



W3C TPAC Music Notation Community Group Meeting

28 October 2021

- Introduction to the Music Notation Community Group
- Progress update since last meeting in April 2020
 - MusicXML 4.0
 - SMuFL 1.4
 - Documentation system for MNX and MusicXML
- MNX specification update
- New possibilities for Community Group work
- Planning for in-person meetings
- Questions and answers



W3C Music Notation Community Group

- Founded in July 2015
- Develops and maintains format and language specifications for notated music used by web, mobile, and desktop applications
- Maintains and updates the MusicXML and Standard Music Font Layout (SMuFL) specifications
- Developing new MNX spec to handle new use cases and technologies
- Now the 8th largest W3C Community Group and 14th most active
- <https://www.w3.org/community/music-notation/>



The most popular music notation software standards

- MusicXML
 - Supported by over 260 web, mobile, and desktop applications
 - Notation editors, digital audio workstations, scanning, practice, analysis, ...
 - MusicXML 4.0 released in June 2021
- SMuFL
 - Supported by most major notation editors including Dorico, MuseScore, Finale, capella, and Soundslice
 - Also supported by Logic Pro X, MaxScore for MAX/MSP, and Verovio
 - Most new music notation fonts are now SMuFL compliant
 - SMuFL 1.4 released in March 2021



MusicXML
app support
as of
27 October 2021

Products Shipping Now			Beta/Prototype Software
abc2xml / xml2abc	Kinetic	Pizzicato	
Band-in-a-Box	Komp	PowerTracks Pro Audio	
BMML	libMusicXML	PriMus	
Braille Music Editor	Lime	ProxyMusic	
Calligra Suite	Logic Pro	QuickScore Elite Level II	A-Score Music Composer
capella	MagicScore	REAPER	Audimus Notes
Cornelius Composer	MaxScore	Reflow	bach
Cubase	Melody Scanner	SCORE	Canorus
DeluxeNote	Mozart	ScoreMaker	CMME Editor
Denemo	MusEdit	Score Writer	Haskell Library
Dorico	MuseScore	Scorio	Humdrum
Electric Pipes	Music Notation SDK	Sibelius	KGuitar
Encore	Music Processing Suite	SmartMusic	Morpheus
Ensemble Composer	music21	SmartScore	Music Jotter
Fandango	NotateMe	Songs2See Editor	MusicSQL
Finale	Notation Composer	Soundslice	Nightingale Notelist
Fiat	NoteAbility Pro	Speech Analyzer	Ossia Viewer
Forte	Noteflight	StaffPad	Partitura
Free Clef	Noteworthy Composer	Stave'n'Tabs	PartRenamer
Guitar Pro	Notion	Symphony Pro	Ptolemaic
Harmony Assistant	Nuendo	TaBazar	pyScore
Hyena	Obtiv Octava	TabEdit	Renoid Player
JapoScore	OpenMusic	tonica fugata	sol2snd
JFugue	Overture	VocalEasel	Zong! Editor
AnthemScore	Impro-Visor	Plaine and Easie	abc4j
AudioScore Ultimate	iReal Pro	PlayScore	Amadeus
audite PLUS	JMSL	Rachmaniac Score	Braille Music Compiler
Audiveris	Jniz	ReadScoreLib	BUZZle
Audovia	Kunkunshi Editor	Rosegarden	FOMUS
Cadencii	Ludwig	Rousseau	GBMusicParser
Cakewalk	muDic	Samplitude	jChing
capella audio2score	muscript	ScanScore	mercussion
capella-scan	MusicJOT	ScoreCloud	mingus
capella wave kit	Music-to-XML	Score Creator	PHPMusicTools
Cavatina	MyScript Music SDK	Sequoia	Power Tab
CelticPipes	Notate	SharpEye	PWGL
Crescendo	Notation Pad	Sheet Music Scanner	SCAMP
Digital Performer	Opusmodus	Simple Song Creator	Sing2Notes
Drumline Composer	PDFtoMusic Pro	SmartScore NoteReader	
Frettable	PhotoScore Ultimate	Synfire	Accento
HarmonyWiz	Piano2Notes	Touch Notation	Antescofo
		TuxGuitar	Arduino
			CrestMuse Toolkit
Archivarius 3000	KlavarScript	Practice Bird	FreeDots
Auto-Tune EFX+	Kooplet	PracticeFirst	GLOzart
Blackbinder	LilyPond	Practice Player Live Midi	GStreamer
BrailleMUSE	Magenta	Purely Musical	HTML5 Guitar Tab Player
Canon	Manufaktura Controls	Real Piano Score	KotoViewer
capella playAlong	Match My Sound	Rhythm Lab	MATLAB
capella reader	MDLscore	Scroller	MoonPiano
capella start	Melody Assistant	SeeScore	µO
CsoundAC	Melody Player	SeeScore SDK	MuseBook Score
D3 Pianogram	MidiAndMusicXmlPlayer	Sight Singing Studio	Musicista
daCapo	MIDI Player Pro	SingAccord	Music Score Metadata Builder
Don's MusicXML Viewer	MuseCloud	Singscope	MusicXML Analyzer
Doo Bee Doo Composer	Musicease	Sinsy	musicxml2words
EarMaster	Music Prodigy	SM Music Reader	Neutrino
EasyABC	musicxml2mid	Songistic	Noutee
Expresseur	MusicXML to MP3	Songs2See Game	Opus
Forte Reader	Myriad QuickLook	Soundslice Viewer	PSAM Control Library
Frescobaldi	Newzik	TEFpad	Rocksmith+
GOODFEEL	OpenSheetMusicDisplay	TEFview	ShakuViewer
GUIDO	OrganMuse	teoria	SolFaSoGood
Harmonia	PhonicScore	Tessa	StringyFi
IBOS Nodelæser	PianoLudic	THoTH	SuperScore
INScore	Piano Marvel	WhiteNote	Talking Scores
Jellynote	PMX / MusiXTeX	Zupnoter	Zong! Player

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- Released in June 2021
- Major new features since 3.1
 - Concert scores with transposed parts
 - A standard way to combine score and parts in a single .mxl file
 - System-level directions
 - Score following, assessment, and other machine listening applications
 - Swing playback
 - Roman numerals and Nashville numbers
 - XML Catalogs
 - Complete documentation on the W3C site with examples of every element



- No current plans for a version 4.1
- We likely would not start this until MNX 1.0 is completed
- Please create a GitHub issue for any suggestions for a future version



- Released in March 2021
- Added more than 150 new glyphs
 - New ranges for scale degrees and techniques noteheads
 - Supplemental ranges for fingering, figured bass, note name noteheads, accidentals
- Enriched font-specific metadata
 - Specification of preferred text fonts
 - Additional engraving defaults for barline separation, multi-bar rest H-bars, etc.



- Not yet actively being worked on
- Ideas for development topics welcome
 - Please raise an issue on GitHub to start the conversation
- Focus likely to be on font-specific metadata, to enrich data about optional glyphs
 - Define categories of optional glyphs (e.g. optical variants at different sizes, historical period, etc.)
 - Allow grouping of optional glyphs into sets (cf. OpenType stylistic sets)
 - Make it easier for applications to use (or present to the user) optional glyphs as alternates



Documentation Generator

- An open source, database-driven web app using Django
- Manage the documentation within the app, making things editable and viewable on a local web server
- At checkpoints, freeze the database contents into a JSON file, and generate a static HTML site via a script
- Used for both the ongoing work on MNX and for MusicXML 4.0
- Never could have done the complete MusicXML 4.0 documentation without it
- <https://github.com/w3c/mnx/tree/master/docgenerator>



Introduction

Tutorial

["Hello World"](#)

[File Structure](#)

[MIDI-Compatible Part](#)

[Notation Basics](#)

[Chord Symbols](#)

[Tablature](#)

[Percussion](#)

[Compressed .MXL Files](#)

[Code Generation](#)

MusicXML Reference

[Elements](#)

[Data Types](#)

[Examples](#)

Container Reference

[Elements](#)

[MusicXML 4.0](#) > [MusicXML reference](#) > [Examples](#) > [<grace>](#)

<grace>



```
<measure number="54">
  <note default-x="13">
    <grace slash="yes"/>
    <pitch>
      <step>B</step>
      <octave>4</octave>
    </pitch>
    <voice>1</voice>
    <type>eighth</type>
    <stem default-y="3">up</stem>
    <notations>
      <slur number="1" placement="above" type="start"/>
    </notations>
  </note>
  <note default-x="31">
    <pitch>
      <step>A</step>
      <octave>4</octave>
    </pitch>
    <duration>8</duration>
    <voice>1</voice>
    <type>quarter</type>
    <stem default-y="10">up</stem>
    <notations>
      <slur number="1" type="stop"/>
    </notations>
  </note>
</measure>
```



Home

Reference

Elements

Data types

Example documents

Concepts in MNX

MNX and MusicXML

MNX 1.0 draft specification



- Editor: [Adrian Holovaty \(Soundslice\)](#)
- Original editor: Joe Berkovitz (Risible LLC)

MNX is a new, open standard for representing music notation as machine-readable data. The aim is to improve [MusicXML](#) in fundamental ways while retaining many of its key concepts, terms and features. A primary goal is to provide a high degree of interoperability and exchange between different applications working with music notation.

MNX is a work in progress, and it's **not ready for implementation**. But if you work with music notation data in any way, we'd love your input.

A gentle introduction

Conceptually, MNX is a way to represent this image...



Three-note chord and half rest



In MusicXML, notes within chords contain `<chord/>` (except for the first note in the chord). MNX uses `<event>` to group notes within chords.

Show: Relevant section Full document

MusicXML

```
...
<note>
  <pitch>
    <step>C</step>
    <octave>4</octave>
  </pitch>
  <duration>2</duration>
  <type>half</type>
</note>
<note>
  <chord></chord>
  <pitch>
    <step>E</step>
    <octave>4</octave>
  </pitch>
  <duration>2</duration>
  <type>half</type>
</note>
```

MNX

```
...
<event value="/2">
  <note pitch="C4"/>
  <note pitch="E4"/>
  <note pitch="G4"/>
</event>
<event value="/2">
  <rest/>
</event>
...
```

1
2
3
Flutes

1
2
Oboes

Piano

This musical score is for measures 1 through 3. It features three parts: Flutes (1, 2, 3), Oboes (1, 2), and Piano. The key signature is one flat (B-flat) and the time signature is 3/4. The Flute parts play a melodic line starting on G4, moving to A4, Bb4, and C5. The Oboe parts play a similar melodic line, with the second oboe part starting on a lower register. The Piano part provides harmonic support with chords in the right hand and a bass line in the left hand.

1
2
3
Fl. 2

1
2
Ob.

Piano

This musical score is for measures 4 through 7. It features three parts: Fl. 2, Oboes (1, 2), and Piano. The key signature is one flat (B-flat) and the time signature is 3/4. The Fl. 2 part plays a melodic line starting on G4, moving to A4, Bb4, and C5. The Oboe parts play a similar melodic line, with the second oboe part starting on a lower register. The Piano part provides harmonic support with chords in the right hand and a bass line in the left hand.

Milestone



Set milestone

Open

Closed

✕ Clear this milestone

✓ V1

No due date

Uncommitted

No due date

V Next

No due date

4 participants



MNX next steps

- Finalize list of V1 features, using V1 GitHub milestone
- Implement each remaining V1 feature with an example-first approach
- Continue implementing mnxconverter open-source utility



MNX: how you can help

- Follow the MNX GitHub issue tracker
- Post your opinion, even if it's just a thumbs up
- Follow the community group blog and mailing list



New possibilities for Community Group work

- Instrument data
- Non-Western music notation, including traditional Asian music notations
- Updating the group charter



Instrument data: problem

- Most music notation applications have data about instruments
 - Basic data, e.g. default clef(s), number of staves, transposition, playable ranges
 - Specific idiomatic data, e.g. tunings for stringed instruments, number of frets for fretted instruments, sounds/playing techniques that can be produced
- This data is not secret, but it can be time-consuming to research and encode
 - Every developer does this research from scratch every time
 - Errors and omissions are different in every data set
 - Massive duplication of effort



Instrument data: solution?

- Music Notation CG could start a new specification for instrument data
- Develop one or more simple data formats (JSON? XML?) to allow easy conversion or consumption of this data by notation applications
- Software developers could contribute their existing data
- Identify and appoint expert volunteers to help advise on errors and omissions, or to arbitrate on disagreements between different sources



Instrument data: value?

- Do group members agree this is an area of need?
- Is there sufficient value to be had in devoting attention to this?
- Would group members who have built data sets actually be willing to contribute data?



Non-Western music notation

- The Music Notation Community Group is not restricted by charter to Western music notation
- However, all current projects focus on Western music notation
- What about non-Western notation, e.g. traditional Asian music notations?
- We would need experts in this area to guide any such projects
 - Not just experts in the notation, but in software that uses these notations
 - Which means there would need to be more software for these notations



Updating the group charter

- If we want to create any new deliverables besides MNX, MusicXML, and SMuFL, we need to add them to the charter
- The charter description is outdated anyway
 - Many of the deliverables happened years ago with new versions afterwards
 - The MNX description refers to the original design that we changed last year
- Is it time to update the charter to clarify our current work, even if we do not add any new projects?



Planning for in-person meetings

- We plan to continue online meetings for their greater inclusiveness
- But we want to resume in-person meetings too
- Here are some of the upcoming events next year:
 - Musikmesse in Frankfurt: 29 April – 1 May 2022 (starts Friday)
 - The NAMM Show in Anaheim: 3 – 5 June 2022 (starts Friday)
 - TENOR conference in Marseille: 9 – 11 May 2022 (starts Monday)
 - Music Encoding Conference in Halifax: 19 – 22 May 2022 (starts Thursday)



Questions and answers

- Any questions for the Community Group?



Staying in touch

- If you are not already a member, join the Music Notation Community Group
 - Membership is free of charge
 - Sign up at the [Community Group home page](#)
 - Click on the JOIN OR LEAVE THIS GROUP button to get started
 - If you work for an organization in the area of music notation, please join as a representative of that organization
- Technical work largely happens in our GitHub repositories for [MNX](#), the [MNX Converter](#), [MusicXML](#), and [SMuFL](#).
- We post co-chair meeting minutes on the blog, usually every 2 weeks