

# Music Notation, MusicXML and W3C

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# Types of Music Representation

- Two main types of music data file formats:
  - Audio: A recording of a music performance, as in CDs and MP3 files
  - Symbolic: Underlying musical data (pitches, rhythms) as in MIDI
- Music notation is most effectively represented on computers using symbolic formats
- Modern formats start with musical semantics, then adds details about appearance and playback
- Cannot “reverse engineer” notation from an audio file

# Example: Original Finale File

FRAUENLIEBE UND LEBEN, Op. 42

## 1. Seit ich ihn gesehen

Adelbert von Chamisso

Robert Schumann

**Larghetto** *p*

Voice

Piano

*p*

Seit ich ihn ge - se - hen, glaub' ich blind zu sein;

5 *ritard.*

wo ich hin nur bli - cke, seh' ich ihn al - lein. Wie im wa - chen

*ritard.*

9

Trau - me schwebt sein Bild \_\_\_\_\_ mir vor, \_\_\_\_\_ taucht aus tief - stem

# Example: Reflowed in SeeScore

AT&T 11:22 PM 51%

Library SeeScore Parts Info Transpose Tempo Settings

## Seit ich ihn gesehen - Robert Schumann

**Larghetto**

Voice *p* *ritard.*

Seit ich ihn ge - se - hen, glaub' ich blind zu sein; wo ich hin nur bli - cke, seh' ich ihn al - lein. Wie im

Piano *p* *ritard.*

8

wa - - - chen Trau - me schwebt sein Bild mir vor, taucht aus tief - - - stem Dun - kel hel - ler, hel - ler nur em -

15

- por. Sonst ist licht - und farb - los al - les um mich her, nach der Schwe - stern

*pp* *ppp*

36 bars

# What is MusicXML?

- The open, de-facto standard format for exchanging digital sheet music between applications
- Invented by Michael Good at Recordare in 2000
- Developed collaboratively by a community of hundreds of musicians and software developers over the past 14 years
- Available under an open, royalty-free license that is friendly for both open-source and proprietary software
- Supported by over 180 applications worldwide
- More information at [www.musicxml.com](http://www.musicxml.com)



# Who Uses MusicXML

Usage map as of October 2014



# Publishing Scores in MusicXML

- MusicXML is the way that scores get from desktop applications like Finale and Sibelius to the new wave of mobile applications
- No DRM controls built-in, though these have been added in the MusicXML-based Open Score Format
- For copyrighted music, MusicXML has usually been a Business-to-Business format, not Business-to-Consumer
- Many sites available with public domain MusicXML scores: see [www.musicxml.com/music-in-musicxml](http://www.musicxml.com/music-in-musicxml)



# in MusicXML (1 of 3)

```
<part id="P1">
  <measure implicit="yes" number="0" width="179">
    <attributes>
      <divisions>24</divisions>
      <key>
        <fifths>3</fifths>
        <mode>major</mode>
      </key>
      <time>
        <beats>2</beats>
        <beat-type>4</beat-type>
      </time>
      <clef>
        <sign>G</sign>
        <line>2</line>
      </clef>
    </attributes>
```





## in MusicXML (2 of 3)

```
<direction placement="above" directive="yes">
  <direction-type>
    <words default-y="25" font-size="10.5"
      font-weight="bold">Nicht schnell</words>
  </direction-type>
  <sound tempo="42"/>
</direction>
<direction placement="above">
  <direction-type>
    <dynamics default-y="10" relative-x="-5">
      <p/>
    </dynamics>
  </direction-type>
  <sound dynamics="54"/>
</direction>
```



## in MusicXML (3 of 3)

```
<note default-x="141">  
  <pitch>  
    <step>C</step>  
    <alter>1</alter>  
    <octave>5</octave>  
  </pitch>  
  <duration>12</duration>  
  <voice>1</voice>  
  <type>eighth</type>  
  <stem default-y="-50">down</stem>  
  <lyric default-y="-80" number="1">  
    <syllabic>single</syllabic>  
    <text>Aus</text>  
  </lyric>  
</note>  
</measure>
```

# Sibelius to Finale: MusicXML vs MIDI

Es muß ein Wunderbares sein

Franz Liszt

**Schwebend**

*p*

Voice

Es muß ein Wun - der - ba - res

Piano

*pp*

Original as entered into Sibelius

[Title]

[Composer]

Voice

Piano

Imported into Finale via MIDI

Es muß ein Wunderbares sein

Franz Liszt

**Schwebend**

*p*

Voice

Es muß ein Wun - der - ba - res

Piano

*pp*

Imported into Finale via MusicXML

# Why a Standards Organization?

- Always planned that MusicXML would eventually transfer from a company to a standards organization when mature, like PDF did
- Music notation industry is unstable: every significant player has had changes in ownership or direction in past 2 years
- Need to maintain the format to better support the industry's transition from printed to digital sheet music
- However, standards organizations have a dismal history with music notation over the past 20 years

# Music Notation Standards Landscape

- ISO / IEC – Already has unused SMDL standard
- MPEG – Already has unused MPEG 7 SMR standard
- IEEE – Already has unused IEEE 1599 standard
- MMA / AMEI – Home of related MIDI standards
- W3C – Home of related Web standards
- Nothing yet the size of the MusicXML community
  - MMA and W3C have one notation company each
  - Notation standards developed outside of the music industry remain unused

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# Staying in Touch

- MusicXML forum: <http://forums.makemusic.com>
- Shows: Musikmesse, NAMM, SF MusicTech
- Twitter: @MusicXML
- Facebook: [www.facebook.com/MusicXML](http://www.facebook.com/MusicXML)