



Reading engines for Visual Narratives

by Laurent Le Meur / EDRLab

18 September 2018

EDRLab / Radium

- ❖ European / Digital Reading / Development Lab
- ❖ Radium -> reading engines, open-source
 - ❖ Mobile: iOS (Swift), Android (Kotlin)
 - ❖ Desktop (Electron, node.js, typescript/js)
 - ❖ Web (typescript/js)
- ❖ EDRLab = Radium Europe

Reading what?

- ❖ EPUB 3 (and 2) reflow and fixed-layout
- ❖ CBZ comics (zipped sequence of images)
- ❖ Audiobooks (soon)
- ❖ Web publications and EPUB 4 (next)

Visual narratives, why a new format?

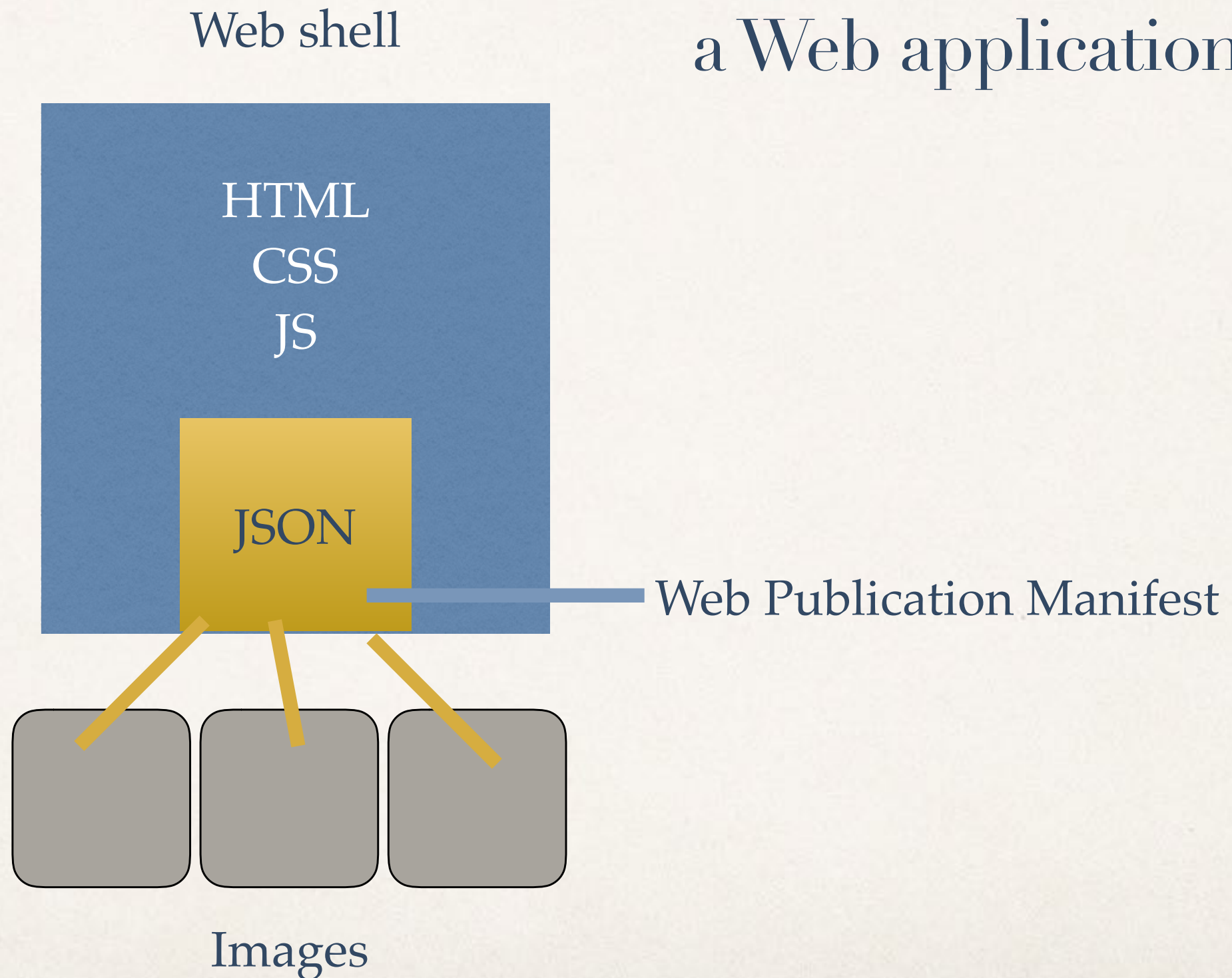
- ❖ Guarantee of a visual experience driven by the author
- ❖ Multiplatform: efficiency on native + web engines
- ❖ Simplicity of authoring
- ❖ Online + offline reading
- ❖ Mobile first; but accommodate digitized works based on printed volumes
- ❖ Long-term preservation

a choice: work based on Web Publications

Exposed on <https://github.com/edrlab/bd-comics-manga>

- ❖ Warning: the following proposal may hurt the sensibility of some Web developers ...
- ❖ Because there will be no CSS on this screen, no HTML, no JS.
- ❖ JSON only
- ❖ Please remind that we're talking about a exchange format processed both by Web apps **and native apps with no webview.**

JSON as a fuel for a Web application





Focusing on the "most useful" effects

Transitions, Transformations, Scroll, Parallax ... Multiple renditions, Metadata

Extract from L'Auberge, by Tommy Redolfi, using Stripop Créative (Philippe Rolland)

But first ... the model

- ❖ **Visual narrative:** comics, manga ... poetry
- ❖ **Page:** a "step" in the reading experience
- ❖ **Fragment** (panel, balloon ...)
- ❖ **Section:** a set of pages which constitutes a reading unit. Ex. a chapter.

The Web Publication manifest

```
{
  "@context": "http://readium.org/webpub/default.jsonld",
  "metadata": {
    "@type": "http://schema.org/Book",
    "title": "sample"
  },
  "links": [
    {"rel": "self", "href": "http://example.org/manifest.json", "type": "application/webpub+json"},
    {"rel": "alternate", "href": "http://example.org/sample.epub", "type": "application/epub+zip"},
  ],
  "readingOrder": [
    {"href": "p001.png", "type": "image/png", "title": "Page 1"},
    {"href": "p002.png", "type": "image/png", "title": "Page 2"}
  ],
  "resources": [
    {"rel": "cover", "href": "cover.jpg", "type": "image/jpeg", "height": 600, "width": 400},
    {"href": "style.css", "type": "text/css"},
    {"href": "whale.jpg", "type": "image/jpeg"},
    {"href": "boat.svg", "type": "image/svg+xml"},
    {"href": "notes.html", "type": "text/html"}
  ]
}
```

Transitions btw pages

- ❖ Types: crossfade, slide, wipe, split (etc.)
- ❖ Or image sequences / animated images
- ❖ Asymmetric transitions
- ❖ Properties: Duration, Controllability, Uniqueness

Which translates to ...

```
{
  "@context": "http://readium.org/webpub/default.jsonld",
  "metadata": {
    "@type": "http://schema.org/Book",
    "title": "sample"
  },

  "readingOrder": [
    {
      "href": "p001.png", "type": "image/png", "title": "Page 1",
      "properties": {
        "transition": {"type": "crossfade"}
      }
    },
    {
      "href": "p002.png", "type": "image/png", "title": "Page 2",
      "properties": {
        "transition-forward": {"type": "split", "from": "center"},
        "transition-backward": {"type": "wipe", "from": "left"}
      }
    },
    {
      "href": "p003.png", "type": "image/png", "title": "Page 3",
      "properties": {
        "transition": {"type": "crossfade", "duration": "slow", "unique": "true"}
      }
    }
  ]
}
```

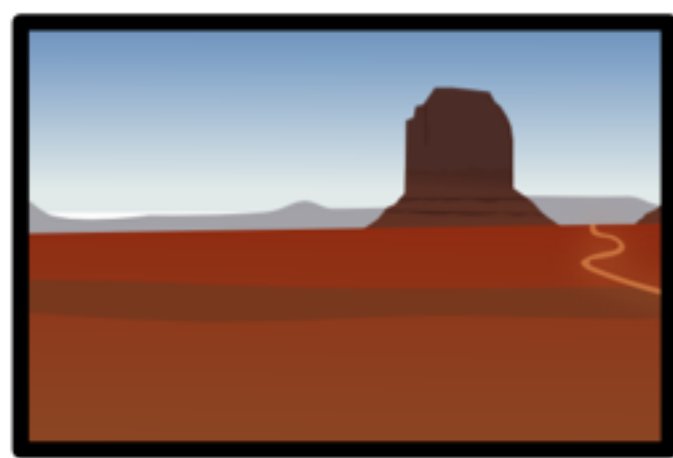
and if image-based

```
{
  "@context": "http://readium.org/webpub/default.jsonld",
  "metadata": {
    "@type": "http://schema.org/Book",
    "title": "sample"
  },
  "readingOrder": [
    {
      "href": "p001.png", "type": "image/png", "title": "Page 1",
      "properties": {
        "transition": {
          "type": "animated",
          "images": [
            { "href": "p001-i1.png", "type": "image/png" },
            { "href": "p001-i2.png", "type": "image/png" },
            { "href": "p001-i3.png", "type": "image/png" },
            { "href": "p001-i4.png", "type": "image/png" },
            { "href": "p001-i5.png", "type": "image/png" },
            { "href": "p001-i6.png", "type": "image/png" },
          ],
          "duration": "fast"
        }
      }
    },
    {
      "href": "p002.png", "type": "image/png", "title": "Page 2"
    }
  ]
}
```

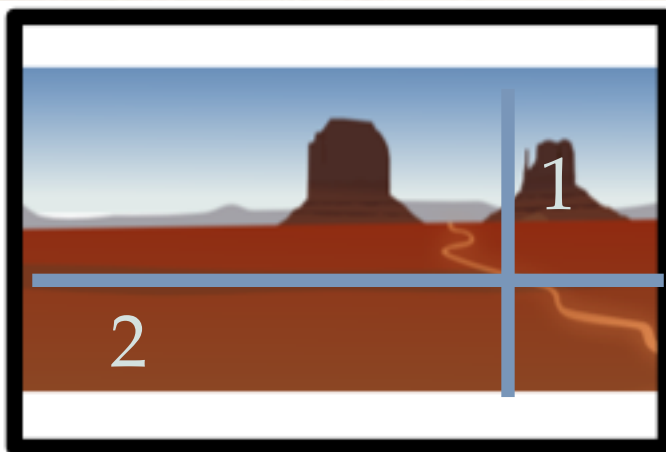
Scroll

- ❖ Vertical or horizontal
- ❖ Constraint on the screen (portrait/landscape)
- ❖ Scaling / viewport (fit to height ...)
- ❖ Positioning of the starting point
- ❖ Snap points

- ❖ fit to height (portrait mode)

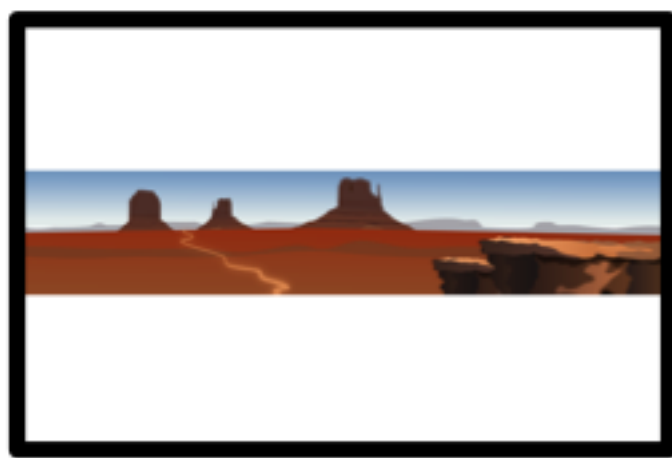


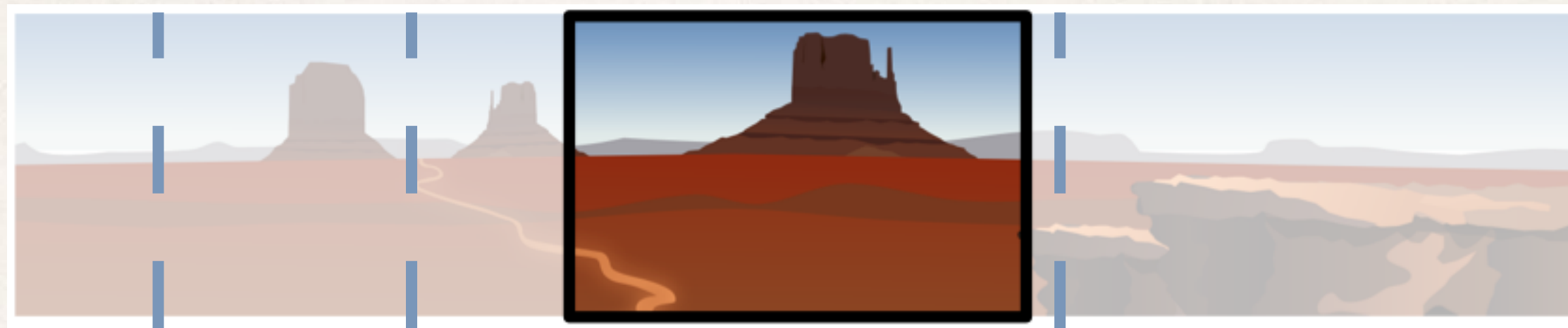
- ❖ 2:1 ratio (portrait mode)



"fit": "ratio#2:1"

- ❖ fit to width (portrait mode)





Start = 50%

Snap points = 10%, 25%, 70%

Initial position

Snap points

Represented as

```
{
  "@context": "http://readium.org/webpub/default.jsonld",
  "metadata": {
    "@type": "http://schema.org/Book",
    "title": "sample"
  },

  "readingOrder": [
    {"href": "p001.png", "type": "image/png", "title": "Page 1",
      "properties": {
        "fit": "ratio#2:1",
        "position-x": "10",
        "snap-x": {"positions": [0, 25, 70]}
      }
    },
    {"href": "p002.png", "type": "image/png", "title": "Page 2"}
  ]
}
```


Fragment based navigation

- ❖ An ordered collection of fragments drives the navigation
- ❖ Rectangular fragments only, as media fragments URI

```
xywh=160,120,320,240  
xywh=pixel:160,120,320,240  
xywh=percent:25,25,50,50
```

- ❖ No fragment can belong to two different resources
 - ❖ Simplified / EPUB 3

Represented as

```
{
  "@context": "http://readium.org/webpub/default.jsonld",
  "metadata": {
    "@type": "http://schema.org/Book",
    "title": "sample"
  },
  "readingOrder": [
    {
      "href": "p001.png#xywh=percent:5,5,90,25",
      "type": "image/png",
      "title": "Page 1 Panel 1",
      "properties": {
        "transition": {"type": "slide"}
      }
    },
    {
      "href": "p001.png#xywh=percent:5,35,90,25",
      "type": "image/png",
      "title": "Page 1 Panel 2",
      "properties": {
        "transition": {"type": "slide"}
      }
    },
    {
      "href": "p003.png#xywh=percent:5,65,90,25",
      "type": "image/png",
      "title": "Page 1 Panel 3"
    }
  ]
}
```

Sections

- ❖ Collections of pages, with their own metadata.
- ❖ Each section has its own reading order.
- ❖ Allows for easy in-book update.

Represented as

```
{
  "@context": "http://readium.org/webpub/default.jsonld",
  "metadata": {
    "@type": "http://schema.org/Book",
    "title": "sample"
  },
  "sections": [
    {
      "metadata": {
        "@type": "http://bib.schema.org/Chapter",
        "identifier": "Chapter-1",
        "published": "2018-03-22T11:18:54+00:00",
        "title": "Chapitre 1 – Let's start",
      },
      "readingOrder": [
        {"href": "p001.png", "type": "image/png", "title": "Page 1"},
        {"href": "p002.png", "type": "image/png", "title": "Page 2"}
      ]
    },
    {
      "metadata": {
        "@type": "http://bib.schema.org/Chapter",
        "identifier": "Chapter-2",
        "published": "2019-01-01",
        "title": "Chapitre 2 – Let's continue",
        "description": "This chapter will be published in 2019"
      }
    }
  ]
}
```

Layers & Parallax effects

- ❖ A page is a collection of **layers**, a layer is an array of images (raster or vector).
- ❖ Properties of a layer : speed, linear path, opacity, snap points (& triggers), resources positioned on the layer.
- ❖ JSON: work in progress.

Other features studied

- ❖ Metadata specific to comics (series ...)
- ❖ Alternate versions
- ❖ Multiple renditions
- ❖ Accessibility

Developing a native reader

- ❖ Great performance on e.g. mobile
- ❖ One can use a game engine (like SpriteKit on iOS / OSX for animations).

Developing a Web reader

- ❖ Two main trends
 - ❖ DOM manipulation + (CSS or Web animations API)+ JS
 - ❖ HTML Canvas (JS)

Summary

- ❖ Let's structure narratives using JSON-LD
 - ❖ Using any kind of authoring software
 - ❖ With long term preservation in mind
- ❖ Let developers create optimized reading engines, using the best technologies today and tomorrow.



Thanks



Bonus: alternate versions

```
{  
  "rel": ["http://bib.schema.org/workTranslation", "http://opds-spec.org/acquisition/buy"]  
  "href": "asterix10-ja.json",  
  "type": "application/webpub+json",  
  "hreflang": "ja",  
  "properties": {"price": {"value": 12.99, "currency": "EUR"}}  
}
```

Bonus: alternate renditions

```
"renditions": [  
  {  
    "metadata": {  
      "language": "fr"  
    },  
    "readingOrder": [{}],  
  },  
  {  
    "metadata": {  
      "language": "ja"  
    },  
    "readingOrder": [{}],  
  }  
]
```