



# OpenScore

*Open-sourcing sheet music*

A collaboration between MuseScore and IMSLP

Speaker: Peter Jonas

FOSDEM 2019

Announced back at  
FOSDEM 2017...



Liberated maps



Liberated books

...OpenScore will liberate  
public domain sheet music

# Two-step process

**Paper**



**Bitmap**



**XML**

Public domain score

PDF scan

Semantic score



```
<note>  
  <pitch>  
    <step>C</step>  
    <octave>4</octave>  
  </pitch>  
  <duration>4</duration>  
  <type>whole</type>  
</note>
```



# Step 1: Scanning

## Paper to Bitmap



Largest online archive of public domain sheet music

Contains scanned PDFs of classical scores

Supported by

Donations

Optional subscription

A screenshot of the IMSLP website homepage. The page features a light blue background with a large, faint watermark of a musical score. At the top, there is a navigation bar with the IMSLP logo, a search bar, and several menu items: 'Navigation', 'Scores', 'Recordings', 'Participate', and 'Other'. The main content area is divided into several sections. On the left, there is a large heading 'IMSLP Petrucci Music Library' followed by statistics: '115,522 works · 14,871 composers · 390 performers', '380,965 scores · 6,706,683+ pages · 43,447 recordings', and 'Naxos Music Library: 123,690 CDs · 1,826,400 tracks'. Below this is the tagline 'Sharing the world's public domain music.' and a search bar. To the right, there is a 'News' section with a list of recent updates, including the number of scores added and recordings made. Below the news is a 'Featured' section with a list of featured works, such as Gerbert's 'De cantu et musica sacra' and Chopin's 'Rondo in C minor'. At the bottom, there is a 'How to Contribute Works' section with a list of languages supported for uploads, including Catalan, Czech, Danish, German, English, Spanish, French, Gallego, Croatian, Indonesian, Italian, Magyar, Japanese, Korean, Macedonian, Dutch, Polish, Portuguese, Russian, Slovenian, Serbian, Swedish, and Turkish. The footer contains a Creative Commons Attribution-ShareAlike 4.0 license notice and a page visit count.

# Step 2: Transcribing

Bitmap to XML

musescore

World's most popular music notation program & largest community of sheet music creators

Free and open source (GPL v2)  
for Windows, Mac and Linux

Available in 40+ languages

Supported by

Apps for Android and iOS  
Website for sharing scores



# Digital scores

## Listen

Play the music and follow the score

## Edit

Change notes, instruments, and transpose

## Share

Send copies to friends and publish online



Liberate  
from copyright



Liberate  
from paper





# Creative Commons Zero (CC0)

**Freedom to copy, adapt and share without restrictions**



# Preparation

## **Ran 2 pilot transcriptions:**

- Tchaikovsky's 6th Symphony
- Faure's Requiem

## **Method:**

1. Split the PDF between many transcribers
2. Give transcribers a template and target date
3. Check transcriptions and request corrections
4. Join completed sections to create finished score


## **Results:**

- Takes approx. one month per symphony


## **Plan:**

- Invite experienced transcribers to help review
- Run multiple in parallel to increase speed

# Kickstarter Campaign

Explore Start a project **KICKSTARTER** Search  Sign in

## OPENSOURCE: Join the sheet music revolution!



Bring sheet music to life by creating digital interactive editions. Free for everyone, for any purpose, for evermore!

June 2017

# The Pitch

## **1. Liberate an initial 100 works**

- Do this using current methods

## **2. Help us enable the project to grow**

- Establish optimum procedures
- Solve scalability issues
- Develop required automation tools
- Pave the way to liberate entire public domain

# How it works



Members give time  
transcribing scores



Rewarded with  
MuseScore PRO  
membership

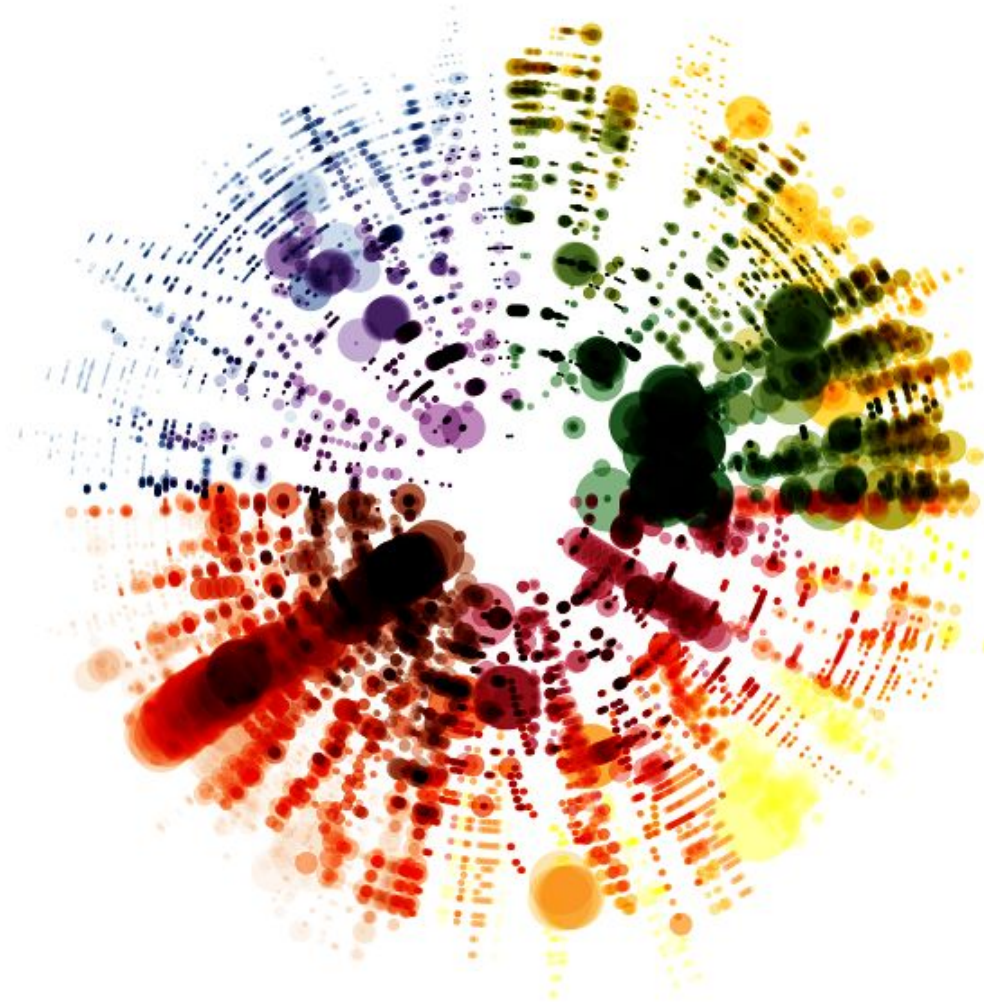


Backers give money to  
coordinate transcription effort



Get named in credits  
and perks like choosing  
works and dedications

# Cover visualisations



Visualisation of Vivaldi's *Four Seasons* by Nicholas Rougeux  
<https://c82.net/offthestaff/>

## OPENSOURCE: Join the sheet music revolution!



Bring sheet music to life by creating digital interactive editions. Free for everyone, for any purpose, for evermore!

**€51,249**

pledged

**113%**

funded

**1,237**

backers

**Hundreds of people register interest in transcribing**

Transcription work begins

# Transcription groups



The screenshot shows a Musescore group page. At the top left is the Musescore logo. The group name is 'OpenScore - Bach's "Art of the Fuge"', with a subtitle 'A transcription group for OpenScore'. A circular profile picture of Johann Sebastian Bach is on the left. Below the name are statistics: 'Discussions (2)', 'Sheet music (18)', and 'Members (17)'. The 'Announcements' section features a post by user 'shoogle' (with a 'pro' badge) from 'a year ago' with '69' replies. The announcement text reads: 'Welcome to the OpenScore transcription group for Bach's "Art of the Fuge"! This discussion thread is where find out which pages you have to transcribe, and where other announcements may be made from time-to-time. Please keep an eye on this thread.'

- Transcribers receive 3 - 5 pages of music each
- Upload their transcriptions to the group for review



# Early challenges

## 1. Variety of pieces

- Ranging from piano scores to entire symphonies

## 2. Length of pieces

- Many scores with 10+ instruments, 50+ pages

## 3. Many transcribers are inexperienced

- See OpenScore as a learning tool

**None of this unexpected!**

# Tips for transcribers

## Shared instrument staves (wind instruments)

Always use a different staff for each instrumental part, even if the original score has multiple instruments/parts on one staff. This makes it easier to control playback and extract parts.

If you'd like to know more, see: <https://www.youtube.com/watch?v=KEk-tIg0iG0>

**Original:**

25

Trumpet 1 & 2

Solo a2 1. 2.

"Solo", "a2", "1.", etc. are plain staff text (no style/formatting)

**Transcription:**

32

Trumpet 1

Trumpet 2

Solo <- notice this is the only keyword retained in the transcription

Note: it is not necessary to use separate staves for parts that only split for a handful of notes in an entire score.

Series of exercises for transcribers to complete before they begin transcribing.

# Template scores

Brandenburg Concerto No. 4 – BWV 1049  
Movement X  
Johann Sebastian Bach

**Allegro**

Violino principale

Flauto 1

Flauto 2

Violino 1

Violino 2

Viola

Violoncello

Violone

Continuo

Empty score containing all instruments from all movements.

# Challenge: joining many scores

- Relied on MuseScore 2's albums feature (experimental)
- Some information not preserved (e.g. layout, beaming, CSN)
- Must add “Spanner” elements (slurs, etc) across joins afterwards
- Significant work remains to tidy the score after it is joined

## **Solution:**

- Wrote Python program to join scores outside MuseScore
  - Operates on raw XML to preserve as much information possible, but still have issues with time signatures
- Give joined score to “engraver” to add spanners and fix layout
  - Mixed results here as engraving is difficult to do well

# Challenge: variety of notation

- Each score has notation quirks not encountered before
- Constant learning process for transcribers (and reviewers!)
- Knowledge doesn't always translate to other scores

## **Solution:**

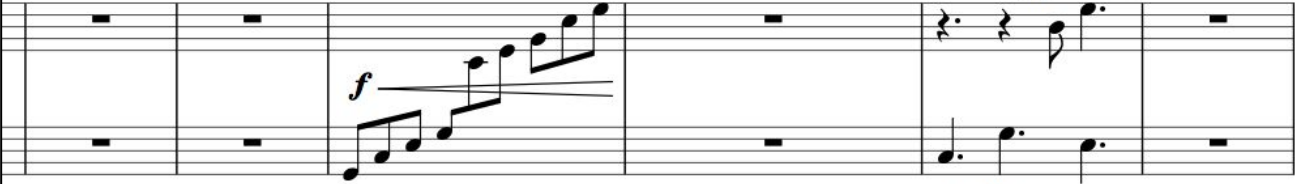
- Add relevant instructions and exercises to each template

# Specialised hints in template scores

**Dynamics for the harp:** Dynamics between the staves apply to both of the staves.

Dynamics above the top staff, or below the lower staff, apply to that staff only.

Use the inspector to change the Dynamic Range from Part to Staff.



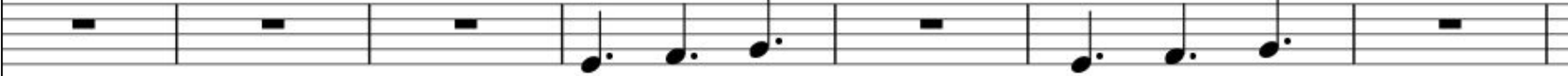
The image shows a musical score for harp with two staves. The first staff has a dynamic marking *f* (forte) with a hairpin. The second staff has a dynamic marking *mf* (mezzo-forte) with a hairpin. Below the second staff, there is a dynamic marking *mp dim.* (mezzo-piano diminuendo).

**How to use Dynamics and Hairpins:** For most instruments they go below the staff.

For vocal instruments (singers) they go above the staff.

Hairpins: add a -9sp vertical offset.

Dynamics: apply the "Dynamics (Vocal Staff)" text style.



The image shows a musical score for a vocal instrument with a single staff. The first staff has a dynamic marking *p* (piano) with a hairpin. The second staff has the lyrics "Song ly - rics." with a dynamic marking *p* (piano) with a hairpin.

*p* —————

Song ly - rics.

*p* —————

Tip: control the length of lines and hairpins by holding Shift and using the arrow keys.

**However:** significant time spent studying each score to produce templates

# The extreme case...

Die Walküre (WWV 86B)  
Act X, Scene Y[a] (add letter if subdividing scene)  
“First line of song” [or section title] *Music and libretto*  
Richard Wagner

Remember to add a manual page break everywhere the original has a page break.  
Also add manual line breaks everywhere the original has line breaks.

Kleine Flöte I

Kleine Flöte II

Große Flöte I

Große Flöte II

Große Flöte III

Hoboe I

Hoboe II

Hoboe III

Englisch Horn

Klarinette I in Bb

Klarinette I in A

Klarinette II in Bb

Klarinette II in A

2nd piccolo staff is present at the very end of the piece.

Die Walküre (WWV 86B)  
Act X, Scene Y[a] (add letter if subdividing scene)  
“First line of song” [or section title] *Music and libretto*  
Richard Wagner

114 instruments, 705 pages!

New approach needed!



# OpenScore Lieder Corpus



Sub-project to  
digitise 19th century  
songs by French and  
German composers

<https://musescore.com/openscore-lieder-corpus>

# Lieder Corpus

- Contacted by Mark Gotham from University of Cambridge
- Had funding to run a project to digitise 19th Century Lieder
- We couldn't help... or could we?

8 Lieder und Gesänge, Op.57

8. Unbewegte laue Luft

Georg Friedrich Daumer Johannes Brahms

**Langsam**

Singstimme  
*Voice*

Un - be - weg - te lau - e Luft, tie - fe

Pianoforte

# Project scope

- Short pieces
  - 2-3 pages each, no need to split scores and rejoin later
  - One transcription group for all pieces
- Few instruments
  - Just voice & piano
- Same instruments
  - Single template covers all pieces
- Common theme
  - Pieces are similar, notation is similar
- Now possible to get more reviewers on-board

**Completed 250 transcriptions in 4 months!**

What about the main project?

# Transcriptions by individuals

- Already some transcriptions done by individuals
  - Make this the primary focus
- Now up to the transcriber to:
  - choose a source edition (must be public domain)
  - provide a template score (must have all instr. from all mvmts.)
- No need to join scores and deal with the issues this creates

## **Some drawbacks:**

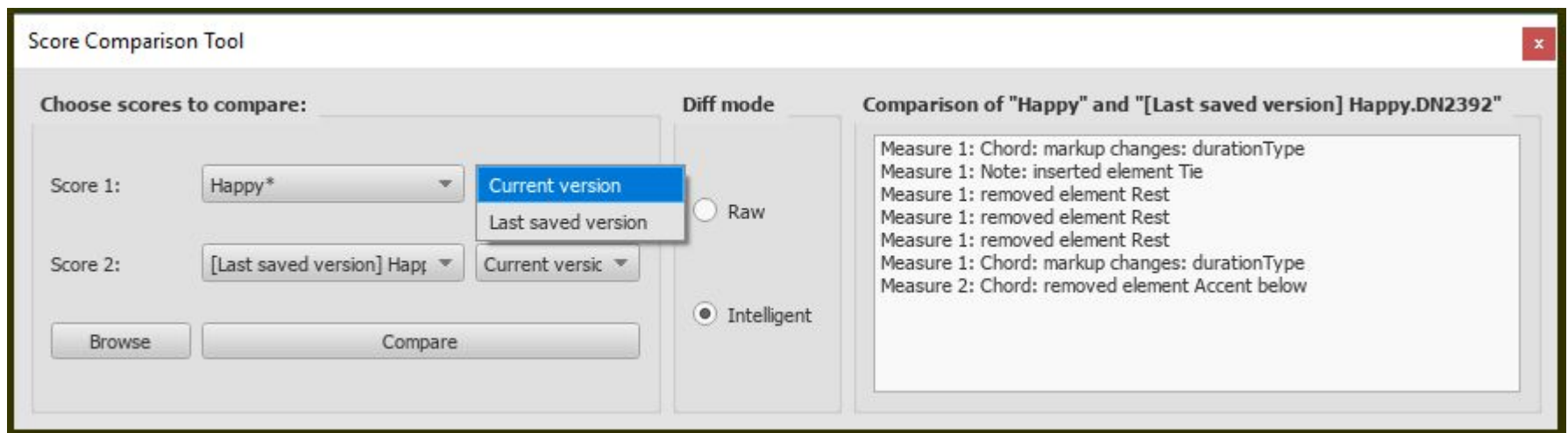
- Transcription runs “in series” rather than “in parallel”
  - But still do more than one piece at a time
- Not as social as group transcriptions
- Scores grow large quickly causing MuseScore to run very slowly

# MuseScore 3 release

- MuseScore 3 released 24th December 2018
- Important features for transcriptions:
  - Automatic layout
  - Fast even with large scores
  - Quicker release cycle
- Able to tackle the backlog of scores left over from group transcriptions and non-compliant submissions
- Clear now that project was not really feasible without these

# Score Comparison Tool

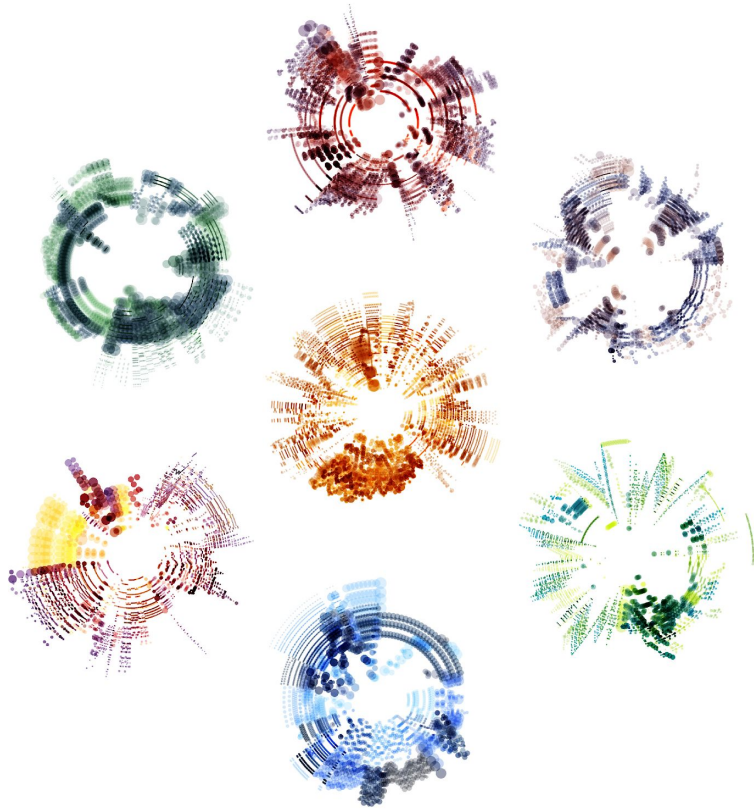
- GSoC Project by Dmitri Ovodok
- Display two versions side-by-side and show changes
- Also made changes to MSCX format to make it diffable
- Saves double-review after a completed score is edited
- Protects integrity of OpenScore Editions



# The Planets

Suite for Large Orchestra  
Op. 32

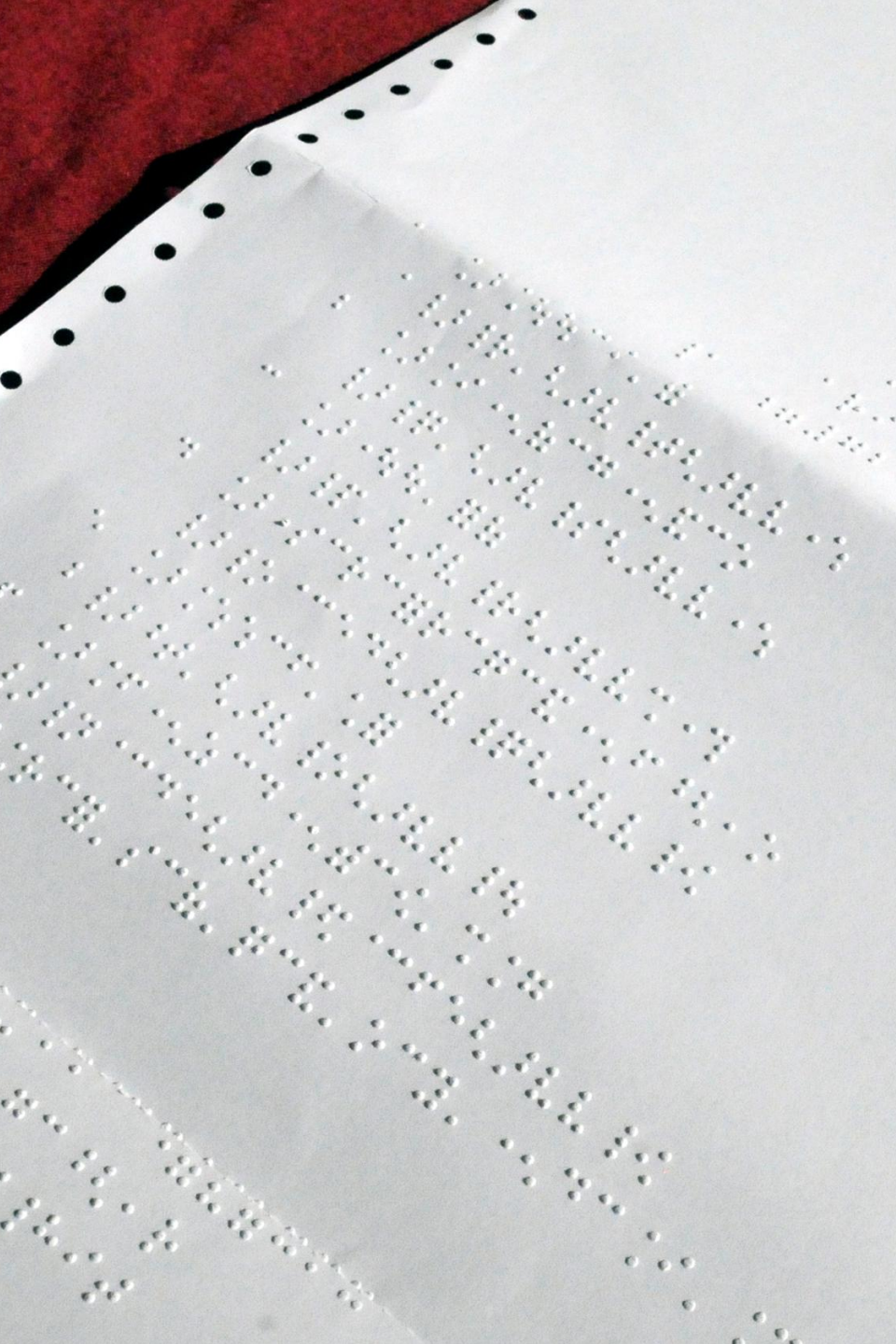
Gustav Theodore Holst



OpenScore

- 57 instruments, 191 pages A3
- 7 movements submitted separately by 3 transcribers
- Started prior to OpenScore so didn't meet some guidelines
- Required months of corrections in MuseScore 2 to reach publishable state
- Estimate corrections would have taken 2-3 weeks in MuseScore 3





# OpenScore Braille

Sub-project to produce  
Braille-friendly MusicXML

<https://musescore.com/openscore-braille>

# OpenScore Braille

- Run by Mike Nelson
  - Long-time MuseScore contributor on MuseScore forums
  - Transcribed Tchaikovsky's 1812 Overture for OpenScore
  - Received requests for “clean” XML from blind users
- Remove problem notation to improve Braille conversion
- Pass scores to Haipeng Hu (Braille in China) to produce Braille



# OpenScore

*Open-sourcing sheet music*

A collaboration between MuseScore and IMSLP

Speaker: Peter Jonas

FOSDEM 2019