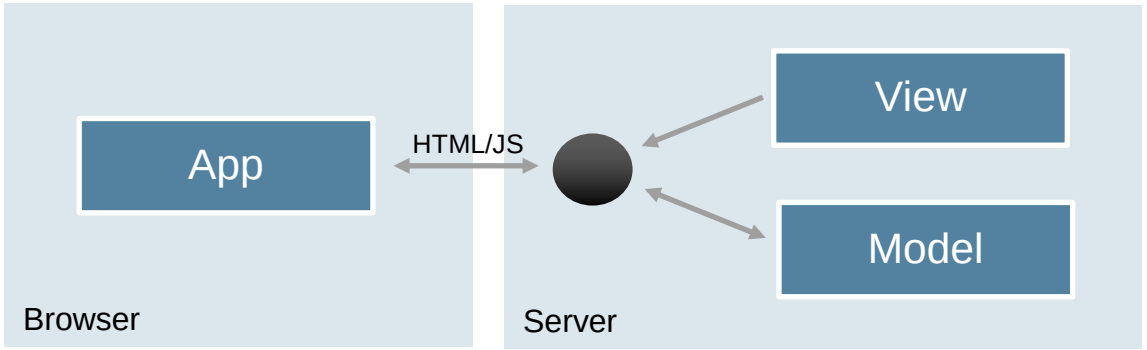
Avatar Application Structure



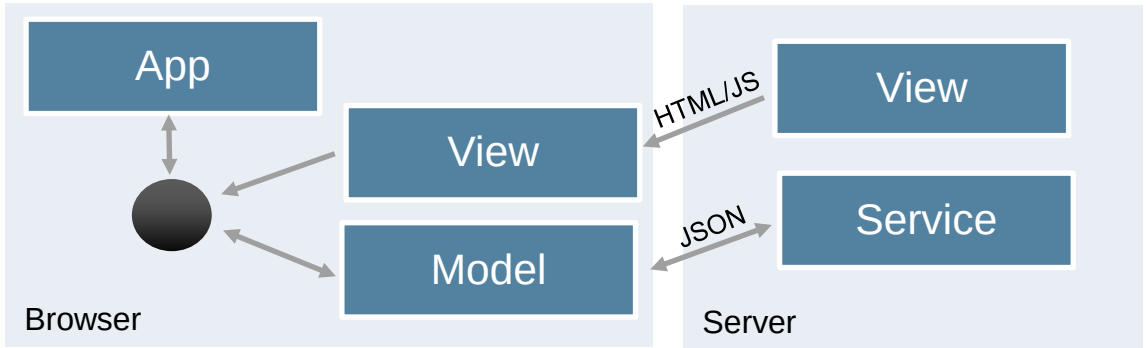
Thin-Server Architecture (TSA)

Traditional vs. Thin Server

Traditional



Thin Server



Programming Model

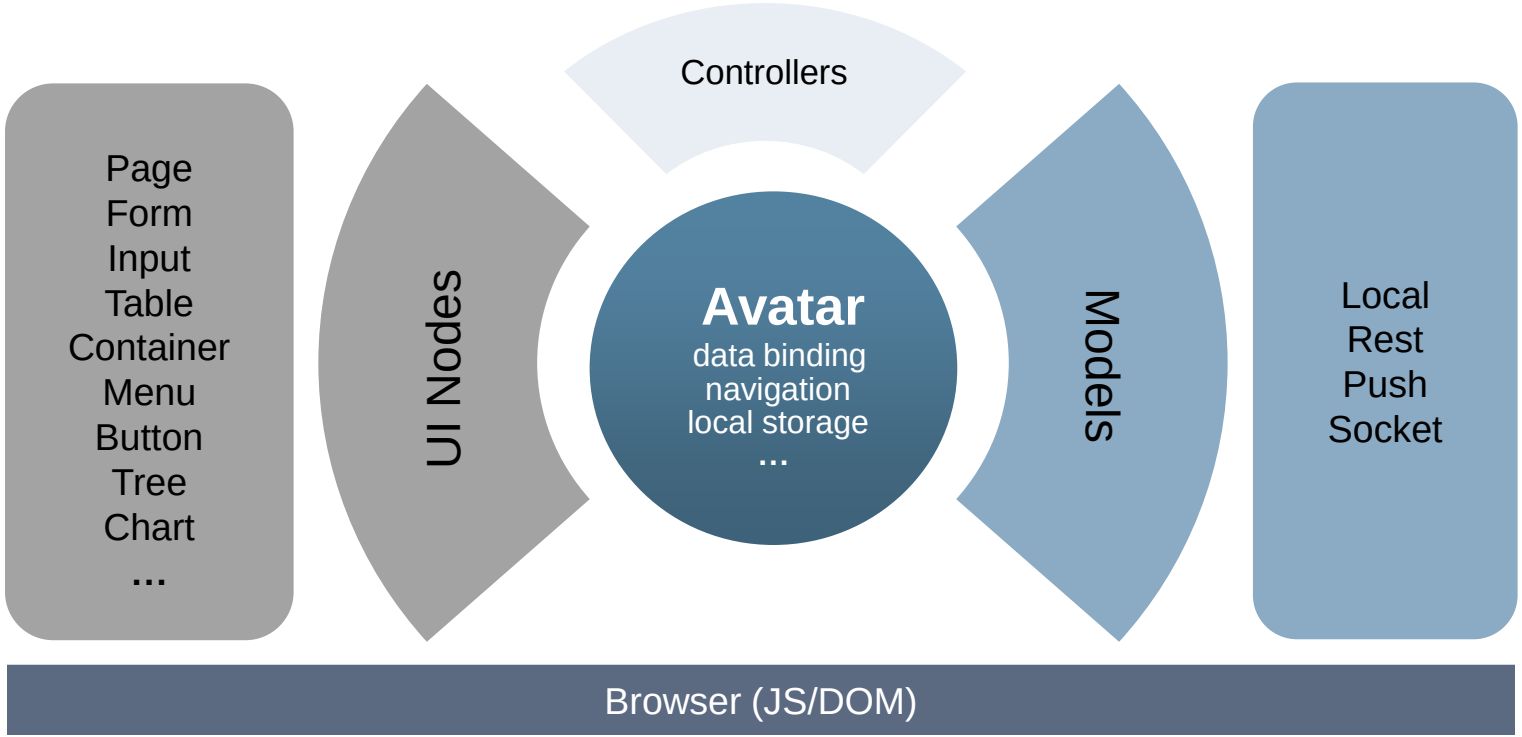
Client and Server

Client	Server
• Extensible component views • Pluggable widget sets • Models in JavaScript • Data binding • HTML and CSS support	• Java EE container ➢ JAX-RS, WS (JSR-356), … • Avatar services in JavaScript ➢ REST, SSE, and WS ➢ Nashorn JavaScript engine ➢ Access to Java API

Avatar Module System (AMD)

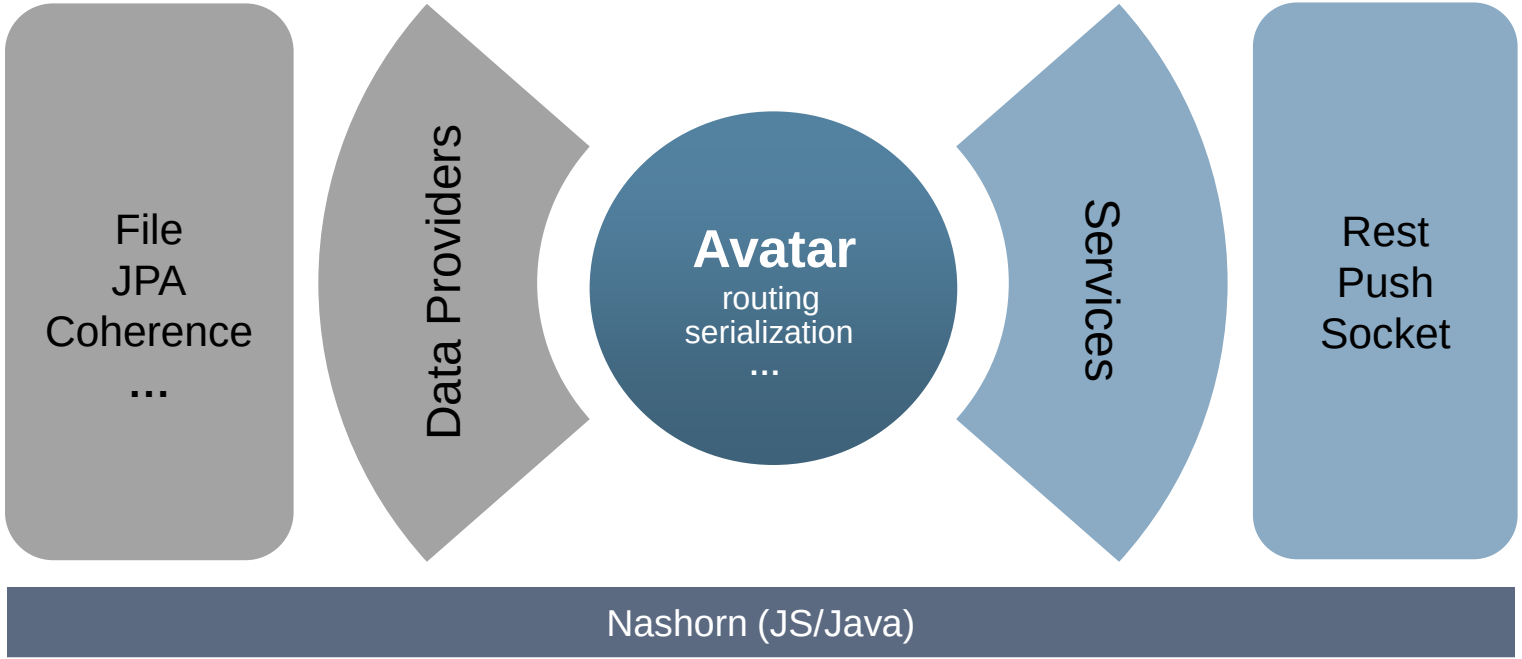
Avatar Client

Concepts



Avatar Server

Concepts



Syntax, Syntax and more Syntax

Programming Style

Declarative vs. Imperative

Declarative	Imperative
• Good for views (UI) ➢ Containment by nesting • Data binding using EL • Templating • Tooling	• Good for models and controllers • WYSIWYG • Full JavaScript control

What's the Syntax?

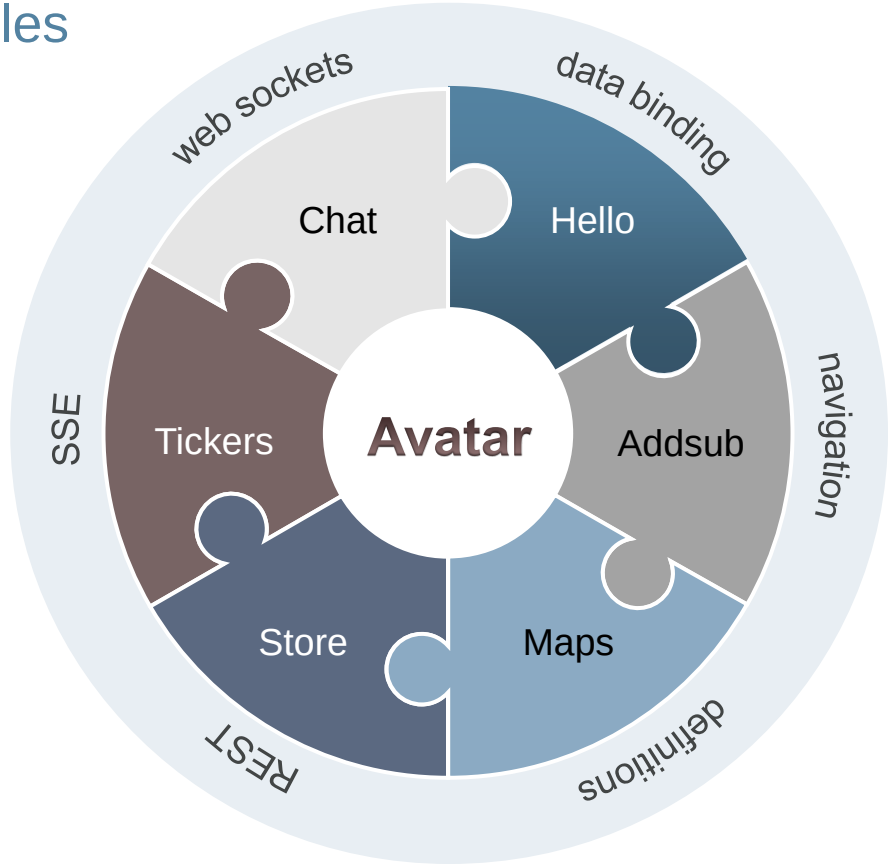
XML vs. HTML

XML	HTML
• "X" is for extensible ➢ Support for namespaces • Components ➢ Easily defined and used • HTML embedding	• We all know it • What the browser understands • Less structured • Extensions via "data-" ➢ No namespaces
Supported	*Under investigation*

Avatar by Example

Avatar by Example

Simple Examples



Where's Hello World?

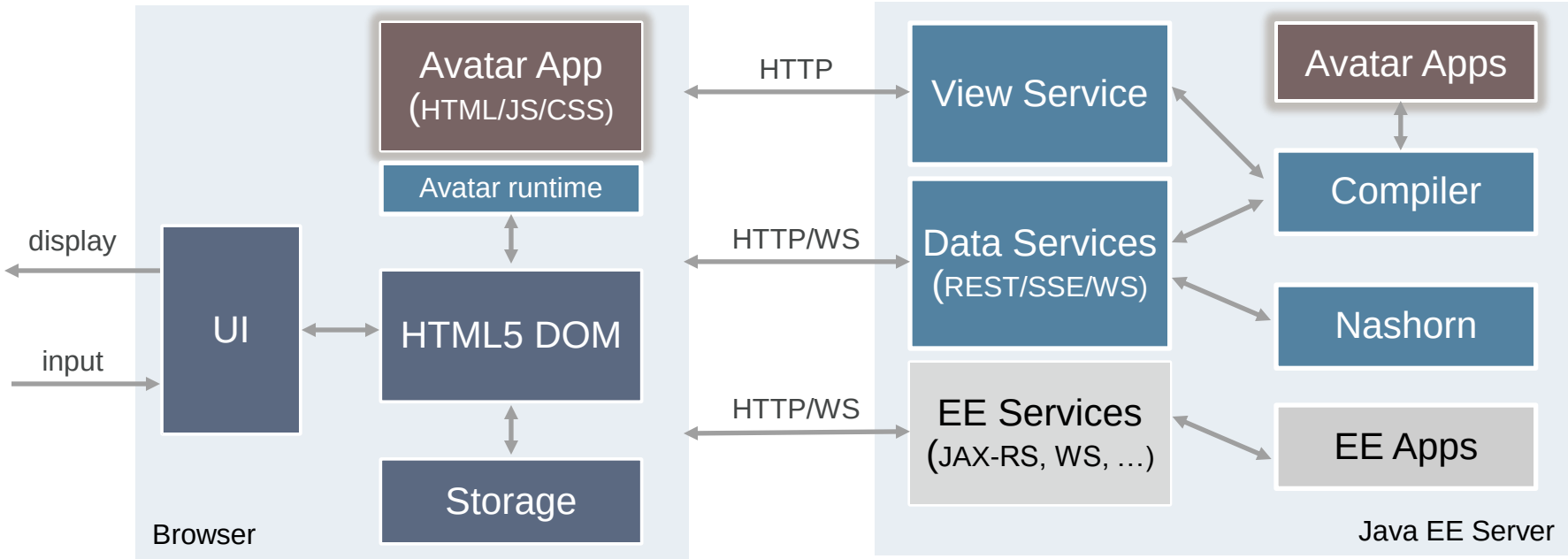
Single View Module

```
<viewModule … >
  <localModel>
    var NameModel = function() {
      this.first = "Planet";
      this.last = "Earth";
      this.clear = function() {
        this.first = this.last = "";
      }; };
  </localModel>
```

```
<page id="home" title="Hello World">
  <model id="name" idref="NameModel"/>
  <form>
    <input label="First Name" value="#{name.first}"/>
    <input label="Last Name" value="#{name.last}"/>
    <output value="Hello #{name.first} #{name.last}”/>
    <button label="Clear" action="#{name.clear()}“/>
  </form>
</page> </viewModule>
```

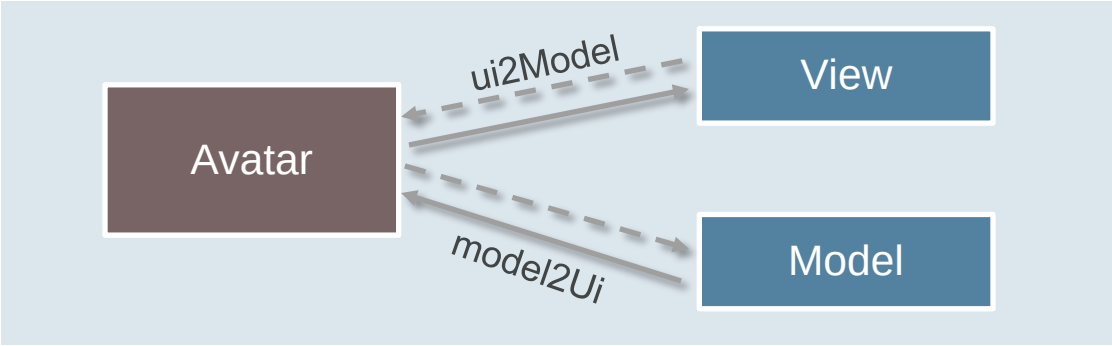
Avatar Runtime

Architecture



Data Binding

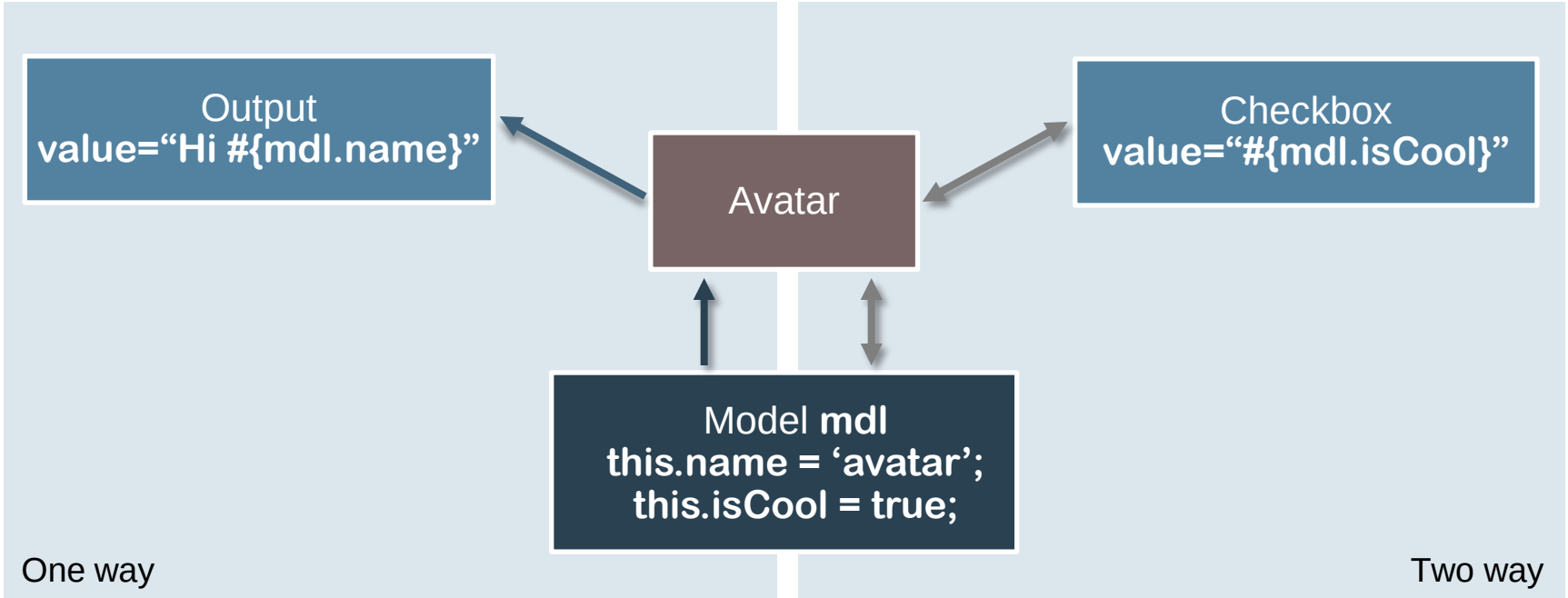
One way or two way



UI Node Property Types	HTML Attributes
➢ **One way**: Model to UI only ➢ **Two way**: Binding for input-type properties ➢ **Action**: No binding, for actions with side effects	➢ **One Way**: Non-action attributes ➢ **Action**: Attributes like **onclick**

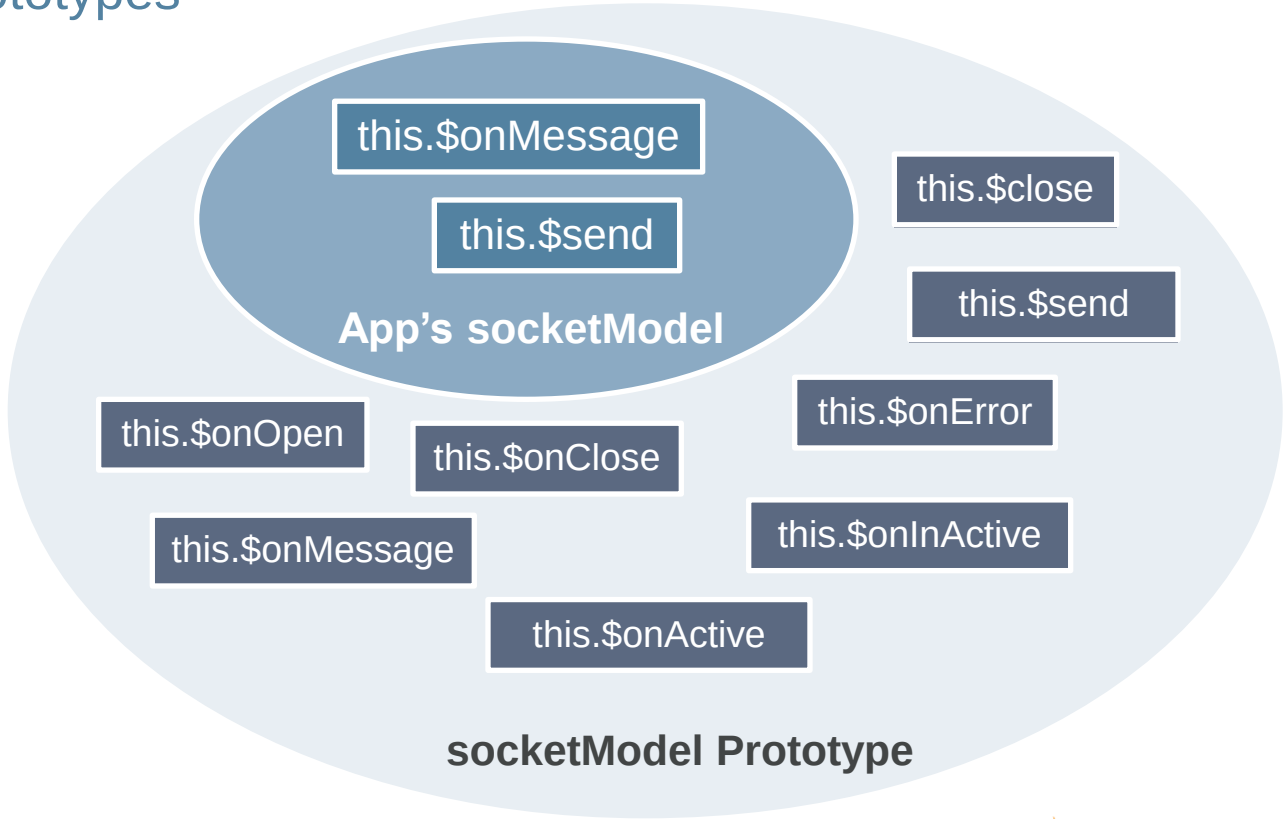
Data Binding

Example



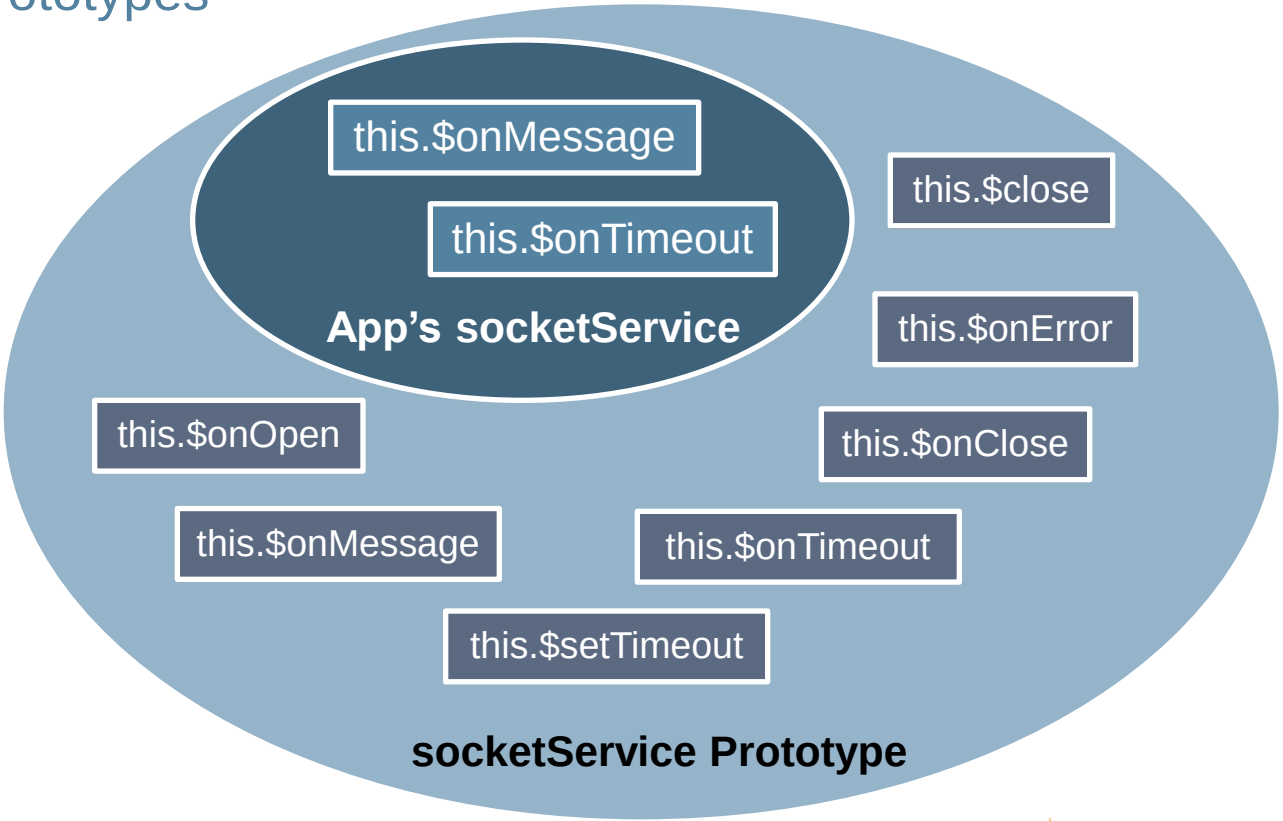
Models and Services

Model Prototypes



Models and Services

Service Prototypes



Models and Services

Chat Example

```
<socketModel>
  var ChatModel = function() {
      this.message = “”; this.user = “”;
      var superSend = this.$send;
      this.$send = function() {
          this.process(this.message);
          superSend.call(this);
      };
  … };
</socketModel>
```

```
<socketService url=“websockets/chat”>
  var SocketService = function() {
      this.$onMessage = function(peer, message) {
          this.process(message);
          peer.getContext().sendAll(message);
      };
  … };
</socketService>
```

Navigation in Avatar

Hash Scheme

 # <page-id> / <pane-id> ? <parameters>

- ID of page to navigate
- May contain module name if in other module

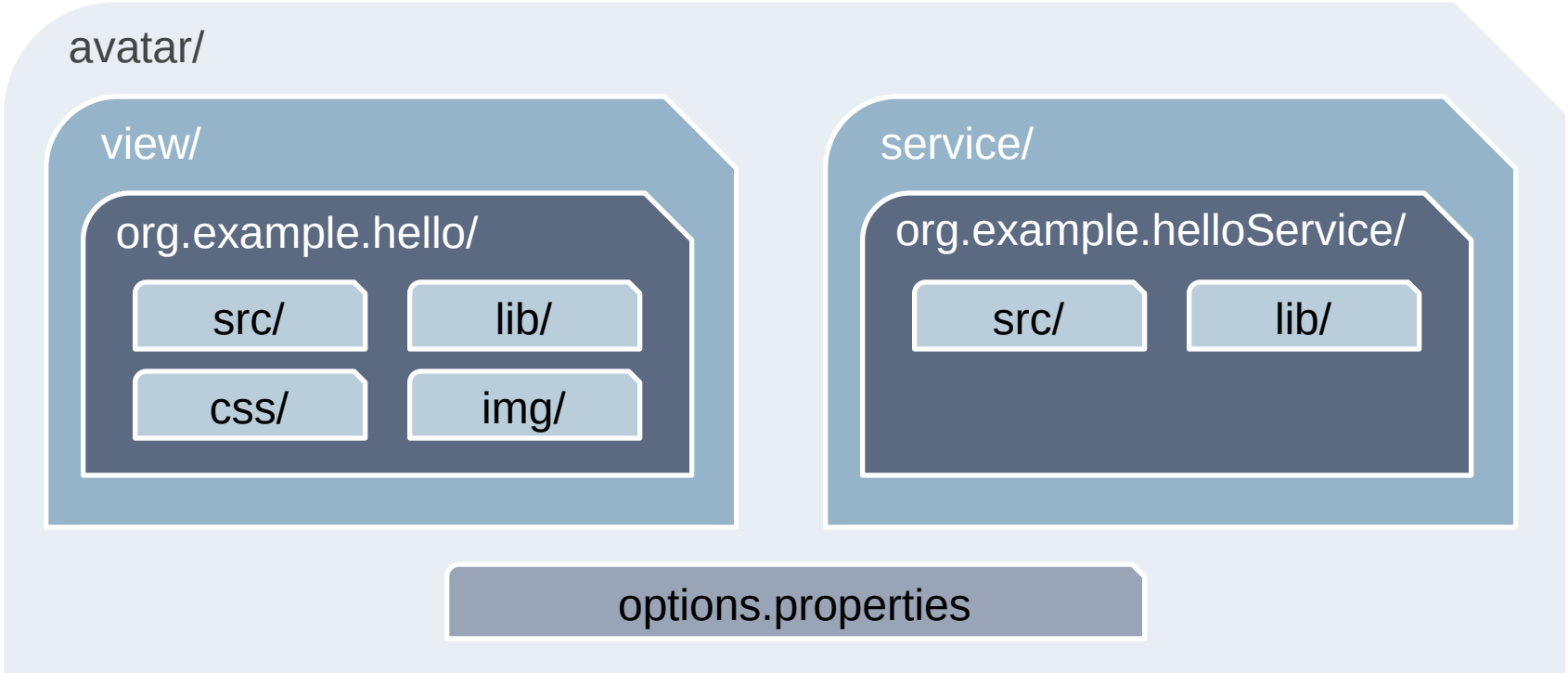
- ID of pane in page
- Selects pane in stack or tab container

- Same syntax as URL parameters
- E.g.: n1=v1&n2=v2

Global model **$location** available in EL

Avatar Archive

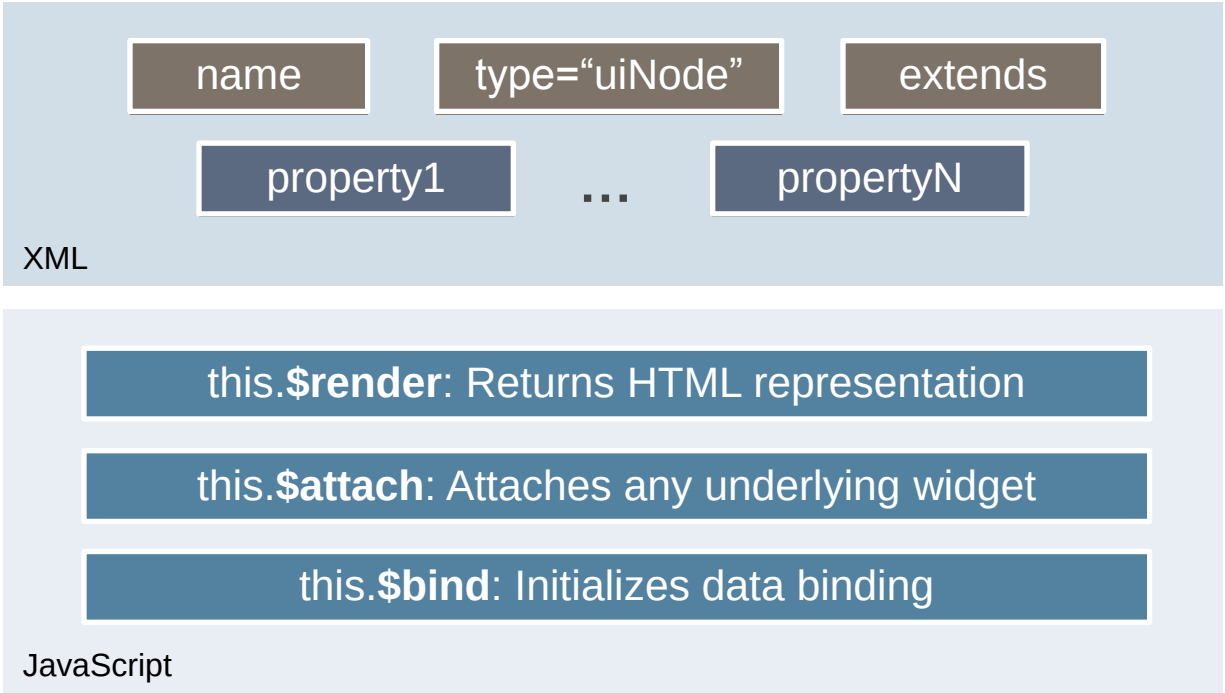
A ZIP file



Advanced Concepts

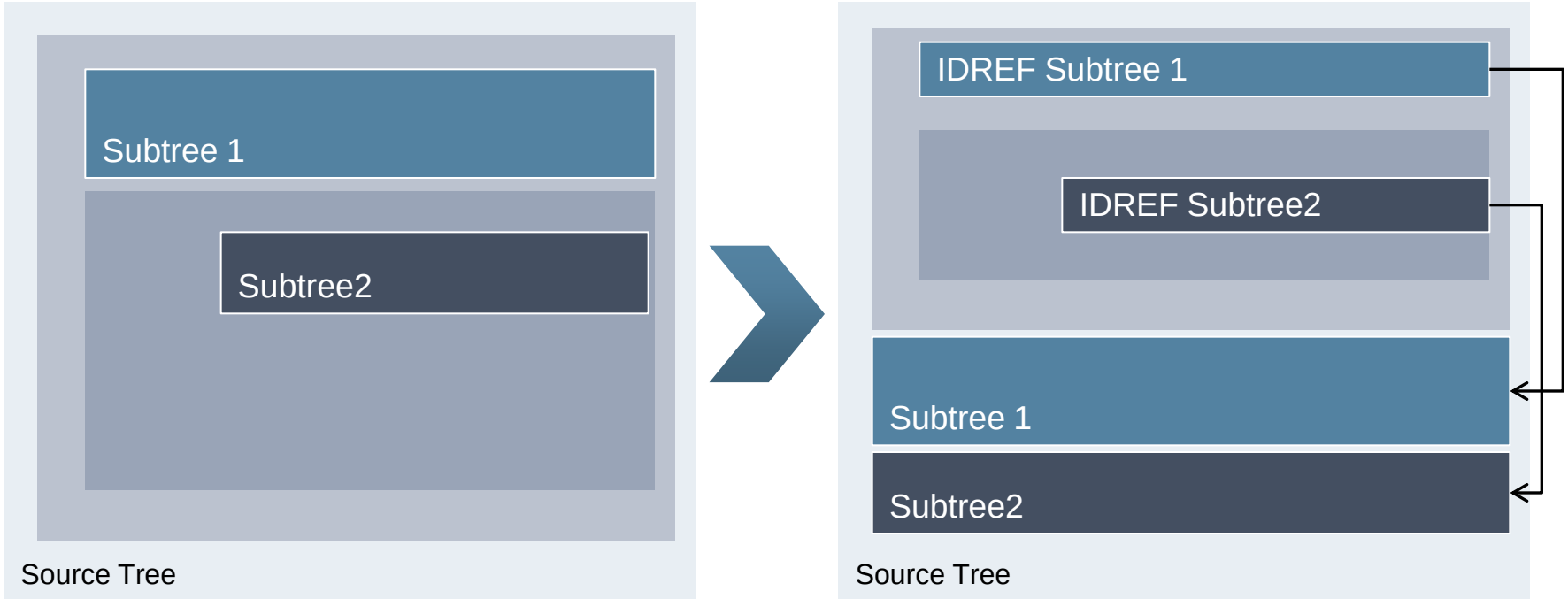
Advanced Concepts

UI Nodes Defintions



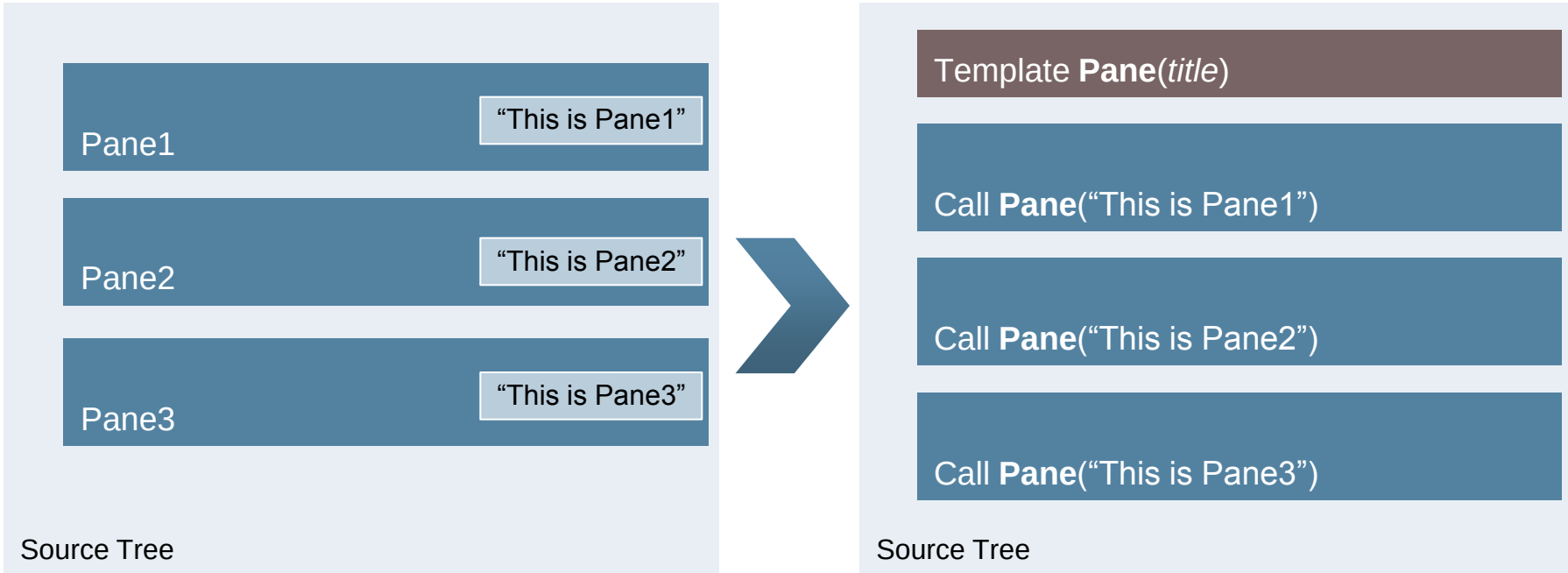
Advanced Concepts

Tree References



Advanced Concepts

Templates



Advanced Concepts

Like and Extensions

Like	Extensions
• Inherit properties from another node instance • Avoids duplication of attributes	• Simple tree transformations • Insert, replace, remove, … • Customize core application

Conclusion

Conclusion

Wrapping up

What is Avatar?

- Web framework for building TSA apps
- End-to-end, extensible and modular
- HTML5 features
- Suitable for small and large projects
- Runs on Java EE

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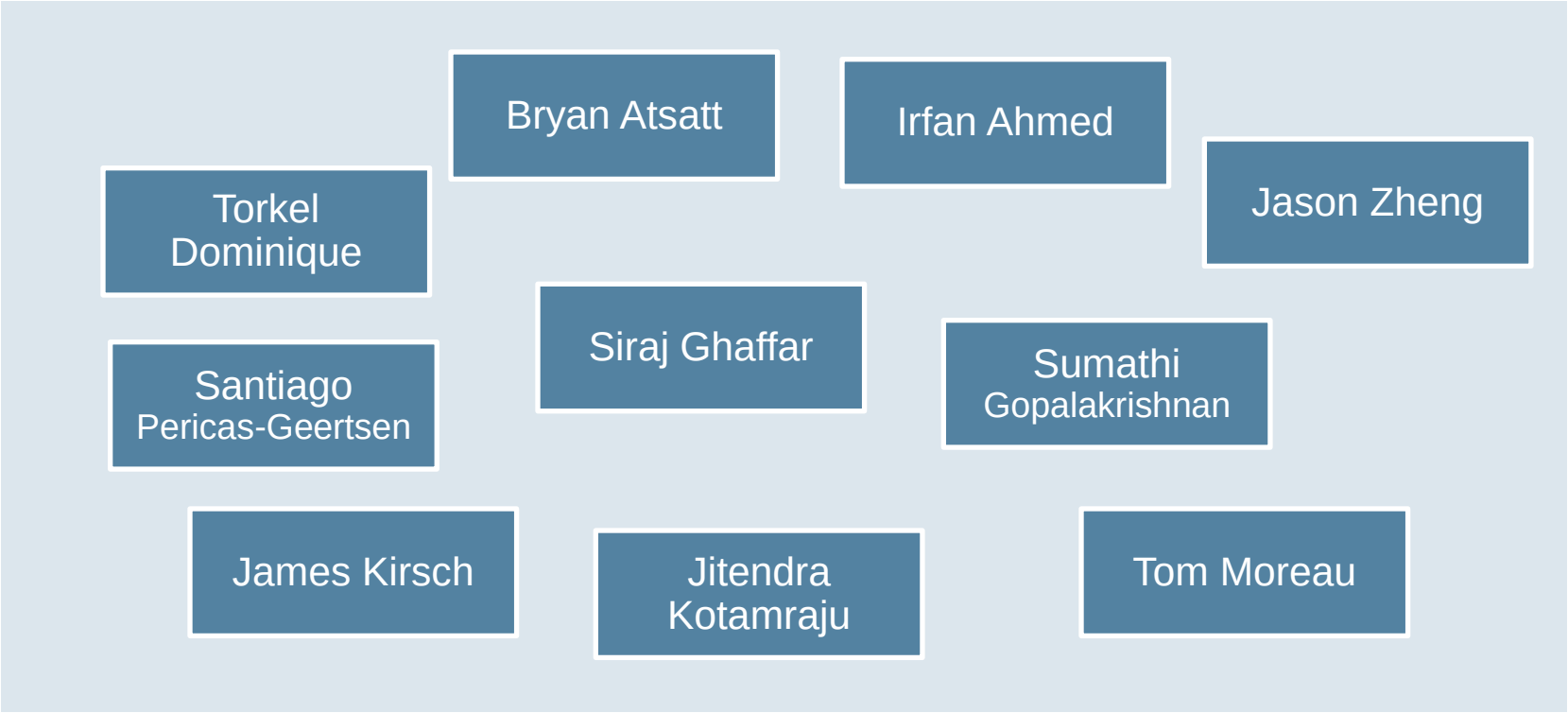
Avatar Team

Meet the team



One More Demo

Real World Application