



FIZ Karlsruhe

Leibniz Institute for Information Infrastructure

ADVANCING SCIENCE

Can RDFa and friends enrich presentation MathML to support accessibility and search?

Schubotz, Moritz, 17.12.2020

Status Quo

The W3C MathML community group discussed the introduction of a new HTML attribute called intent to specify mathematical intent without using content MathML.

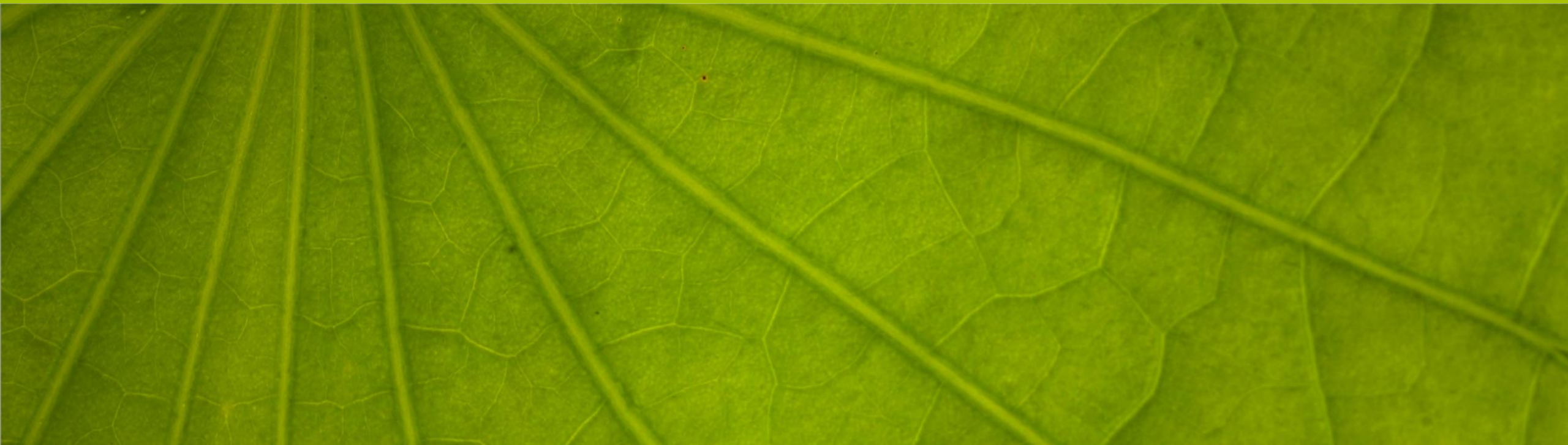
The goal of this presentation is to understand, if concepts from

- Schema.org (<https://schema.org/>)
- **Microdata HTML** (<https://www.w3.org/TR/microdata/>)
- **HTML+RDFa** (<https://www.w3.org/TR/html-rdfa/>)

can be used to transport the same information in a more standardized way.

Agenda

- 1) schema.org
- 2) microdata
- 3) RDFa



Schema.org

*Schema.org provides a collection of **shared vocabularies** webmasters can use to mark up their pages in ways that can be understood by the major **search** engines: Google, Microsoft, Yandex and Yahoo!
(<https://schema.org/docs/gs.html>)*

- Vocabularies in [Microdata](#), [RDFa](#), [JSON-LD](#) at lowest level of content or as invisible HTML meta-tags.
- type [Thing](#) (name, description, url, image, identifier, disambiguatingDescription)
 - <https://schema.org/Mass> ([fatContent](#))
 - <https://schema.org/ComputerLanguage> ([programmingLanguage](#))
- [DataType](#)
 - [Boolean](#)
 - [Number](#)
 - [Text](#) (CssSelectorType, PronounceableText, URL, XPathType)
 - [Time](#)

Microdata

```
<section> Hello, my name is John Doe, I am a graduate research assistant at  
the University of Dreams.  
My friends call me Johnny.  
You can visit my homepage at <a href="http://www.JohnnyD.com">www.JohnnyD.com</a>.  
I live at 1234 Peach Drive, Warner Robins, Georgia.</section>
```

```
<section itemscope itemtype="http://schema.org/Person">  
  Hello, my name is  
  <span itemprop="name">John Doe</span>,  
  I am a  
  <span itemprop="jobTitle">graduate research assistant</span>  
  at the  
  <span itemprop="affiliation">University of Dreams</span>.  
  My friends call me  
  <span itemprop="additionalName">Johnny</span>.  
  You can visit my homepage at  
  <a href="http://www.JohnnyD.com" itemprop="url">www.JohnnyD.com</a>.  
  <section itemprop="address" itemscope itemtype="http://schema.org/PostalAddress">  
    I live at  
    <span itemprop="streetAddress">1234 Peach Drive</span>,  
    <span itemprop="addressLocality">Warner Robins</span>,  
    <span itemprop="addressRegion">Georgia</span>.  
  </section>  
</section>
```

Exact quote from
[https://en.m.wikipedia.org/wiki/Microdata_\(HTML\)](https://en.m.wikipedia.org/wiki/Microdata_(HTML))

RDFa

- W3C recommendation from 2015 to combine RDF with (X)HTML (5)
- Also used from within SVG images
- In principal compatible with MathML

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML+RDFa 1.0//EN"
  "http://www.w3.org/MarkUp/DTD/xhtml-rdfa-1.dtd">
<html xmlns="http://www.w3.org/1999/xhtml"
  xmlns:foaf="http://xmlns.com/foaf/0.1/"
  xmlns:dc="http://purl.org/dc/elements/1.1/"
  version="XHTML+RDFa 1.0" xml:lang="en">
<head>
  <title>John's Home Page</title>
  <base href="http://example.org/john-d/" />
  <meta property="dc:creator" content="Jonathan Doe" />
  <link rel="foaf:primaryTopic" href="http://example.org/john-d/#me" />
</head>
<body about="http://example.org/john-d/#me">
  <h1>John's Home Page</h1>
  <p>My name is <span property="foaf:nick">John D</span> and I like
    <a href="http://www.neubauten.org/" rel="foaf:interest"
      xml:lang="de">Einstürzende Neubauten</a>.
  </p>
  <p>
    My <span rel="foaf:interest" resource="urn:ISBN:0752820907">favorite
    book is the inspiring <span about="urn:ISBN:0752820907"><cite
    property="dc:title">Weaving the Web</cite> by
    <span property="dc:creator">Tim Berners-Lee</span></span></span>.
  </p>
</body>
</html>
```

Discussion / Ideas

```
<math>
<mrow>
<semantics>
<mi>sin</mi>
<annotation-xml encoding="MathML-Content"> <sin /> </annotation-xml>
</semantics>
<mfenced>x</mfenced>
</mrow>
</math>
    <math>
    <mrow>
    <mi about="https://www.openmath.org/cd/transc1.html#sin">sin</mi>
    <mfenced>x</mfenced>
    </mrow>
    </math>
```

Contact

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