DAISY Music Braille Project:

Q3 update 2021

Reporting on project activity in Q3: July, Aug, Sept 2021

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# Executive summary

Q3 activity has mostly focussed on the last 6-months of the professional conversion tool, MakeBraille, and the continued establishment of the interactive user tool, SMB with accessibility fixes in MuseScore. Development is all going according to plan, ready for promotion of MakeBraille to agencies in 2022, and for a beta test of SMB in Q4.

We have been preparing for a Q4 trial of a ‘Music Braille Production Network’, giving agencies an efficient way to source/commission music braille sources, making best use of international available expertise.

We are also looking for feedback on your current experiences of searching for music braille scores using online collections/libraries, with a view to us working together to standardize metadata and make the search process easier.

We are also considering how we can help to locate, signpost and promote existing teaching and learning resources for music braille (for users and teachers) during 2022, and are asking for help in this area.

Please reply to musicbraille@daisy.org with your feedback on these two areas.

In other news from around the sector, we are sharing a report from Vision Australia on their experience with using capella tools to scan and mark up scores ready for MakeBraille.

Finally, we will shortly be requesting funding support for the remaining project costs for 2022 (see Funding Request to be circulated separately). We’d like to thank SBS for being the first agency to pledge funding towards those final 2022 costs, as well as thanking previous years’ funders whose contributions have also helped towards the costs of 2022 (due to cost-savings from the pandemic).

Please read on for details of all of these issues.

# 1. Interactive end-user music braille tool (SMB with Musescore)

**Aim:** At least one improved interactive music braille user tool is available for blind musicians to independently read, write, convert and explore music in accessible ways, in education, for work and leisure.

**Update:** We continue to make good progress on our planned Q3 activities which add accessibility improvements to MuseScore, a mainstream music notation and editing program, and the development of SMB, a braille notation editor and converter tool.

## MuseScore developments

Lead: Peter Jonas

In the third quarter, four issues relating to accessibility were addressed, as well as some in-kind development contributions by MuseScore.

### 1.1.1 Q3 Project-funded improvements

* Tuplet more than nine notes are now announced correctly
* Notehead types now read
* Hidden objects now announced
* Cross staff notes now announced

### 1.1.2 Additional accessibility improvements funded by MuseScore

#### Accessibility Systems

MuseScore’s internal development team has implemented a new accessibility interface to extend support to more screen readers besides NVDA, the only one fully supported in MuseScore 3. The new interface works in Narrator on Windows as well as Orca on Linux. Unfortunately, the new interface is not working with NVDA at the present time, but the team is working to fix this regression. A solution has been identified, and it is thought that implementing this fix will also get MuseScore to work with VoiceOver, the default screen reader on macOS.

MuseScore’s design team is looking into improving keyboard shortcuts. The aim is to provide a logical set of basic shortcuts and the means for users to define their own shortcuts on top of these, while doing so in a way that is more easily discoverable than the approach used in MuseScore 3. The idea of providing special shortcut profiles for users migrating from other notation programs has been discussed.

#### High Contrast Themes

A student intern with MuseScore for this year’s Google Summer of Code has successfully implemented accessible colour theming in the UI, including two high contrast themes for partially sighted users. Users will be able to choose between a light and a dark theme, with the ability to customize the colours used for text, buttons, and selection indicators in the UI, as well as change the UI font and font size. The student was supervised by MuseScore’s in-house design and development teams to achieve a professional result, which has already been merged into the program and is available for testing in nightly builds.

### 1.1.3 Plans for Q4 development of MuseScore

The next set of prioritized accessibility improvements, with a focus on exporting to MusicXML.

## 1.2 SMB developments at Sao Mai Centre for the Blind

Lead: Phúc Dang Hoai

### 1.2.1 Q3 developments

Below are highlights of new features, improvements and fixes of SM Braille music translation module, that the team implemented over the last three months (Jul-Sep, 2021):

* Fully supported bar-over-bar, line-over-line and section-by-section formats.
* Supported two options to present plucked fingers: aligned and inline PIMA.
* Supported multiple-voice in-accords: full, partial and with stem note signs.
* Supported chord symbols with degrees and stem signs.
* Offset is checked to place directions in correct position.
* Repetitions: correctly translated volta repetition/backward/forward repetition barlines. Supported partial and full measure repetition with passages in different octave, durations, dynamics/hairpin/music text, post-note attachment, slur and tie and with articulation/ornament cases.
* Regular note grouping for different types of time signature.
* Created new SMUFL glyphs table and wrote related rules for LibLouis library to translate SMUFL characters.
* And many new transcription options for main features mentioned above.
* Fixes: no more crash with notation for unsupported instruments, part with more than three staves and with translating big file size.
* Improvements: multiple voices with hidden rest, forward and empty duration; regular note grouping; Braille line breaks; in-voice staff change detection; extension measures; hairpins; other different types of pedal signs and many more.
* SMB general improvements: addressed accessibility issues of user interface and text editing; new SMB localization tool and many bug fixes.

### 1.2.2 Plans for Q4 development of SMB

The Sao Mai team expects to release a beta version of SMB in October, 2021 which will be available for testing by funders (in the first instance). We intend to complete the following features: advanced repetitions, regular and irregular note groupings, music words dictionary, missing rules from MBC part II and III, custom translation based on instrument type and full score translation option.

# 2. Professional music braille conversion tool (MakeBraille)

## 2.1 MakeBraille developments at dzb lesen

Lead: Matthias Leopold

**Aim**: At least one improved tool is available for rapid professional, accurate and automated music braille transcription which produces global formats and is linked to a production workflow. Note that this does not remove the need for skilled music braille staff.

**Update**: Our Q3 activity has implemented further country-specific requirements, improved handling of conversions of complex scores, and more customization options, summarised below. If you wish to see the full development list please visit <https://dzblesen.uber.space/> and follow the link to ‘What’s New in MakeBraille’.

New features:

* User profile for Conductor, which influences the reading order of intervals etc. for Canada, China and USA (all upwards)
* User profile for Expert music braille reader
* Individual customer/transcriber profiles - ability to create, save and select from individual named customer/transcriber profiles to produce scores with individual customer preferences
* Updated capella optimizers which include new recognition features and support for pages larger than A4
* Option to include list of full configuration settings at the end of the converted file
* UTF-16 MusicXML files can now be uploaded and recognised for conversion
* Support for exercise sheet conversions (for lessons/exams)
* Support for very large score conversion
* New release of capella (from capella-software) includes proposals made by dzb lesen which improves conversions from capx files in MakeBraille
* Full-score handling and multi-instrument staffs

Improvements:

* Reading order of orchestral scores, according to country preferences
* Recognition of fingering, work title and directives in capella files
* Automated errror detection, notification and resolution
* Reading order for intervals, voices
* Error messages now sent when a zip file cannot be opened/converted
* Instrument name and composer name recognition
* PIMA fingering recognition
* Australia and Canada specifications implemented
* Bar over Bar alignment
* More SMUfL characters implemented as they occur in real scores
* Back-end processing to improve efficiency of conversions
* Additive time signatures (containing plus symbol)
* Handling of overlong measures containing only invisible rests
* Use of slurs with grace notes, according to country preferences
* Segno and Coda symbols better recognised in context, as to whether it's the actual Segno/Coda or the reference to go to Segno/Coda.
* Text Block command can now be used in MusicXML sources (the same as in capella)
* Grace slurs implemented for UK requirements
* Slur shape support improved in capella for dotted and dashed slurs
* Behaviour of suffix symbols after repeats, compressed rests, references, similar parallel shift are now unified so they all follow the same rules
* Sequential repeat handling
* If two or more parts are presented as one part in ink print as for example S.+A. or Left hand+Organ pedals, these parts will now be split up automatically to two or more parts when converted to Braille
* Reading order of full-scores is now presented as top-to-bottom as standard
* Top-to-bottom and Bottom-to-top now fully respect order of voices, notes within intervals, setting of octave signs, creation of stems, and of moving notes
* When using capella to prepare files, when MakeBraille finds hand indicating letter groups within notes (e.g L.H., R.H., M.D., M.S., M.G.), these are now highlighted by the Optimizer so you can decide how to handle them, e.g. whether to add or replace them by commands, shift the notes to the oppisite staff or just keep the words unchanged. If you don't do anything with these cases, as standard they will be presented as text only. The interval direction and voice order will not be affected then. This is the same behaviour with MusicXML files
* Numerous fixes for country-specific formatting, Bar over Bar handling, complex notations and so on (see <https://dzblesen.uber.space/> and follow the link to ‘What’s New in MakeBraille’)

## 2.2 MakeBraille plans for Q4 (final funded development period)

**1. Definite – will be included by end of December 2021**

**Technical development:**

* 1.1 Ongoing implementation of country-specific requirements
* 1.2 Ongoing fixes and general improvements to current implementation
* 1.3 Guidance on marking up/checking MusicXML files for effective conversion
* 1.4 MusicXML checker to test and report back on quality of MusicXML files uploaded
* 1.5 Set page option for embossing as single-sided/duplex
* 1.6 Reading order (order of intervals and voices)
* 1.7 Selection of selected parts/voices for output in braille
* 1.8 Short and editable instrument names
* 1.9 Individual customer profiles (i.e. when a producer wants to save separate Config settings for different customers e.g. John, Jane, library, or instrument)
* 1.10 New option on Config page to include full list of Config settings at end of each converted file

**Other:**

* 1.11 Maintain Wiki support pages in English and German: updating to match new features/functionality
* 1.12 ‘Getting Started’ resources for new users packaged up on Wiki
* 1.13 Test workflow production of music textbook containing music, with a willing agency
* 1.14 Test workflow for engraving and conversion with a willing publisher
* 1.15 Server upgrade (to provide greater stability and processing capacity)
* 1.16 Document the process for translating interface and Wiki for any future translations
* 1.17 Liaise with developers of interactive music tool, for compatibility and effective conversions
* 1.18 Prepare business proposal for service offering

**2. Nice to have - could be possible – but only if still required and can be specified**

* 2.1 Splitting large scores over multiple volumes (needs careful specification by agencies requiring this as to what is required)
* 2.2 To consider: make information on country-specific requirements available to the team revising the New International Manual of Braille Music Notation

**3. Out of Scope - will not be delivered by the end of the project**

* 3.1 Line over Line formatting
* 3.2 Accept MNX file format (not been released yet by W3C)
* 3.3 Tablature (unless already converted into standard music notation)
* 3.4 Interactive review/editing of score via HTML5 viewer (although we may be able to demonstrate a prototype within this period)
* 3.5 Export BMML
* 3.6 Further language translations of interface or Wiki, other than German and English
* 3.7 Server storage of converted files
* 3.8 Copy encryption.

# 3. Other project news

## 3.1 Music Braille Production Network (previously ‘Global Virtual Competence Centre’)

We have continued to work with SBS to bring to life their proposal for a network of agencies who could source/provide music braille transcription to each other in an efficient way.

We have prepared a workflow process, an email process, as well as an online web form to help with requesting scores/transcription.

We are almost ready to share this with agencies and transcribers who have signed up for a walk-through trial of the process which will be conducted from Q4 into 2022. We have already used the network in a very informal way to locate a music braille score for a blind student within a matter of hours, rather than the search taking days/weeks.

## 3.2 Finding music braille scores from online collections/libraries – questions to the sector

From our Requirements analysis at the start of the project, we know that it can sometimes be difficult and time-consuming for people to search for an existing music braille score from the various online collections/braille libraries.

There are lots of reasons why this is the case, including not knowing where to ask/look; differences in metadata of the files; delays in getting replies from libraries and so on.

Near the start of the project we talked with some of the collection owners about what metadata was in use/should be used for music braille files to enable successful search and retrieval. Since then more scores have been added, or are being prepared for upload.

With the new possibility of greater numbers of quality music braille being created, as well as the availability of quality MusicXML master files, we believe it is timely to review how libraries will create and save files, upload them, and how resources can be found more effectively from the different collections

We will be hosting a discussion with the owners of the main online collections during Q4 to review the current situation, and discuss opportunities for the future.

If you have any immediate feedback on how easy/hard it is right now to find existing music braille scores from online or library collections, please send us a few comments to musicbraille@daisy.org (we may ask for more feedback later on):

1. Which collections/libraries do you use to search for music braille scores?
2. What helps you to make an efficient search?
3. If you face any difficulties in your search please describe them.
4. Can you think of any improvements which would make your searches more effective?

## 3.3 Teaching and learning of music braille – questions to the sector

As reported in the Q2 report, we’re considering how we could help to promote existing resources on the teaching and learning of music braille across the sector during 2022. We know that resources do exist in various countries, but people reported difficulty in finding them, and gaps in what’s available.

We have a few questions for you please if this is an area you can comment on, and you can return answers to musicbraille@daisy.org:

1. Which teaching and learning resources do you find most valuable regarding music braille?
2. Do you have any teaching and learning resources on music braille which you’d be willing to share, or have translated?
3. Can you describe any gaps in resources which you’d like to see filled?

# 4. Related news from around the sector

## 4.1 Experience of using capella scanning and editing tool at Vision Australia

From: Christina Christensen, Vision Australia

As a participant in the ongoing MakeBraille software research and development project, Vision Australia has now purchased the associated music scanning and editing software Capella Scan and Capella X. This software has the advantage over other similar scanning and editing software on the market, since the MakeBraille developer has maintained close dialog with capella developers to ensure MakeBraille works well with capella tools. It is clear that the backend coding aligns more easily across these software tools, and makes for better end result output.

The main challenge with using any translation software for music in particular, is that the source file such as a PDF may be of poor quality. Capella Scan has several features allowing the end user to clean up  such files by removing smudges, speckles and shadows. At Vision Australia, we are fortunate to have skilled music transcribers who are able to transcribe both quickly and with high level accuracy. Calculating whether the time spent cleaning up a file is worthwhile in comparison to manually brailling the music is what determines how we proceed.

Recently, a very clean PDF file of violin pieces was translated using the Capella and MakeBraille software. Overall, this proved to be a time saving experience although the output files would not have been satisfactory to send to the client. The notes were overall accurate, however, some glitches were noted still to be fixed in the backend of MakeBraille regarding Australian layout preferences. We also trialled some vocal pieces and found that layout is an issue yet to be overcome. It is exciting for our team to be part of this innovative phase in the development of such software and we look forward to continue being witness to the constant improvements being made.

## 4.2 Do you have music braille news to share next time?

I’ll happily collate other news from around the sector and send it out. Our next quarterly update will go out in January 2022, so please send me your news by **Tuesday 11 January 2021**.

This mailing goes out to around 150 music braille experts worldwide, including transcribers, teachers, composers, end-users and developers, among others. Please send your updates to musicbraille@daisy.org

# 5. With thanks to our funders

We are now seeking final funding contributions towards remaining 2022 costs – the funding request is to be circulated separately.

Please do support our request with your decision-makers to enable us to complete the strategic activities which the sector requested us to deliver.

We’re very grateful to the following agencies who are making our activities possible for 2020 and 2021, and for our first pledge towards 2022 funding from SBS.

Thanks to: CNIB, DAISY Strategic Development Fund, MTM, NLB, Norwegian Association of the Blind, NOTA, ONCE, RNIB, SBS and Vision Australia; as well as in-kind contributions from the agencies undertaking development work: dzb lesen, MuseScore and Sao Mai Centre for the Blind.