

Elm | > Real Life

jiri.sliva@newired.com



In the beginning ... (2016)

Needs

- Pure JavaScript
- Complex UI
- REST
- Electron, NW.js, WebExtension ...
- a lot of Prototyping
- a lot of Refactoring
- GWT
- Polymer
- ClojureScript
- AngularJS / Angular 2.0 RC
- React, Redux, Immutable-js
- Flow, TypeScript
- **Elm**

Elm - Pure Functional

- Immutable data, only pure functions, ...
- ML family syntax (*Haskell for kids*)
- Static Typing

```
view : List Article -> Html Msg
view articles =
  let
    viewArticle article =
      div [ class "article" ] [ text article.title ]
  in
  Html.ul
    [ class "article-list" ]
    (List.map viewArticle articles)
```

Types

```
String, Int, Float, Bool, List, (a, b, c)
```

```
type alias PersonId = Int
```

```
type alias Person =  
  { name : String  
    , age : Int  
  }
```

```
type Role  
  = Admin  
  | Sales  
  | Customer
```

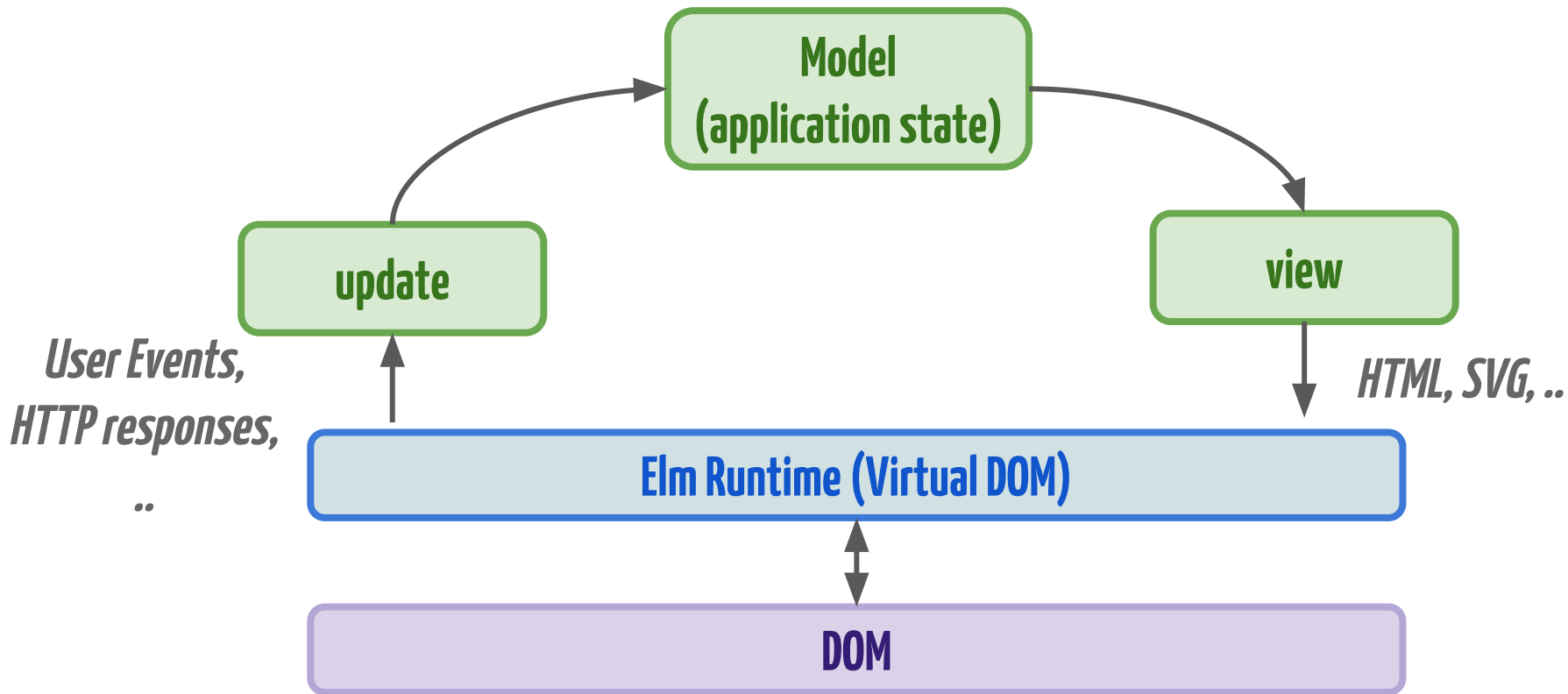
```
type Msg  
  = ButtonClicked  
  | NameChanged String  
  | SetRole Person Role
```

```
case msg of  
  ButtonClicked ->  
    ..  
  NameChanged name ->  
    ..  
  SetRole person role ->  
    ..
```

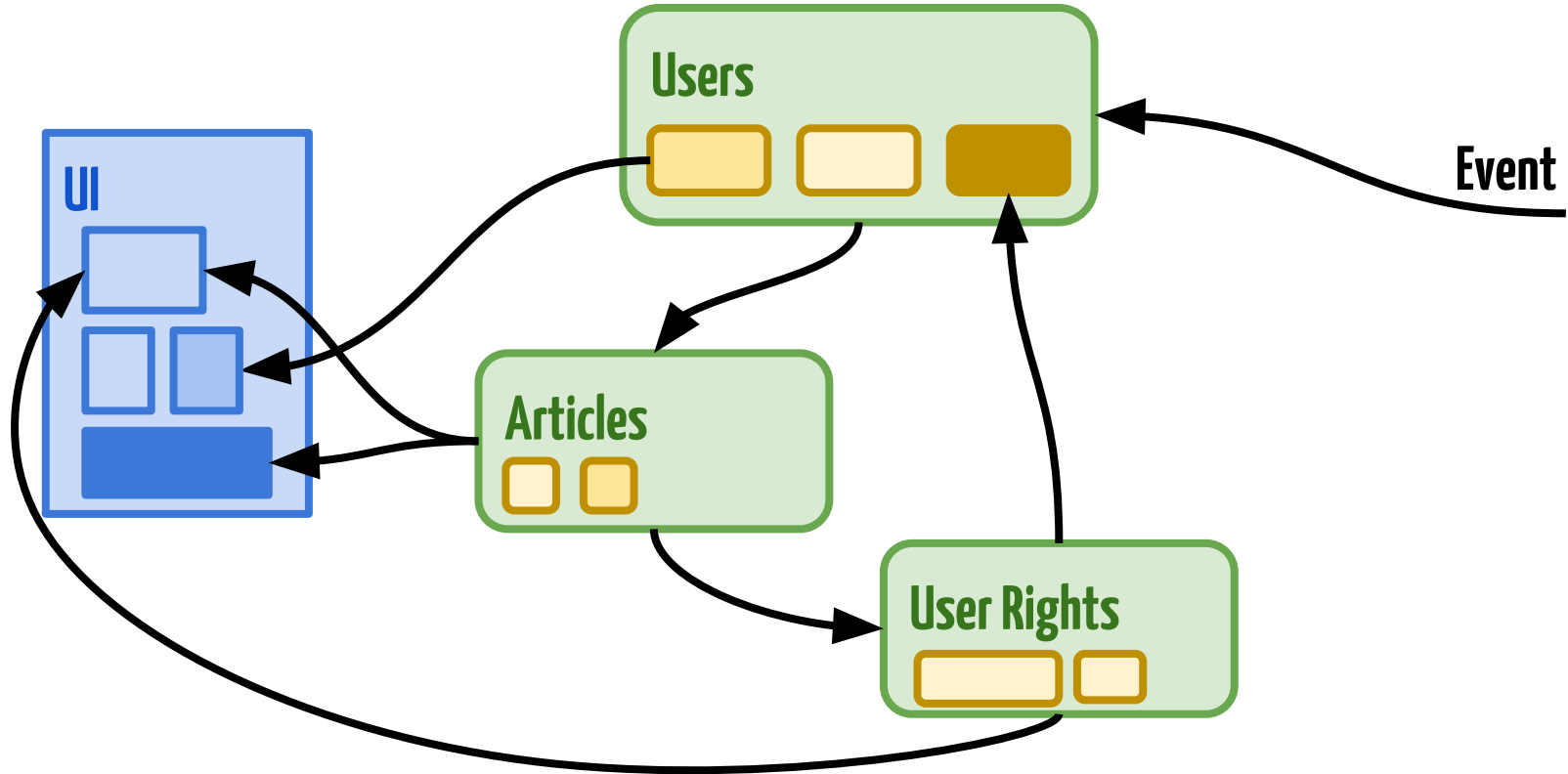
```
isJunior : Person -> Bool  
isJunior person =  
  person.age < 20
```

```
isJunior : { a | age: Int } -> Bool  
isJunior x =  
  x.age < 20
```

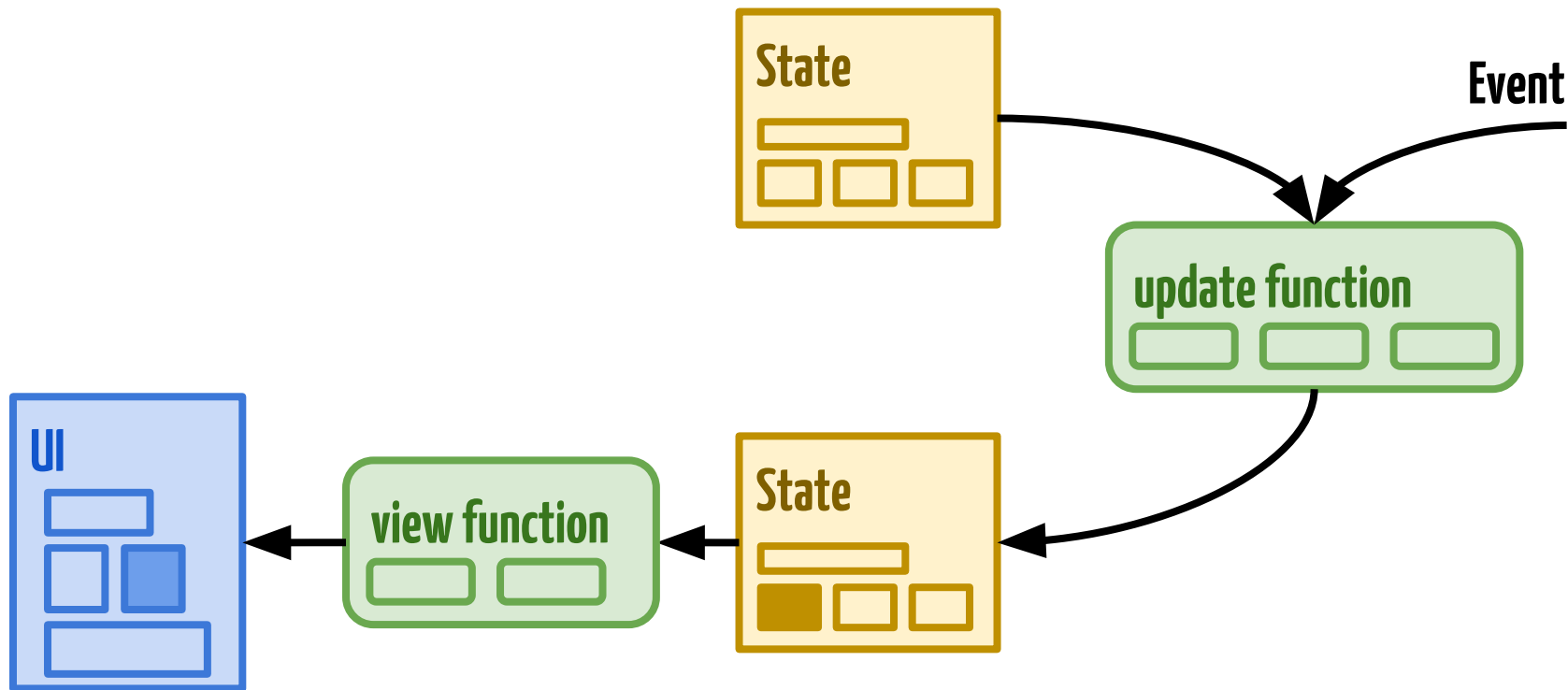
Model – Update – View



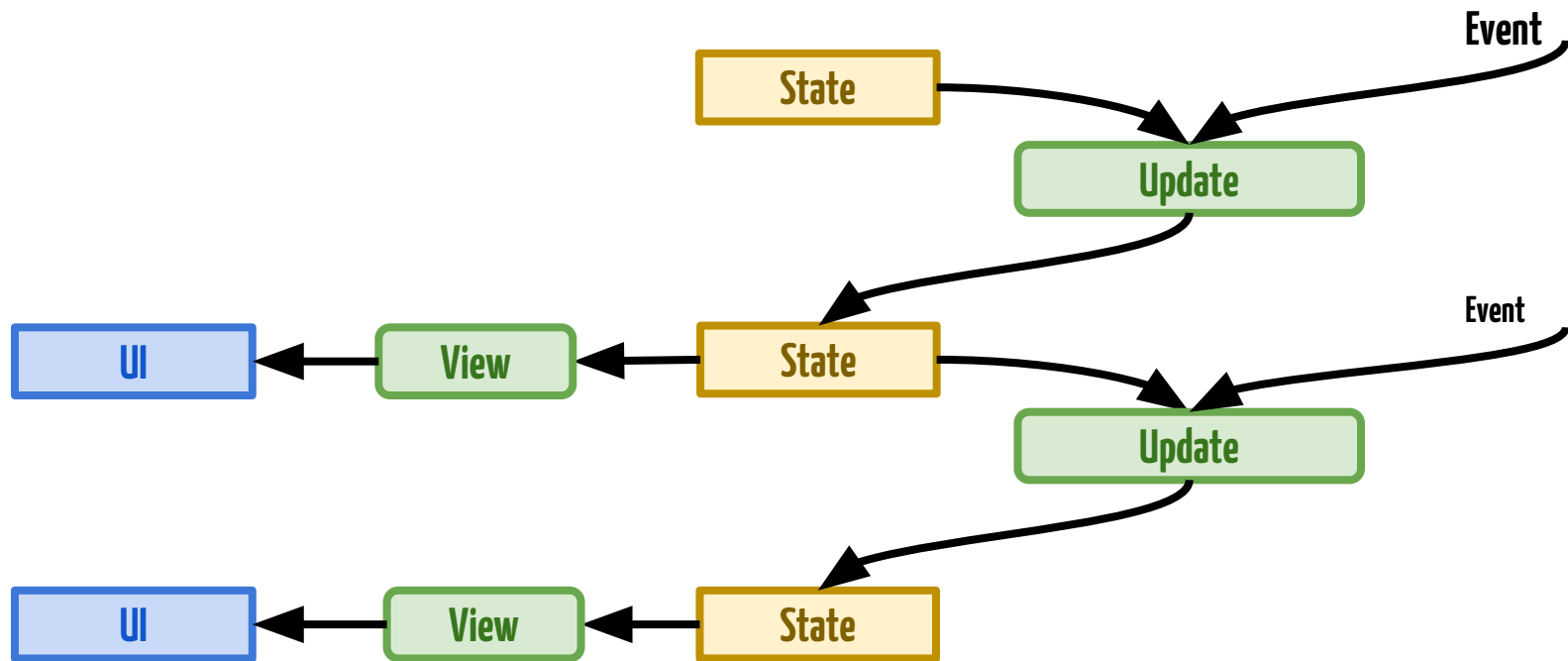
Inside *common application*TM



Inside Elm Application



Elm Application Timeline



Demo!

Proč Elm?

- Rychlé první kroky
- Minimalistická syntaxe
- Přátelský kompilátor
- Bezpečný refactoring
 - Single source of truth
 - Immutability
 - Static Typing
- “Něco jako React + Redux + TypeScript + Immutable-js ...” v jednom nástroji
- No runtime errors

Compiler

Friendly

Detected errors in 1 module.

-- TYPE MISMATCH ----- src/Main.elm

The `model` record does not have a `nane` field:

```
43|      { model | nane = "John" }  
                      ^^^^^
```

This is usually a typo. Here are the `model` fields that are most similar:

```
{ name : String  
  , greetings : String  
}
```

So maybe `nane` should be `name`?

Fast

114 files,
29 173 lines => **0.79 sec.**


Tooling

- **Elm-Format** – Accepted by community as *the only one proper format* (used in 99% packages)
- **Elm Analyse** – Static analyze tool. Interactive web application or JSON output
- **Elm debugger** – Just compile with `--debug`
- Elm-monitor - Monitor your Elm program with redux-devtools (experimental)
- ellie-app.com
- IDEs support
 - **Intellij IDEA** – Refactoring, Find usages, Code completion, Type Inference and Type Checking
 - **Visual Studio Code**
 - **Atom**
 - **Vim**

Ecosystem

package.elm-lang.org

- [vega-lite](#)
- [elm-graphql](#)
- [Elm Bootstrap](#) - Elm & Bootstrap 4
- [elm-mdl](#) - Material Design Library

elm
packages

[elm/browser](#) ... 1.0.1 — Overview
Run Elm in browsers, with access to browser history for single-page apps (SPAs)

[elm/bytes](#) ... 1.0.8 — Overview
Work with sequences of bytes (a.k.a. ArrayBuffer, typed arrays, DataView)

[elm/core](#) ... 1.0.2 — Overview
Elm's standard libraries

[elm/file](#) ... 1.0.5 — Overview
Select files. Download files. Work with file content.

Popular Packages

- [elm/core](#)
- [elm/html](#)
- [elm/json](#)
- [elm/browser](#)
- [elm/url](#)
- [elm/http](#)

Resources

- [Fancy Search](#)
- [Using Packages](#)
- [API Design Guidelines](#)
- [Write great docs](#)
- [Elm Website](#)

Kdo to používá?

- Microsoft – [Microsoft/elm-json-tree-view](https://microsoft.com/en-us/learn/javascript/tree-view)
- IBM – [Decision Composer](https://ibm.com/decision-composer)
- Ableton – learningmusic.ableton.com
- Gizra
- NoRedInk

To be continued ...

Null? .. Maybe not

```
type Maybe a
  = Just a
  | Nothing
```

```
type alias Person =
  { name : String
  , age : Int
  , email: Maybe String
  }
```

```
personEmail person =
  case person.email of
    Just email ->
      email
    Nothing ->
      "no e-mail address"
```

```
personEmail person =
  person.email |> Maybe.withDefault "no e-mail address"
```