MEI

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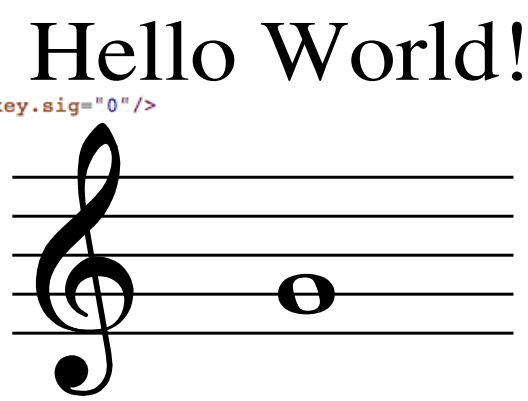
MEI

- Music Encoding Initiative: XML representation for music with focus on academic research
- Features for generating critical editions of a work (with multiple source that are not the same)
- Secondary concentration on pre-modern western musical notation (mensuration and neumes).
- Examples: http://music-encoding.org/documentation/samples

```
<mei version="1.7b">
  <meihead>
    <meiid>20071029101306082</meiid>
    <filedesc>
      <titlestmt>
        <title>Hello World!</title>
      </titlestmt>
      <pubstmt/>
    </filedesc>
  </meihead>
  <work>
    <music>
      <mdiv>
        <score>
          <scoredef meter.count="4" meter.unit="4" key.sig="0">
            <staffgrp>
              <staffdef n="1" id="P1" label.full="Music" clef.line="2" clef.shape="G" midi.div="1" key.sig="0"/>
            </staffgrp>
          </scoredef>
          <section>
            <scoredef meter.count="4" meter.unit="4" key.sig="0"/>
            <measure n="1" id="d1e6">
              <staff>
                <layer>
                  <note id="d1e24" tstamp="0" pname="c" oct="4" dur="1" dur.ges="4"/>
                </layer>
              </staff>
            </measure>
          </section>
        </score>
      </mdiv>
    </music>
  </work>
</mei>
```



TEI

- MEI is modeled after the Text Encoding Initiative: http://www.tei-c.org/index.xml

  “a consortium which collectively develops and maintains a standard for the representation of texts in digital form.”

```
<TEI xmlns='http://www.tei-c.org/ns/1.0' xmlns:xml='http://www.w3.org/XML/1998 namespace'
xml:id="A050153">
<teiHeader>
<fileDesc>
<titleStmt>
<title level="s">Aktuelle Nachrichten der Carl-Maria von Weber-Gesamtausgabe</title> <title
level="a">Quellcode von weber-gesamtausgabe.de auf GitHub verfügbar</title> <author
key="A009001">Peter Stadler</author>
</titleStmt> <publicationStmt>
<date when="2013-02-06T12:02:00"/>
</publicationStmt> <sourceDesc>
<p>born digital</p>
</sourceDesc>
</fileDesc> <profileDesc>
<textClass>
<keywords scheme="WeGA_cat">
<term>announcement</term>
</keywords>
</textClass>
</profileDesc>
</teiHeader> <text type="news">
<body>
<div xmlns:xml='http://www.w3.org/XML/1998/namespace' xml:lang="de">
<p>
Der Quellcode der Webapplikation weber-gesamtausgabe.de ist nun (endlich) unter <ref
target="https://github.com/Edirom/WeGA-WebApp">https://github.com/Edirom/WeGA-
WebApp</ref> frei verfügbar gemacht worden. <rs type="news" key="A050256">Vor ein paar
Wochen wurden bereits die XML-Schemata veröffentlicht</rs>, so dass gewissermaßen das
technische Fundament der Digitalen Weber-Edition jetzt auch offiziell frei zugänglich ist. Das
Ganze ist zwar auf unsere Ausgabe maßgeschneidert, ich hoffe aber doch, dass es zumindest als
Anhaltspunkt und Diskussionsgrundlage für ähnliche Editionsvorhaben dienen mag.
</p> <p>Ein paar weiterführende Informationen finden sich auf den genannten Seiten, wobei die
Dokumentation des Ganzen noch ein großes Desperat ist. Ich freue mich über alle Fragen und
Kommentare und stehe auch bei einer geplanten Nachnutzung gerne mit Rat und Tat zur Seite!</
p>
</div>
</body>
</text>
</TEI>
```

rendering

Quellcode von weber-gesamtausgabe.de auf GitHub verfügbar

Der Quellcode der Webapplikation weber-gesamtausgabe.de ist nun (endlich) unter https://github.com/Edirom/WeGA-WebApp frei verfügbar gemacht worden. Vor ein paar Wochen wurden bereits die XML-Schemata veröffentlicht, so dass gewissermaßen das technische Fundament der Digitalen Weber-Edition jetzt auch offiziell frei zugänglich ist. Das Ganze ist zwar auf unsere Ausgabe maßgeschneidert, ich hoffe aber doch, dass es zumindest als Anhaltspunkt und Diskussionsgrundlage für ähnliche Editionsvorhaben dienen mag.

Ein paar weiterführende Informationen finden sich auf den genannten Seiten, wobei die Dokumentation des Ganzen noch ein großes Desperat ist. Ich freue mich über alle Fragen und Kommentare und stehe auch bei einer geplanten Nachnutzung gerne mit Rat und Tat zur Seite!

Peter Stadler, Wednesday, February 6, 2013

- HTML on steroids
- Database format which can be transformed into HTML

http://www.weber-gesamtausgabe.de/en/A009001/News/A050153

Formal Description/Documentation

http://music-encoding.org/documentation

- Currently three components:
  - mei-CMN (Common western Music Notation)
  - mei-Mensural (precursor to CMN)
  - mei-Neumes (precursor to mensural notation)

- Element Tag Library:

  http://music-encoding.org/documentation/3.0.0/elements

- ODD (XML structure definition):

  https://github.com/music-encoding/music-encoding

DTD/Schema/RelaxNG/ODD

- Method to verify structure of XML and, to some degree, content

DTD: http://en.wikipedia.org/wiki/Document_Type_Definition
http://www.w3schools.com/dtd/dtd_intro.asp

- Original method for formal description of XML file structure (XML 1.0).

Schema: http://en.wikipedia.org/wiki/XML_Schema_(W3C)`

- 2001: Schema is also in XML format, a successor of DTDs
- XSD (XML Schema Definition)
- More data typing than DTDs
- Namespaces, such as “xml:id”

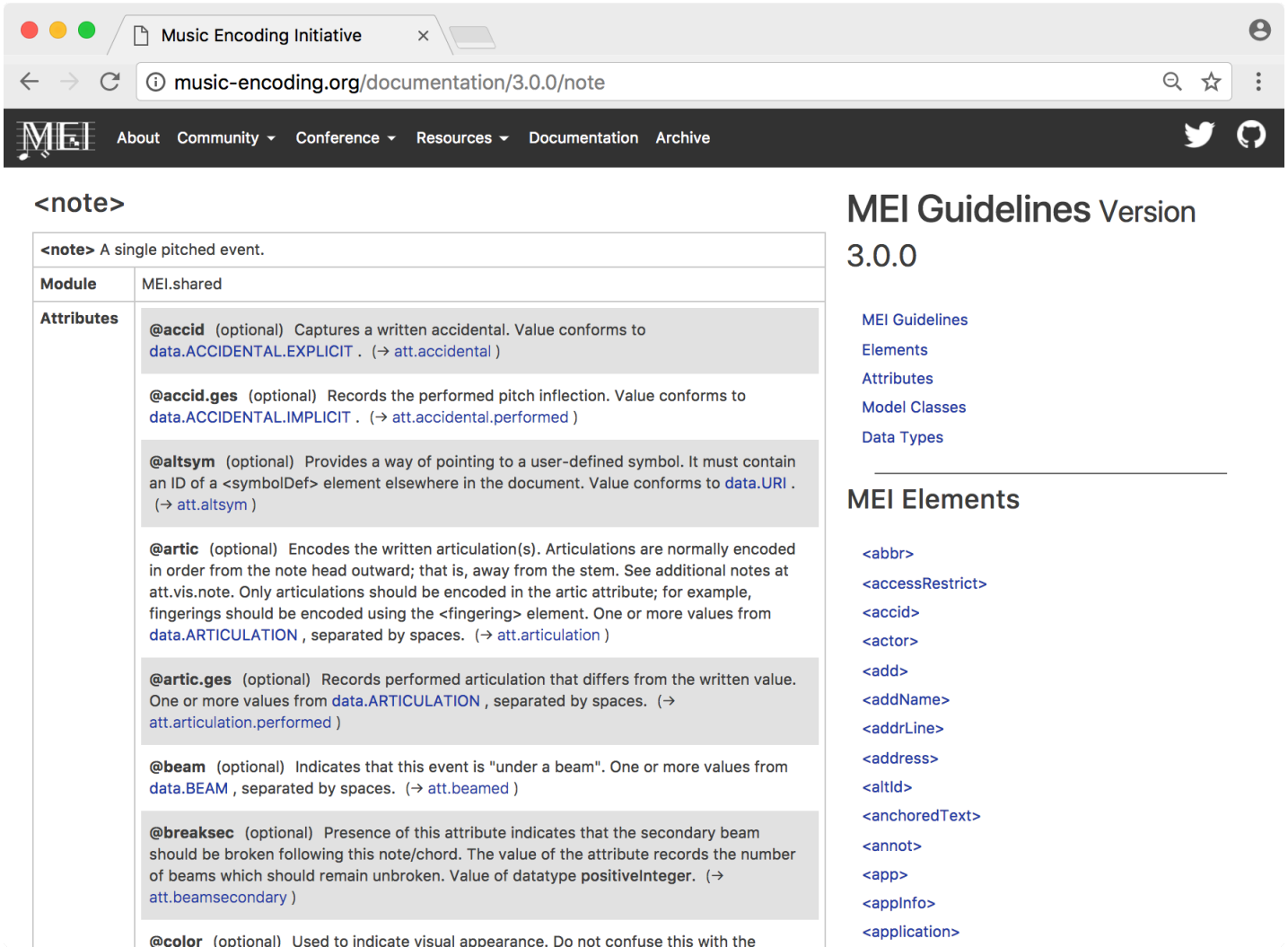
RelaxNG: http://en.wikipedia.org/wiki/RELAX_NG

- REgular LAnguage for Xml Next Generation
- 2009

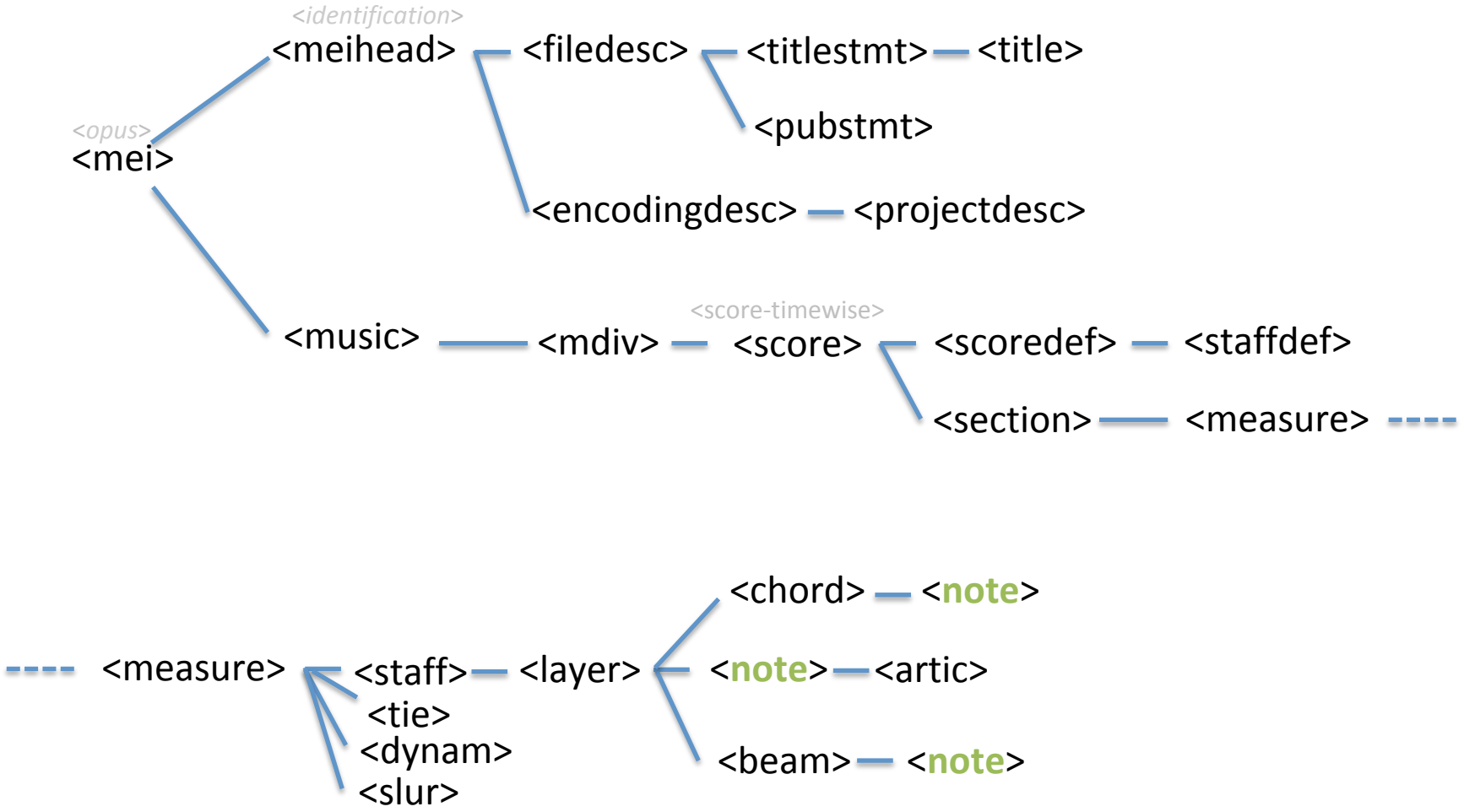
ODD: TEI’s meta representation to automatically generate Schema or RelaxNG format description.

Documentation

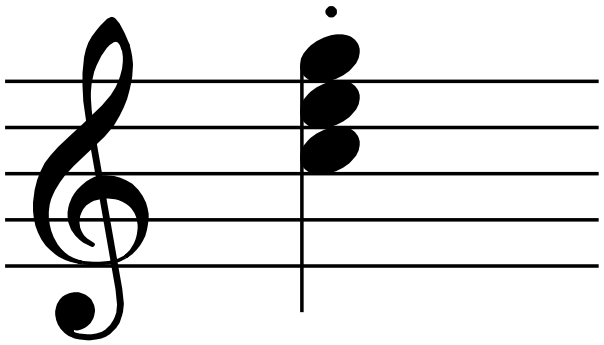
- http://music-encoding.org/documentation/3.0.0/chapters
- http://music-encoding.org/documentation/3.0.0/elements



Basic MEI structure



Chords



MEI

```
<chord xml:id="d11e1" dur="4" dur.ges="1" stem.dir=”down">
  <artic value="stacc"/>
  <note xml:id="d1e85"   pname="g" oct=“5"/>
  <note xml:id="d1e102" pname="e" oct=“5"/>
  <note xml:id="d1e118" pname="c" oct=“5"/>
</chord>
```

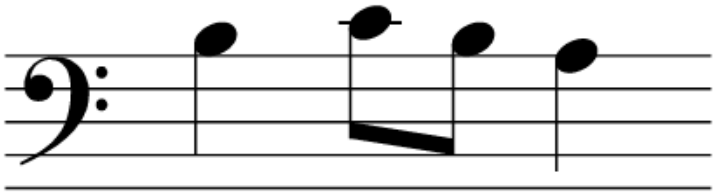
MuseData

```
G5      1       1 q     d
 E5     1       1 q     d
 C5     1       1 q     d
```

MusicXML

```
<note default-x="84">
  <pitch>
    <step>C</step>
    <octave>5</octave>
  </pitch>
  <duration>2</duration>
  <voice>1</voice>
  <type>quarter</type>
  <stem default-y="-50.5">down</stem>
  <notations>
    <articulations>
      <staccato default-x="3" default-y="15" placement="above"/>
    </articulations>
  </notations>
</note>
<note default-x="84">
  <chord/>
  <pitch>
    <step>E</step>
    <octave>5</octave>
  </pitch>
  <duration>2</duration>
  <voice>1</voice>
  <type>quarter</type>
  <stem>down</stem>
</note>
<note default-x="84">
  <chord/>
  <pitch>
    <step>G</step>
    <octave>5</octave>
  </pitch>
  <duration>2</duration>
  <voice>1</voice>
  <type>quarter</type>
  <stem>down</stem>
</note>
```

Beams



MEI

```
<note xml:id="n_sc_14_0" pname="b" oct="3" dur="4"/>
<beam>
        <note xml:id="n_sc_15_0" pname="c" oct="4" dur="8"/>
        <note xml:id="n_sc_16_0" pname="b" oct="3" dur="8"/>
</beam>
<note xml:id="n_sc_17_0" pname="a" oct="3" dur="4"/>
```

MuseData

```
B3    2    1 q
C4    1    1 e      [
B3    1    1 e      ]
A3    2    1 q
```

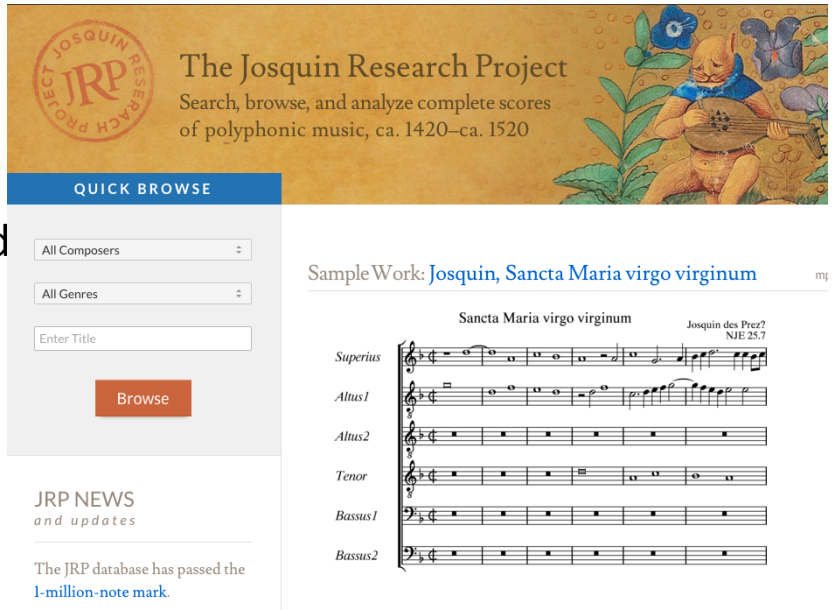
MusicXML

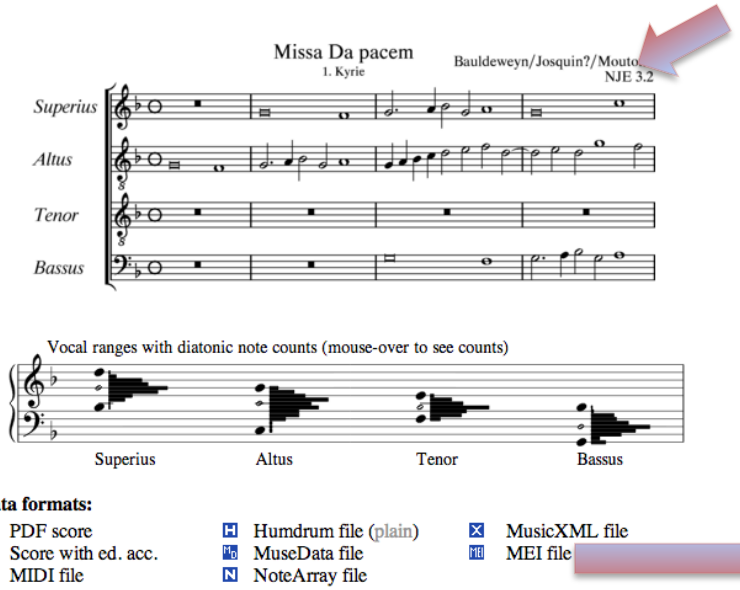
```
<note>
        <pitch>
                <step>B</step>
                <octave>3</octave>
        </pitch>
        <duration>2</duration>
        <voice>1</voice>
        <type>quarter</type>
        <stem>down</stem>
</note>
<note>
        <pitch>
                <step>C</step>
                <octave>4</octave>
        </pitch>
        <duration>1</duration>
        <voice>1</voice>
        <type>eighth</type>
        <stem>down</stem>
        <beam number="1">begin</beam>
</note>
<note>
        <pitch>
                <step>B</step>
                <octave>3</octave>
        </pitch>
        <duration>1</duration>
        <voice>1</voice>
        <type>eighth</type>
        <stem>down</stem>
        <beam number="1">end</beam>
</note>
<note>
        <pitch>
                <step>A</step>
                <octave>3</octave>
        </pitch>
        <duration>2</duration>
        <voice>1</voice>
        <type>quarter</type>
        <stem>down</stem>
</note>
```

MEI data on the web

http://jrp.ccarh.org

- JRP: database of music from the early Renaissance (1420-1520)
- Data available in Humdrum (primary format), MIDI, MuseData, MusicXML and MEI.
- Primarily Josquin des Prez
- Currently 1,000,000+ notes/1,000 works

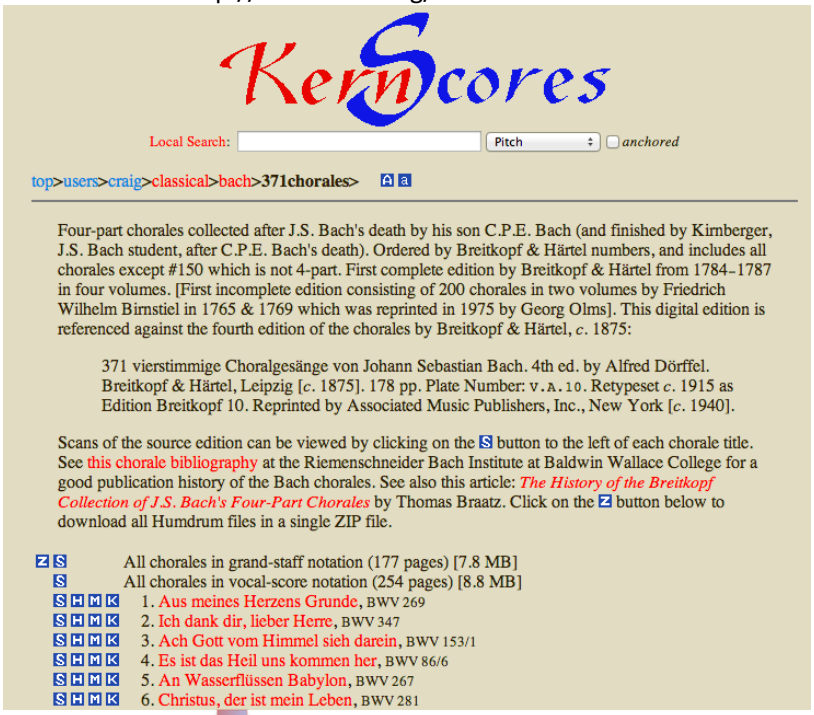




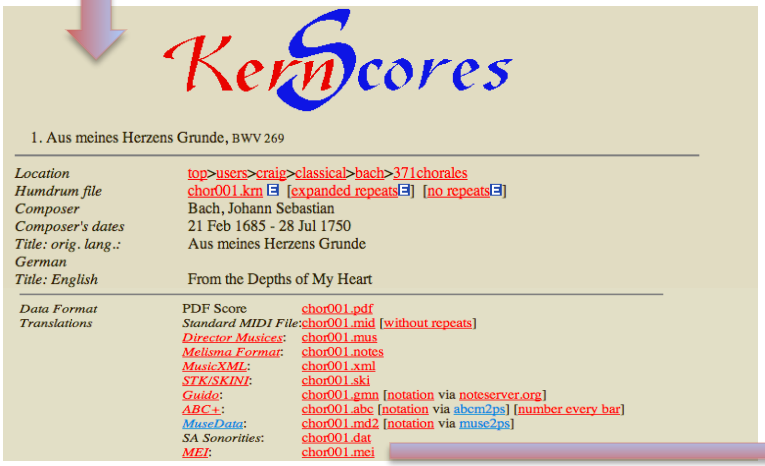

```
<measure n="1" xml:id="mx_sc_1">
  <staff n="1">
    <layer n="1">
      <rest xml:id="n_sc_29_3" dur="breve" dots="1"/>
    </layer>
  </staff>
  <staff n="2">
    <layer n="1">
      <note xml:id="n_sc_29_2" pname="g" oct="3" dur="breve"/>
    </layer>
  </staff>
  <staff n="3">
    <layer n="1">
      <rest xml:id="n_sc_29_1" dur="breve" dots="1"/>
    </layer>
  </staff>
  <staff n="4">
    <layer n="1">
      <rest xml:id="n_sc_29_0" dur="breve" dots="1"/>
    </layer>
  </staff>
</measure>
```

MEI data on the web (2)

http://kern.ccarh.org/browse?l=371chorales



http://kern.ccarh.org/data?file=chor001.krn&l=371chorales&format=info



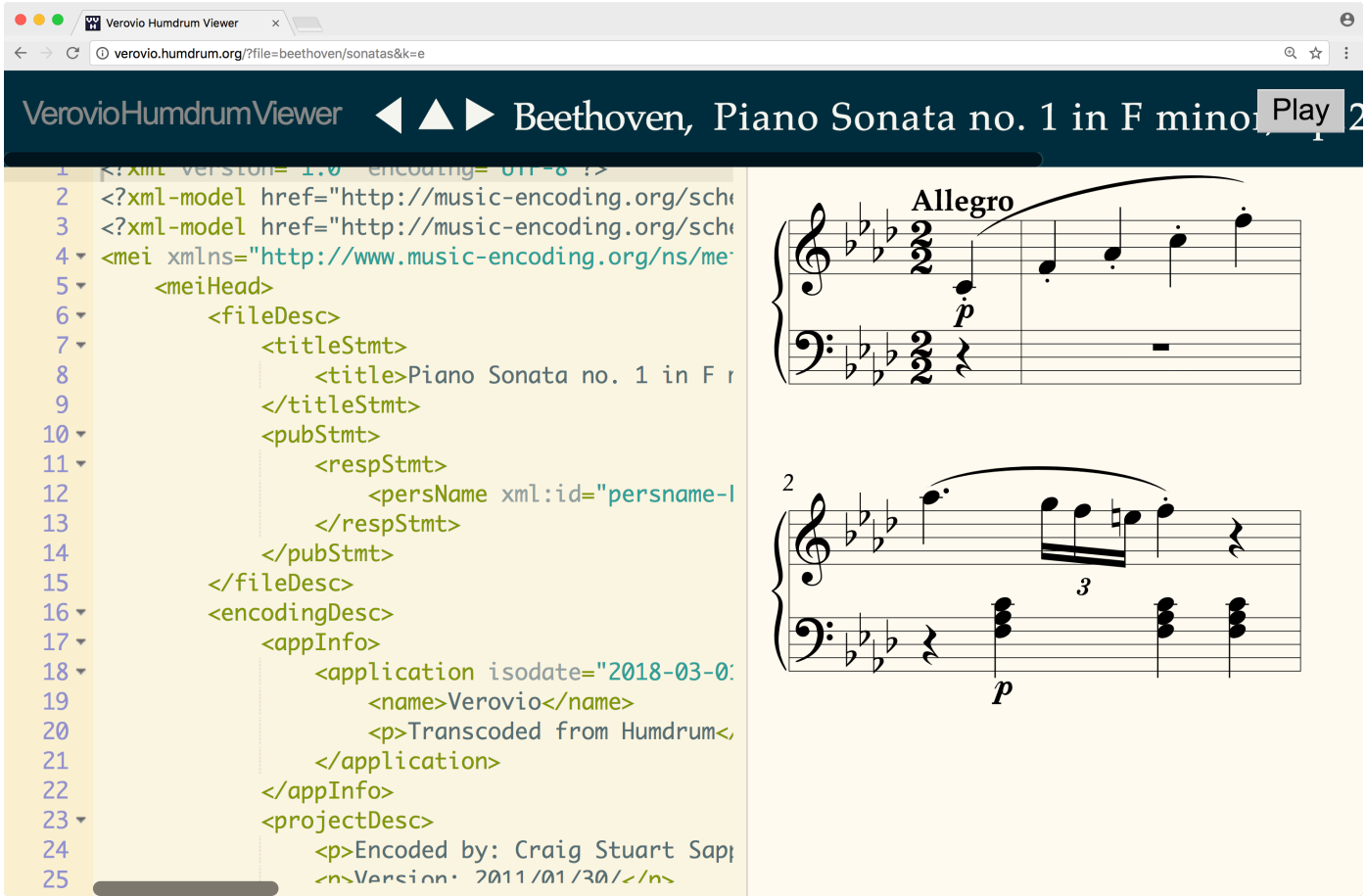
http://kern.ccarh.org/sdata?l=371chorales&file=chor001.krn&f=mei

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<?oxygen SCHSchema="http://music-encoding.org/mei/schemata/2010-05/rng/mei-all.rng"?>
<?oxygen RNGSchema="http://music-encoding.org/mei/schemata/2010-05/rng/mei-all.rng"
   type="xml"?>
<mei xmlns:xlink="http://www.w3.org/1999/xlink" xmlns="http://www.music-encoding.org/
ns/mei" meiversion="2010-05">
 <meihead>
  <filedesc>
   <titlestmt>
    <title type="main" xml:lang="ger">Aus meines Herzens Grunde</title>
    <title type="translated" xml:lang="eng">From the Depths of My Heart</title>
   </titlestmt>
   <pubstmt/>
  </filedesc>
  <profiledesc>
   <langusage>
    <language xml:id="eng" authority="iso639-2"/><!-- English -->
    <language xml:id="ger" authority="iso639-2"/><!-- German -->
   </langusage>
  </profiledesc>
</meihead>
 <music>
  <body>
   <mdiv>
    <score>
     <scoredef key.sig="1s" key.pname="g" key.accid="n" key.mode="major" meter.count="3"
        meter.unit="4">
      <staffgrp>
       <staffdef n="1" clef.shape="G" clef.line="2"/>
       <staffdef n="2" clef.shape="G" clef.line="2"/>
       <staffdef n="3" clef.shape="G" clef.line="2" clef.trans="8vb"/>
       <staffdef n="4" clef.shape="F" clef.line="4"/>
      </staffgrp>
      <!-- <secexpan repeat="true" label="default" ids="A A B"/> -->
      <!-- <secexpan repeat="false" label="norep" ids="A B"/> -->
     </scoredef>
     <section xml:id="A">
      <measure xml:id="mx_sc_13">
       <staff n="1">
        <layer n="1">
         <note xml:id="n_sc_19_3" pname="g" oct="4" dur="4"/>
        </layer>
       </staff>
       <staff n="2">
        <layer n="1">
         <note xml:id="n_sc_19_2" pname="d" oct="4" dur="4"/>
        </layer>
       </staff>
       <staff n="3">
        <layer n="1">
         <note xml:id="n_sc_19_1" pname="b" oct="3" dur="4"/>
        </layer>
       </staff>
```

Verovio Humdrum Viewer

http://verovio.humdrum.org

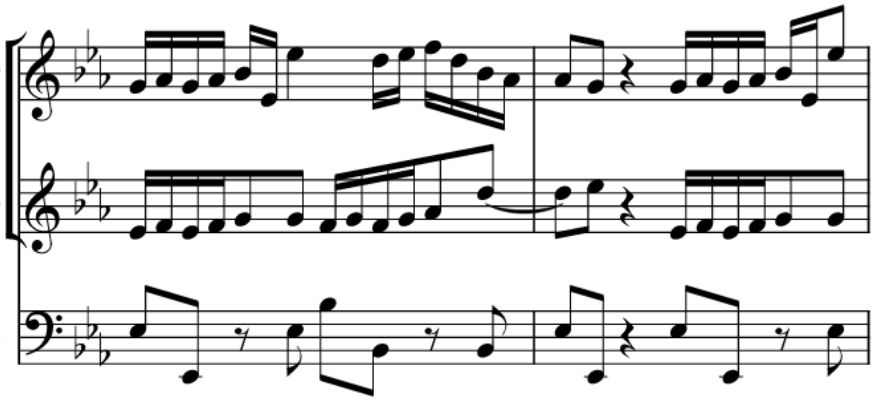
Click on “?” button in top right corner, then select repertory
From list at bottom of help menu, and after loading a work, type “alt-m”
To view the MEI data conversion.



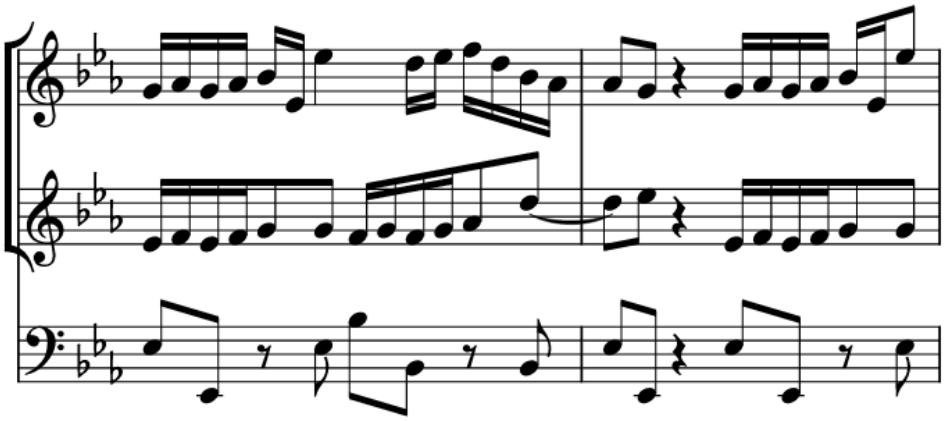
Verovio

http://www.verovio.org

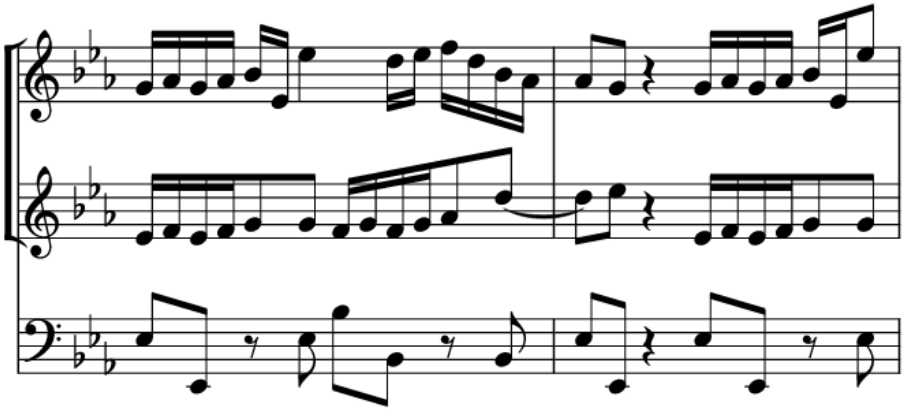
Leipzig



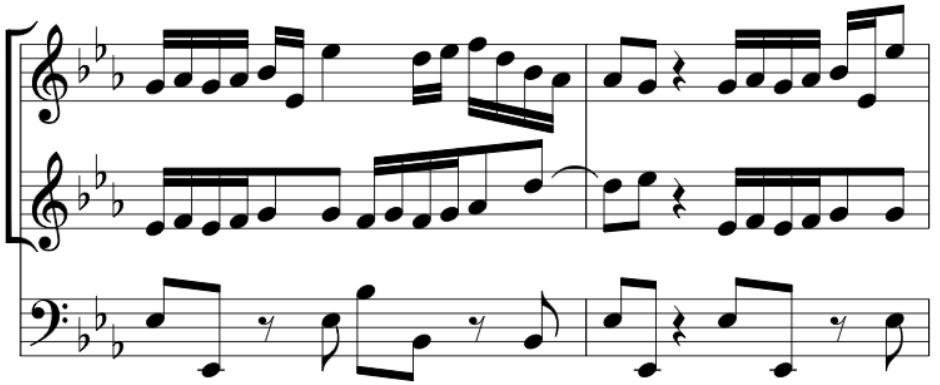
Bravura



Gootville



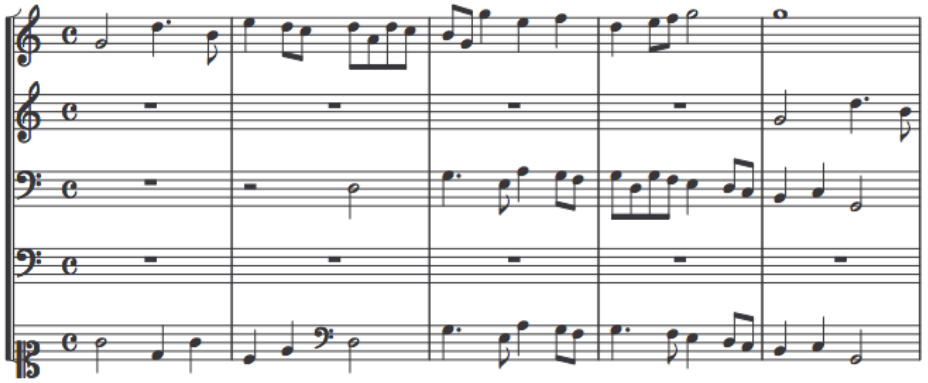
SCORE

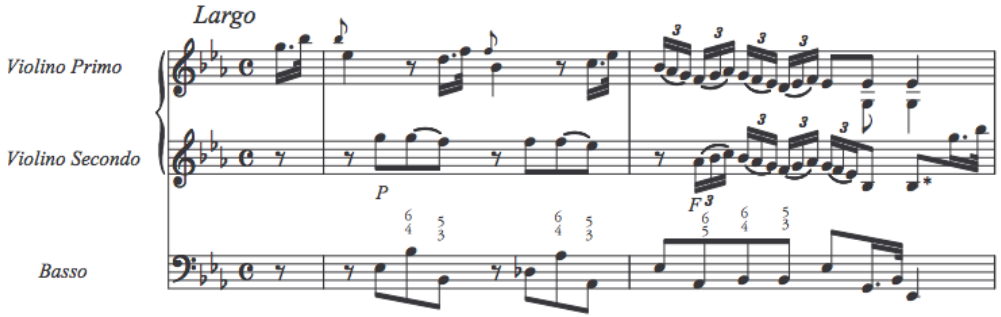


http://rism-ch.github.io/verovio/smufl.xhtml

Wolfgang

Wolfgang est développé dans le cadre de l'Université de Genève par Etienne Darbellay, musicologue et informaticien.





Wolfgang supporte désormais l'importation de fichiers au format GUIDO. Cette fonction permet l'échange avec d'autres applications (logiciels de reconnaissance de musique ou autres logiciels d'édition).

http://www.winwg.com/presentation/exemples.shtml

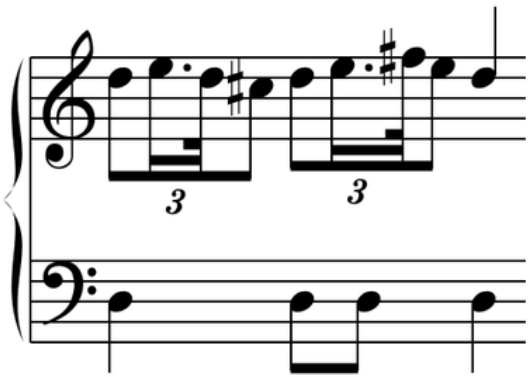
Verovio (2)

MEI

```
<tuplet xml:id="t1" num="3" numbase="2">
  <beam xml:id="b1">
    <note xml:id="n1" pname="d" oct="5" dur="8" />
    <note xml:id="n2" pname="e" oct="5" dur="16" dots="1"/>
    <note xml:id="n3" pname="d" oct="5" dur="32" />
    <note xml:id="n4" pname="c" oct="5" dur="8" accid="s"/>
  </beam>
</tuplet>
<beam xml:id="b2">
  <tuplet xml:id="t2" num="3" numbase="2">
    <note xml:id="n5" pname="d" oct="5" dur="8" />
    <note xml:id="n6" pname="e" oct="5" dur="16" dots="1"/>
    <note xml:id="n7" pname="f" oct="5" dur="32" accid="s"/>
    <note xml:id="n8" pname="e" oct="5" dur="8"/>
  </tuplet>
</beam>
```

SVG

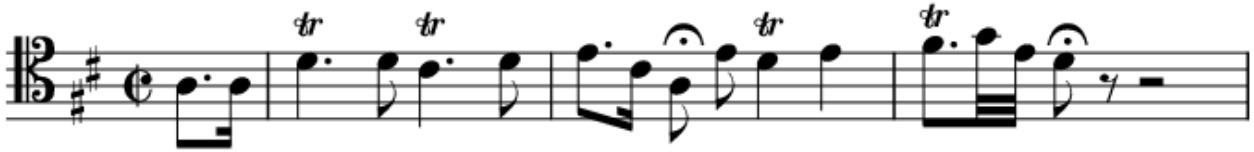
```
<g class="tuplet" id="svg-t1" >
  <g class="beam" id="svg-b1" >
    <g class="note" id="svg-n1" >...</g>
    <g class="note" id="svg-n2" >...</g>
    <g class="note" id="svg-n3" >...</g>
    <g class="note" id="svg-n4" >...</g>
  </g>
</g>
<g class="beam" id="svg-b2" >
  <g class="tuplet" id="svg-t2" >
    <g class="note" id="svg-n5" >...</g>
    <g class="note" id="svg-n6" >...</g>
    <g class="note" id="svg-n7" >...</g>
    <g class="note" id="svg-n8" >...</g>
  </g>
</g>
```



http://rism-ch.github.io/verovio/structure.xhtml

Verovio (3)

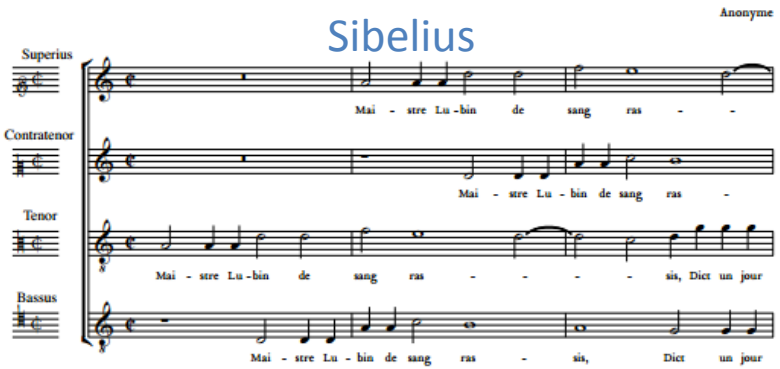
RISM / Plaine & Easie code

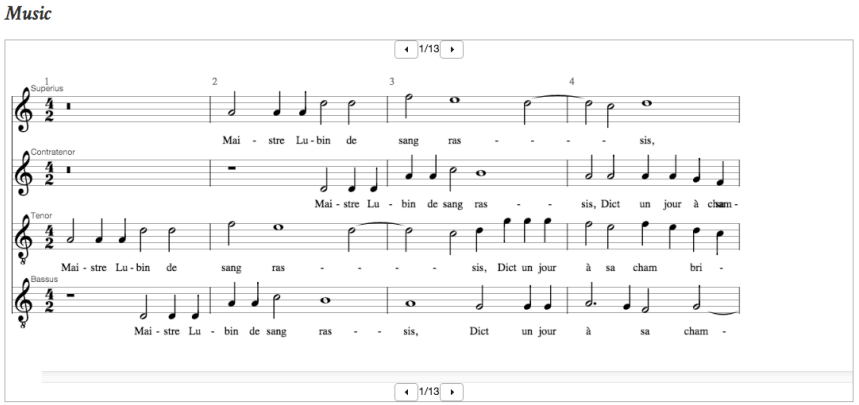


```
@clef:C-4
@keysig:xFC
@timesig:c/
@data:,{8.A6A}/'4.Dt8D4.Ct8D/{8.E6C},8(A)'E4DtE/{8.Ft3GE}8(D)-2-/
```

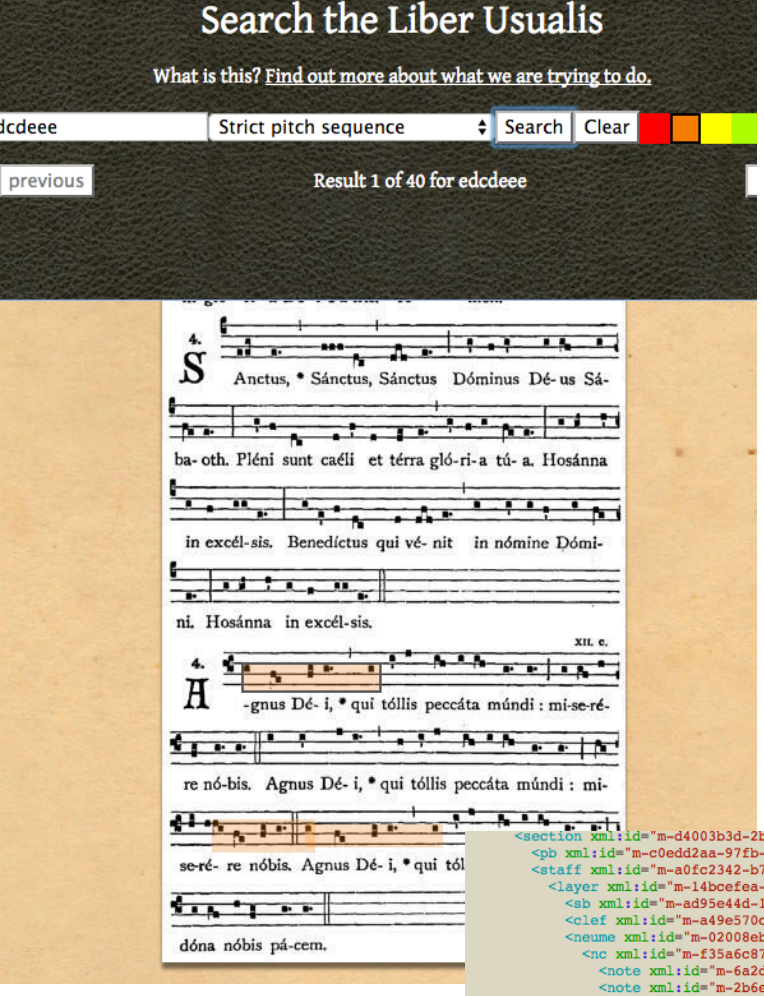
http://rism-ch.github.io/verovio/pae-examples.xhtml

The Lost Voices Project

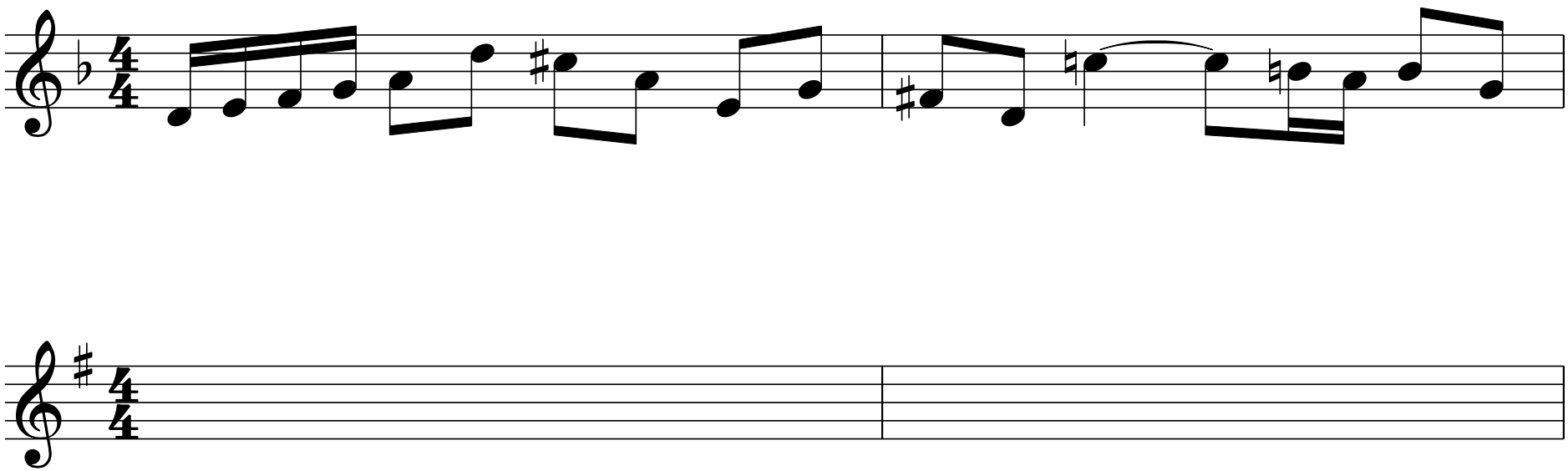




http://digitalduchemin.org/piece/DC0301



SIMSSA

http://simssa.ca

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