Elm Pages - A statically typed site generator

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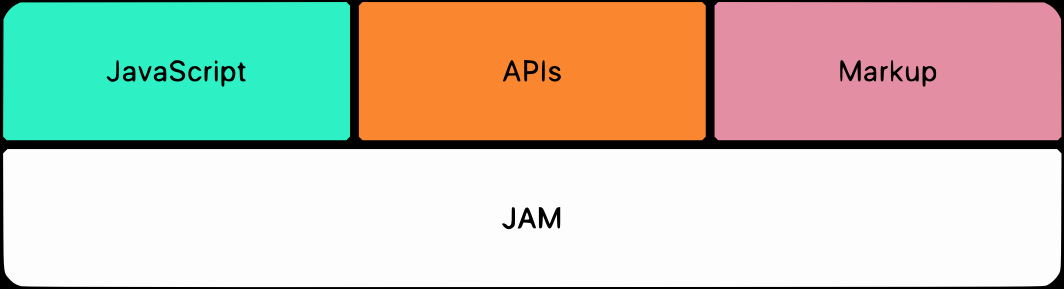
The New Gold Standard for Websites: JAMstack



> *JAMstack - A modern web development architecture based on client-side JavaScript, reusable APIs, and prebuilt Markup*

Mathias Biilmann (CEO & Co-founder of Netlify)

JavaScript

- Dynamic functionalities are handled by JavaScript
- No restriction on which framework or library to use

APIs

- Server side operations are abstracted into reusable APIs and accessed over HTTPS with JavaScript
- Tird party services or custom functions

Markup

- Websites are served as static HTML files
- Generated from source files, such as Markdown, using a Static Site Generator

But Also:

Progressive Web Apps

- Only load the critical HTML, CSS, data, and JavaScript through code & data splitting
- Once loaded, prefetch resources for other pages
- Offline access

CSS in JS

- Complete isolation for selectors, animations, keyframes
- Backwards compatibility
- Dynamic styles and themes support

So What Exactly Does It Add to an Elm App?

- **Accessibility** - Screen readers, low performance systems, ...
- **SEO** - Make website visible for bots which don't execute JavaScript
- **Performance** - Serve pre-built markup and assets over a CDN
- **Compile Time Code Execution**
    - **Requests** - Load data which is not accessible on the frontend
    - **Page Generation** - Don't let the frontend waste its time

And what does Elm add to the JAMstack concept?

- Type-safety and simplicity
- Type system guarantees valid images and routes in the right places
- Build errors for broken links or images in markdown (optional)
- Custom rules like maximum title length, tag names from a set to avoid multiple tags with different wording, ...

`elm-pages` is just Elm!

elm-pages hydrates into a full-fledged Elm app

Example Page

elm-pages.com

Directory Structure

```
.
|-- content/
|   |-- index.md
|-- src/
|   |-- Main.elm
|-- package.json
|-- elm.json
`-- index.js
```

Folders

`content`	Each file in the content folder result in a new route of your site.
`src`	No strict requirements except for the main function

Entrypoint `index.js`

```
import hljs from 'highlight.js/lib/highlight'
import 'highlight.js/styles/github.css'
import elm from 'highlight.js/lib/languages/elm'
hljs.registerLanguage('elm', elm)

import './style.css'

window.hljs = hljs
const { Elm } = require('./src/Main.elm')
const pagesInit = require('elm-pages')

pagesInit({
  mainElmModule: Elm.Main,
})
```

Main.elm

```elm
main : Pages.Platform.Program Model Msg Metadata Rendered
main =
    Pages.Platform.application
        { init = \_ -> init
        , view = view
        , update = update  -- Msg -> Model -> ( Model, Cmd Msg )
        , subscriptions = subscriptions  -- Model -> Sub Msg
        , documents = [ markdownDocument ]
        , manifest = manifest
        , canonicalSiteUrl = "https://elm-pages.com"
        , onPageChange = \_ -> ()
        , generateFiles = generateFiles
        , internals = Pages.internals
        }
```

view

```
List ( PagePath Pages.PathKey, Metadata )
    ->
        { path : PagePath Pages.PathKey
        , frontmatter : Metadata
        }
    ->
        StaticHttp.Request
            { view : Model -> Rendered -> { title : String, body : Html Ms
            , head : List (Head.Tag Pages.PathKey)
            }
```

elm-pages Generates Elm Code in /gen/Pages.elm

```elm
allPages : List (PagePath PathKey)
allPages =
    [ (buildPage [ "blog", "draft" ])
    , (buildPage [ "blog", "hello" ])
    , (buildPage [ "blog" ])
    , (buildPage [ "elm-meetup" ])
    , (buildPage [  ])
    ]

content : List
  ( List String
  , { extension: String, frontMatter: String, body: Maybe String }
  )
content = …
```

Other Data is Added Manually

src/Data/Author.elm

```elm
type alias Author =
    { name : String
    , avatar : ImagePath Pages.PathKey
    , bio : String
    }


all : List Author
all =
    [ { name = "Dillon Kearns"
      , avatar = Pages.images.author.dillon
      , bio = "Elm developer and educator."
      }
    ]
```

Metadata

```
type Metadata
    = Page PageMetadata
    | Article ArticleMetadata
    | Author Data.Author.Author
    | BlogIndex
```

Thank you for your attention!