

Microformats, Metadata

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1 Introduction

1.1 Content

- What are microformats?
- Why to use microformats?
- How to replace microformats?
- Advantages of microformats to own markup.
- Disadvantages of microformats..
- Common used microformats
- Microformats design patterns.
- Resources on microformats.

1.2 What are microformats?

- The way how to add simple markup into human readable information to allow computer processing.
 - acquiring data from documents
 - indexing
 - searching
 - storing
 - cross-referencing
- Microformats are elements of a semantic markup using a plain old semantic (X)HTML (POSH)
 - Why has been the HTML designed at CERN (Conseil Européen pour la Recherche Nucléaire (<http://dg-rpc.web.cern.ch/dg-rpc/Scale.html>)) v in the year 1991?

1.3 Example of Microformat

```
<ol class='xoxo'>
  <li>První bod
    <ol>
      <li>Podbod a</li>
      <li>Podbod b</li>
    </ol>
  </li>
  <li>Druhý bod
    <ol compact="compact">
      <li>Podbod c</li>
      <li>Podbod d</li>
    </ol>
  </li>
</ol>
```

1.4 Why to use microformats?

Microformats combines some trends:

- next logical step in web-design and information architecture progress
- the manner how can people and organisations publish semantically rich content without dependency on centralized services
- "agreement", that the traditional meta data either failed or their adoption took too long, so there has been a need of a different solution.
 - microformats use the meta data. :-)
- Use of (X)HTML for data.

1.5 How can be microformats replaced? (1)

- Including data in own formatting in a different namespace
 - XHTML + Voice Profile (<http://www.voicexml.org/specs/multimodal/x+v/12/>)
 - (X)HTML + SVG
 - XLink
 - XHTML+RDF
 - ...

1.6 How can be microformats replaced? (2)

- Advantages:
 - easy visualisation (direct support in browsers, using CSS for example),
 - independent on centralized services.

- Disadvantages:
 - depends on host markup,
 - may be more difficult to process on a computer.

1.7 Standardized Microformats

- hCalendar - publishing events on the web
- hCard - publishing people, companies, organizations on the web
- rel-license - indicating licenses of a content embedded in (X)HTML, ...
- rel-nofollow - hypertext link should not be ranking by user agents
- rel-tag - allows adding user-defined tags to hyper links
- XFN - the Xhtml Friends Network - simple way of human relationships representation using hyper links
- XMDP - (XHTML Meta Data Profiles) - simple XHTML-based format for defining HTML meta data profiles. Specification is documented at <http://gmpg.org/xmdp/>
- XOXO - microformat for embedding outlines into (X)HTML pages.

1.8 Developed microformats

- adr - address annotations in documents
- geo - geographical coordinates annotation in documents
- hAtom - markup for content aggregation.
- hProduct - microformat for including information on products into (X)HTML pages.
- hReceipe - microformat for including informations on receipts into (X)HTML pages.
- hResume - microformat for including resume into (X)HTML pages.
- hReview - microformat for including reviews on products, services, etc. into (X)HTML pages.
- ... (for more see microformats.org/Wiki (http://microformats.org/wiki/Main_Page))

2 hCalendar

2.1 Introduction

- simple, open, distributed microformat for annotation of calendars and events
- based on the standard iCalendar (RFC2445 (<http://www.ietf.org/rfc/rfc2445.txt>))
 - used for calendar synchronisation in organizers, mobile phones, PDAs, etc. with computer, for temporal based data exchange in between above mentioned devices, etc.
- hCalendar corresponds 1:1 to standard iCalendar

2.2 Introduction (2)

- hCalendar is defined by the XMDP profile at URI <http://microformats.org/profile/hcalendar>
 - Link should be included in (X)HTML document using this microformat.

```
<head
  profile="http://microformats.org/profile/hcalendar">

<link rel="profile"
  href="http://microformats.org/profile/hcalendar">

This content uses
<a rel="profile"
  href="http://microformats.org/profile/hcalendar">
hCalendar</a>.
```

2.3 Event Markup Example in iCalendar Format

```
BEGIN:VCALENDAR
BEGIN:VEVENT
UID:guid-1.host1.com
DTSTAMP:19980309T231000Z
DESCRIPTION:Project XYZ Review Meeting
SUMMARY:XYZ Project Review
DTSTART:19980312T133000Z
DTEND:19980312T143000Z
LOCATION:1CP Conference Room 4350
END:VEVENT
END:VCALENDAR
```

2.4 Corresponding hCalendar Event Markup

```
<div class="vevent">
<h3 class="summary">XYZ Project Review</h3>
<p class="description">Project XYZ Review Meeting</p>
<p>To be held on
<abbr class="dtstart" title="1998-03-12T08:30:00-05:00">
12 March 1998 from 8:30am EST</abbr>
until
<abbr class="dtend" title="1998-03-12T09:30:00-05:00">
9:30am EST</abbr></p>
<p>Location: <span class="location">1CP Conference Room 4350</span></p>
<small>Booked by: <span class="uid">guid-1.host1.com</span> on
<abbr class="dtstamp" title="19980309T231000Z">
9 Mar 1998 6:00pm</abbr></small>
</div>
```

2.5 Tools for hCalendar Creating and Publishing

- hCalendar Creator (<http://microformats.org/code/hcalendar/creator>)
- Midgard CMS (<http://www.midgard-project.org/documentation/net-nemoin-calendar/>)
- Firefox Greasemonkey (http://www.decafbad.com/blog/2005/06/08/greasemonkey_magic)
- Event plugin for Windows Live! Writer (<http://gallery.live.com/liveItemDetail.aspx?li=9751e563-1408-4fc3-8028-bd4351edb1fb&l=8>)
- ... (see hCalendar implementation (<http://microformats.org/wiki/hcalendar-implementations>))

3 hCard

3.1 Introduction

- Simple, open, distributed format for publishing information about people, companies, etc.
- Corresponds 1:1 to vCard standard (RFC2426 (<http://www.ietf.org/rfc/rfc2426.txt>)).
- (X)HTML document using hCard should have assigned corresponding profile:

```
<head profile="http://microformats.org/profile/hcard">
```

```
<link rel="profile"
href="http://microformats.org/profile/hcard">
```

This content uses

```
<a rel="profile"
href="http://microformats.org/profile/hcard">hCard</a>.
```

3.2 vCard Example

```
BEGIN:VCARD
VERSION:3.0
N:Bártek;Luděk
FN:Luděk Bártek
URL:http://www.fi.muni.cz/~bar
END:VCARD
```

3.3 Corresponding hCard

```
<div class="vcard">
  <a class="url" href="http://www.fi.muni.cz/~bar/">
    <span class="fn n">
      <span class="given-name">Luděk</span>
      <span class="family-name">Bártek</span>
    </span>
  </a>
</div>
```

3.4 hCard Creation and Manipulation Tools

- hCard creator (<http://microformats.org/code/hcard/creator>)
- Wordpress Addressbook plugin (<http://wordpress.org/extend/plugins/addressbook/>)

4 XOXO

4.1 Introduction

- Simple format for including outlines and presentations in XHTML.
- Made up of the following XHTML modules:
 - structure module (elements body, head, html, title)
 - hypertext module (element a)
 - list module (elements dl, dt, dd, ol, ul, li)
 - meta information module (element meta)
 - style sheet module (element style)
 - style attribute module (attribute style)
 - link module (element link)
 - legacy module (attribute compact u ol a ul)

4.2 Introduction (2)

- It is a good practice to assign following profile to a document using XOXO microformat:

```
<head profile="http://microformats.org/profile/xoxo">

<link rel="profile"
href="http://microformats.org/profile/xoxo">
```

4.3 Sample XOXO Markup

```
<ol class='xoxo'>
  <li>Subject 1
    <ol>
      <li>subpoint a</li>
      <li>subpoint b</li>
    </ol>
  </li>
  <li>Subject 2
    <ol compact="compact">
      <li>subpoint c</li>
      <li>subpoint d</li>
    </ol>
  </li>
```

4.4 Sample XOXO Markup (2)

```
  <li>Subject 3
    <ol>
      <li>subpoint e</li>
    </ol>
  </li>
</ol>
```

4.5 Sample CSS for Example Visualization

```
ol.xoxo { list-style:decimal; }
ol.xoxo ol { list-style:lower-latin; }
ol[compact="compact"] { display:none; }
```

4.6 Creating XOXO documents

- S5Easy (<http://www.s5easy.com/>) - on-line slide show generation tool
- Slimey (<http://sourceforge.net/projects/slimey/>)
- ...

5 hResume

5.1 Description (1)

- Microformat for including resume in (X)HTML pages.

- Composed from following microformats:
 - hCard
 - hCalendar
 - rel-tag

5.2 Description (2)

- It is a good practice to add links to following profiles to document using hResume:
 - hResume


```
<head profile="http://microformats.org/profile/hresume">
<link rel="profile"
href="http://microformats.org/profile/hresume">
– hCard
– hCalendar
– eventually. geo, ...
```
- Sample - see example from lecture.

6 Microformats Design Patterns

6.1 Introduction

- Offers the vocabulary of commonly used markup across microformats.
- Basic design patterns:
 - abbr-design-pattern
 - class-design-pattern
 - datetime-design-pattern, date-design-pattern
 - class names defined across all design patterns
 - include-pattern
 - value-class-pattern
 - rel-design-pattern
 - atomic microformats
 - composed microformats

6.2 Abbr-design-pattern

- Is used to make human-readable text machine-readable as well.
- Wraps the human-readable text into abbr element (it contains machine readable equivalent of particular value).
- `<abbr class="author" title="Danny Ayers">Danny</abbr>`
- Not recommended for usage in documents to be accessed by programlisting readers
- we have a party in
`<abbr class="dtstart" title="20070312T1700-06">
 March 12, 2007 at 5 PM
</abbr>`

6.3 Class-design-pattern

- The best matching (X)HTML element should be used.
- The semantics is assigned to the elements using the semantic classes.
- `<div class="vcard">
 <a class="url fn"
 href="http://www.fi.muni.cz/~bar">
 Luděk Bártek,
 FI MU Brno
</div>`

6.4 Datetime-design-pattern

- Used to make human readable time information machine readable as well.
- Human readable time is enclosed into an abbr element.
- Machine readable time is the value of attribute title in the format corresponding ISO-8601 standard.
- `<abbr class="dtstart" title="20051010T10:10:10-0100">
 10 o'clock on the 10th
</abbr>`

6.5 Atomic microformats

- The minimalistic solution of a particular problem.
- Composed from standard (X)HTML elements/attributes.
- Are the base for composed microformats.
- Often use either single class or rel attribute.
- Example of atomic microformats:

- rel-license
- XOXO
- ...

6.6 Composed Microformats

- Composed microformats consists from atomic microformats and/or standard (X)HTML elements.
- Are designed to be easily included in web pages.
- Often use combination of several class or rel attributes.
- Example of composed microformats:
 - hCalendar
 - hCard
 - hResume
 - ...

6.7 Resources

- microformats.org (<http://microformats.org>)
- What are microformats (<http://www.xml.com/pub/a/2005/03/23/deviant.html>) on xml.com
- Microformats in Context (<http://www.xml.com/pub/a/2006/04/26/microformats-grddl-rdfa-nvdl.html>) on xml.com
- ...

7 Metadata Frameworks Describing the XML and Data Resources

7.1 RDF Framework

RDF Model and RDF Schema are W3C Recommendation. Set of W3C Recommendations (2004): <http://www.w3.org/standards/techs/rdf> List of specs with their current status http://www.w3.org/standards/techs/rdf/#w3c_all RDF Primer (<http://www.w3.org/TR/2004/REC-rdf-primer-20040210/>)

7.2 RDF Model

RDF is general mechanism for metadata specification. RDF can be used with any (not only digital) resources. RDF model is based on triplets.

- resource - <http://www.fi.muni.cz/tomp/xml> for example
- property - description for example

- value - PB138 at FI MU Homepage for example.

Triplets can be represented

- graphically,
- like a triplets (r, p, v) (N3-notation)
- by an XML syntax

See more

7.3 RDF Model (2)

See more:

- Good introduction on [xml.com](http://www.xml.com/pub/a/2001/01/24/rdf.html) (J. Tauber, 2006): What is RDF? (<http://www.xml.com/pub/a/2001/01/24/rdf.html>)
- Zvon RDF Tutorial (Miloslav Nič) Zvon RDF Tutorial (<http://www.zvon.org/comp/r/tut-RDF.html>)
- RDF Tutorial (W3Schools) W3Schools RDF Tutorial (<http://www.w3schools.com/rdf/default.asp>)
- RDF Tutorial (P.A.Champin, 2001) <http://www710.univ-lyon1.fr/~champin/rdf-tutorial/node1.html>

7.4 RDF Schema

- Specifies the set of properties, their definition, domains, and the range of their values.
- To model the RDF Schema is used the RDF.

7.5 RDF representation of legacy metadata schemes - Z39.50, Dublin Core etc.

- RDF is general framework for metadata modeling.
- There is a need of definition of allowed properties, their domains and (allowed) for particular use.
- This is the way to create RDF metadata schema representation.
- Representation may be in a form of RDF Schema.

8 Dublin Core - Example of RDF Schema

8.1 What is Dublin Core?

- Generally usable generic metadata schema.
- Based on initiative of librarians to create framework for bibliographic information description.

- Today is commonly used - metadata description of public service information (*e-Government*) for example.
- Created by 15 basic elements with partially defined semantics.
- Elements can be extended - by decomposition to (usually disjoint) subsets.
 - It always must be a subsets of originally designed elements.

8.2 Simple Dublin Core

”Simple” or ”unqualified” Dublin Core (”Simple DC” in what follows) represents the basic set of 15 element designed and supported by:

- Dublin Core(R) Metadata Initiative (DCMI, <http://dublincore.org>).
- Present version - Dublin Core Metadata Set, Version 1.1. DCMI Recommendation, last issue Jun 2012, <http://dublincore.org/documents/2012/06/14/dces/>
- Accepted by IETF (<http://ietf.org>) consortium as *RFC (Request For Comment) 5013 (Aug 2007) as well as ISO Standard 15836-2009 (2009)*, and recently in 2012 as ANSI/NISO Standard Z39.85-2012 (http://www.niso.org/apps/group_public/download.php/10216/Z39-85-2012_dublin_core.pdf)

8.3 Qualified Dublin Core

- contains the same set of elements as the Simple DC and recommends more in depth specification and limitation on every element.
- Typically based on formal or de-facto international standard.
 - The language must be specified according the ISO 639 standard for example.

8.4 RDF Tools

Jena Java RDF API and toolkit (<http://www.hp1.hp.com/semweb/>)The ICS-FORTH RDFSuite (<http://139.91.183.30:9090/RDF/>)DC Creator on University of Bath (<http://www.ukoln.ac.uk/cgi-bin/dcdot.pl>)for more see <http://www.w3.org/RDF> (<http://www.w3.org/RDF/>)

9 Ontologies

9.1 What are ontologies?

Instrument how to describe a knowledge.Set of terms and constructs and how they can be joint, derived etc.Basic cathegories of ontologies are:

- **Classes** (general things) in the many domains of interest
- The **relationships** that can exist among things

- The **properties** (or **attributes**) those things may have

Uses the metadata frameworks (eg. RDF), but it is better with more exact semantics. There are general frameworks for creation of specific ontologies.

9.2 Use Cases

- Web portals - data integration on web.
- Multimedia collections.
- Large web sites management
- Design documentation
- Intelligent agents
- "Ubiquitous computation"

Web Ontology Language (OWL) (<http://www.w3.org/2001/sw/wiki/OWL>) (current version "OWL 2", 2009) Simple Knowledge Organization System (SKOS) (<http://www.w3.org/2001/sw/wiki/SKOS>) (SKOS Primer, 2009)