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RoboBraille Service Summary

RoboBraille is an email-based service capable of converting documents into a range of accessible formats including Braille, mp3, Daisy and various e-book formats. The service can furthermore be used to convert otherwise inaccessible documents such as scanned images and pdf files into more accessible formats. RoboBraille has been in operation since 2004 and currently serves thousands of user requests each month from users across the world.

The service is developed jointly by the National Danish Center for Visual Impairment for Children and Youth and Sensus ApS. RoboBraille is available free of charge to non-commercial users and users need not register to use the service. The development and operation of RoboBraille has been funded by the Danish Government, the European Commission and private foundations.

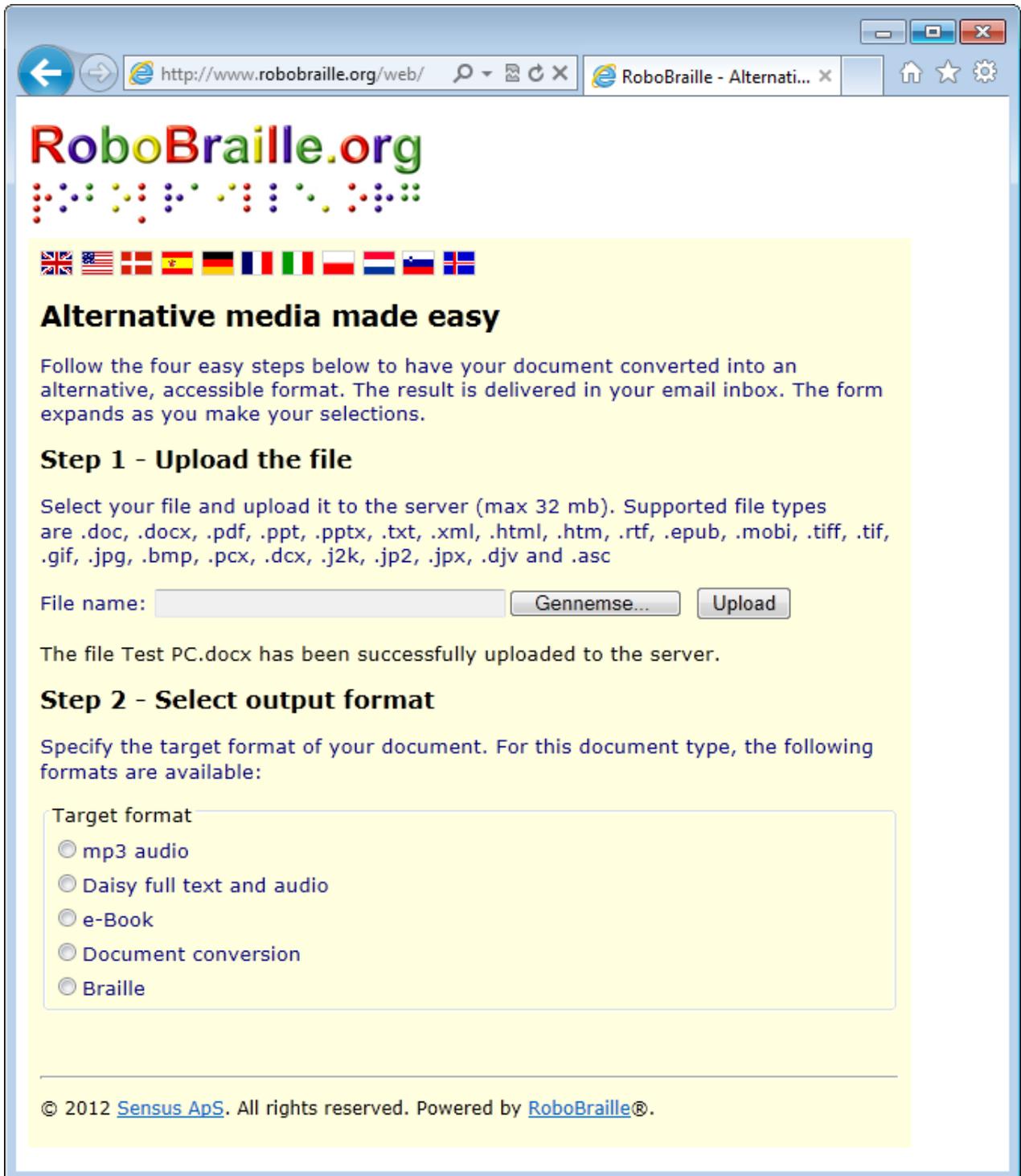
In January 2010, the RoboBraille services received the prestigious BETT Award for best Special Education Needs solution. The service has previously received the Access IT Award for Learning for most affordable eLearning solution (2009), The National eWell-Being Award for "Reaching the Digitally Excluded" (2009), the European Commission eInclusion Award for e-Accessibility Award (2008), the Well-Tech Award for Innovation and Accessibility (2008) and the British Computer Society's Social Contribution Award (2007).

RoboBraille offers six different categories of service:

- 1. Braille transcription services:** Translation to and from Braille (contracted, uncontracted) in Danish, British English, American English, Italian, French, Greek, German, Icelandic, Norwegian, Polish, Portuguese and Spanish. Supported document types include text files (DOS and Windows), Microsoft Word documents (doc, docx, Word xml), html documents, rtf files, tiff, gif, jpg, bmp, pcx, dcx, j2k, jp2, jpx, djv and all types of pdf documents. Before the Braille document is returned to the user, it may be converted to a particular Braille character set based on user settings. Documents can also be returned in Unicode Braille or formatted in either text format or PEF (Portable Embosser Format).
- 2. Audio conversion services:** All document types listed in the previous section may be converted into mp3 files. Furthermore, RoboBraille is capable of converting well-structured Word documents (doc, docx, xml) into Daisy Talking Books complete with audio. The audio conversion services currently include high-quality voices for the following languages: Arabic, Arabic/English bilingual, Danish, Dutch (male, female), English/American, English/British, German, Polish, French, Italian, Lithuanian, Portuguese, Slovenian Spanish/Castilian and Spanish/Latin American.
- 3. Accessibility services:** Otherwise inaccessible documents such as image files in gif, tiff, jpg, bmp, pcx, dcx, j2k, jp2, jpx, djv and image-only pdf, as well as all types of pdf files can be converted to more accessible formats including tagged pdf, doc, docx, Word xml, xls, xlsx, csv, text, rtf and html.
- 4. E-Book conversion services:** Most document types listed above may be converted into the popular ePub and Mobi (Kindle) e-book formats. Furthermore, epub may be converted to mobi and vice versa.
- 5. Visual Braille services:** To support the requirements of pharmaceutical companies, RoboBraille can create graphical Braille artwork based on the Braille codes of many European countries. Pharmaceuticals, printers and designers submit control files with the product name and strength, Braille number encoding regime and language codes. A subscription is required for these services.

6. **RoboBraille Tools:** A number of utility accounts support functions such as file partitioning, file conversion and file export to particular Braille character sets.

In addition to the traditional email-interface, RoboBraille is available via the web form at www.robobrace.org/web. The web interface to RoboBraille is shown in the figure below:



Contact the main RoboBraille service account on contact@robobrace.org or visit the main RoboBraille website on www.robobrace.org if you have enquiries, questions or support issues.

The remainder of this document explains the various email accounts and options available in RoboBraille, as well as how to format and emboss Braille documents. As such, the document is the closest thing to an actual RoboBraille manual.

Braille accounts

Account	Function
sixdot@robobralle.org	Translates the document into six-dot, Grade II Braille according to the British English Braille code.
eightdot@robobralle.org	Translates the document into eight-dot, Grade II Braille according to the British English Braille code.
fulltext6@robobralle.org	Translates the document into six-dot, Grade I Braille according to the British English Braille code.
fulltext8@robobralle.org	Translates the document into eight-dot, Grade I Braille according to the British English Braille code.
banagrade2@robobralle.org	Translates the document into six-dot, Grade II Braille according to the American English Braille code (BANA)
banagrade1@robobralle.org	Translates the document into six-dot, Grade I Braille according to the American English Braille code (BANA)
sekspunkt@robobralle.org	Translates the document into six-dot, Grade II Braille according to the Danish Braille code.
ottepunkt@robobralle.org	Translates the document into eight-dot, Grade II Braille according to the Danish Braille code.
fuldskrift6@robobralle.org	Translates the document into six-dot, Grade I Braille according to the Danish Braille code.
fuldskrift8@robobralle.org	Translates the document into eight-dot, Grade I Braille according to the Danish Braille code.
820da@robobralle.org	Decontracts the document from Danish eight-dot Grade II Braille into ordinary text.
textoparabralle@robobralle.org	Translates the document into six-dot, Grade I Braille according to the Portuguese Braille code.
brailleseipunti@robobralle.org	Translates the document into six-dot, Grade I Braille according to the Italian Braille code.
potbraille@robobralle.org	Translates the document into six-dot, Grade I Braille according to the Greek Braille code.
icebraille6@robobralle.org	Translates the document into six-dot, Grade I Braille according to the Icelandic Braille code.
icebraille8@robobralle.org	Translates the document into eight-dot, Grade I Braille according to the Icelandic Braille code
vollschrift@robobralle.org	Translates the document into six-dot, Grade I Braille according to the German Braille code.
kurzschrift@robobralle.org	Translates the document into six-dot, Grade II Braille according to the German Braille code.
vollschrift8@robobralle.org	Translates the document into eight-dot, Grade I Braille according to the German Braille code.
kurzschrift8@robobralle.org	Translates the document into eight-dot, Grade II Braille according to the German Braille code.
fullskrift@robobralle.org	Translates the document into six-dot, Grade I Braille according to the Norwegian Braille code.

Account	Function
kortskrift1@robobralle.org	Translates the document into six-dot, Level 1 contracted Braille according to the Norwegian Braille code.
kortskrift2@robobralle.org	Translates the document into six-dot, Level 2 contracted Braille according to the Norwegian Braille code.
braille@robobralle.org	Translates the document into six-dot, Grade I Braille according to the French Braille code.
integral@robobralle.org	Translates the document into six-dot, Grade I Braille according to the Spanish Braille code.
brajl@robobralle.org	Translates the document into six-dot, Grade I Braille according to the Polish Braille code.

Users can specify the name of the target Braille character set by writing the name of the appropriate export filter in the subject line of the mail, e.g., *nacb* for North American Computer Braille and *unicode* for Unicode Braille.

Users can also specify particular formats such as *format3028p* for 30 characters per line, 28 lines per page with pagination, *format3227* for 32 characters per line, 27 lines per page without pagination, *pef3227p* for delivery on pef (portable embosser format) with 32 characters per line, 27 lines per page with pagination and *pef3329pd* for a pef file with 33 characters per line, 29 lines per page, pagination and duplex embossing. A number of combinations exist. For extended information on how to format and emboss Braille documents, please refer to the section below entitled **Formatting and embossing documents**.

MP3 accounts

Account	Function
britspeech@robobralle.org	Converts the document to an mp3-file using a British English voice.
usspeech@robobralle.org	Converts the document to an mp3-file using an American English TTS.
tale@robobralle.org	Converts the document to an mp3-file using a Danish voice.
tydeligtale@robobralle.org	Converts the document to an mp3-file using an alternative Danish voice (more distinct pronunciation).
deutsch@robobralle.org	Converts the document to an mp3-file using a German voice.
audio@robobralle.org	Converts the document to an mp3-file using an Italian voice.
potspeech@robobralle.org	Converts the document to an mp3-file using a Greek voice.
textoparavoz@robobralle.org	Converts the document to an mp3-file using a Portuguese voice.
castellano@robobralle.org	Converts the document to an mp3-file using a Castilian Spanish voice.
leeme@robobralle.org	Converts the document to an mp3-file using a Latin American Spanish voice.

Account	Function
parlefrancais@robobracille.org	Converts the document to an mp3-file using a French voice.
mowa@robobracille.org	Converts the document to an mp3-file using a Polish voice.
preberi@robobracille.org	Converts the document to an mp3-file using a Slovenian voice.
aistis2@robobracille.org	Converts the document to an mp3-file using a Lithuanian voice.
arabic@robobracille.org	Converts the document to an mp3-file using an Arabic voice. See note below regarding document types.
arabicbilingual@robobracille.org	Converts the document containing bilingual text in Arabic and English into to an mp3-file using an Arabic and a British English voice. See note below regarding document types.
v@robobracille.org	Converts the document to an mp3-file using a Dutch female voice.
m@robobracille.org	Converts the document to an mp3-file using a Dutch female voice.

Users can specify the required speed of the audio via pluses or minuses in the subject line of the mail: + = fast; ++ = faster; +++ = fastest; - = slow; -- = slower; --- = slowest.

Note regarding documents in Arabic: Text documents (ANSI and Unicode) as well as Word documents have been successfully tested with RoboBraille. Be aware that pdf files, images and similar documents that require OCR processing will be processed but are unlikely to be recognized correctly due to limitations of in the RoboBraille OCR engine.

Daisy accounts

Account	Function
daisy@robobracille.org	Main Daisy account. Produces a full Daisy project complete with audio.
englishdaisy@robobracille.org	Produces a full Daisy project complete with audio with a user response in English.
danishdaisy@robobracille.org	Produces a full Daisy project complete with audio with a user response in Danish.
deutschdaisy@robobracille.org	Produces a full Daisy project complete with audio with a user response in German.
pldaisy@robobracille.org	Produces a full Daisy project complete with audio with a user response in Polish.
nldaisy@robobracille.org	Produces a full Daisy project complete with audio with a user response in Dutch.

To produce a Daisy project, submit a Word document (.doc, .docx, .xml or .rtf) to one of the accounts above. The author and title of the document must be specified in the document meta data, and the first element in the document must be a level heading.

The Daisy accounts are implemented using the Daisy Pipeline. The TTS is selected via the main language attribute of the submitted document. The current implementation of Daisy Pipeline does not support changes in the natural language of a document, nor is it

possible to change the speed of the generated audio. The audio speed can often be adjusted in the Daisy player.

Accessibility accounts

Account	Function
convert@robobrainle.org	Converts image files, pdf, DOS text, rtf and Microsoft Word documents into other more accessible formats with a user response in English.
konverter@robobrainle.org converter@robobrainle.org konvertiere@robobrainle.org converti@robobrainle.org potconvert@robobrainle.org konwersja@robobrainle.org converteer@robobrainle.org	As above but with user responses in Danish, Portuguese, German, Italian, Greek, Polish, Dutch.

Word and rtf files are converted into text or tagged pdf files subject to the format specified by the user in the subject line, e.g., txt or pdf. PowerPoint files are converted into tagged pdf, web projects or rtf files subject to the format specified by the user in the subject line, e.g., pdf, html or rtf. Text files in the old DOS format (with .asc extension) are converted into corresponding Windows text files. Pdf, tiff, gif jpg, bmp, pcx, dcx, j2k, jp2, jpx, and djv files are converted into the format specified by the user in the subject line of the mail, e.g., pdf, htm, txt, rtf, doc, docx, xml, xls, xlsx and csv.

E-Book accounts

Account	Function
epub@robobrainle.org	Converts pdf, rtf, Microsoft Word, html, image files, lit and mobi documents into the epub e-book format, with user response in English.
mobi@robobrainle.org	Converts pdf, rtf, Microsoft Word, html, image files, lit and epub documents into the mobi e-book format, with user response in English.
epubda@robobrainle.org, mobida@robobrainle.org	As above but with user response in Danish.

E-books are created using Calibre. Prior to conversion into ePub or Mobi, some document types are pre-converted. The table below summarises the intermediate formats utilised by prior to e-book conversion RoboBraille:

Input format	Intermediate format
Image documents	OCR processed and converted to tagged pdf
Pdf documents	OCR processed and converted tagged pdf
Word documents (.doc, .docx)	Converted to RTF
RTF	No conversion
Html files	No conversion
Epub	No conversion
Mobi	No conversion
Lit	No conversion
Text	No conversion

RoboBraille tools accounts

Account	Function
export@robobrainle.org	Exports (converts and/or formats) the attached file into the target Braille character set and/or format specified in the subject line of the mail. For further information about the formatting options, please refer to the section below entitled Formatting and embossing documents .
eksport@robobrainle.org exporter@robobrainle.org exportiere@robobrainle.org esporta@robobrainle.org potexport@robobrainle.org zmienbrl@robobrainle.org exporteer@robobrainle.org	As above but with user responses in Danish, Portuguese, German, Italian, Greek, Polish, Dutch
filepart@robobrainle.org	Partitions the attached mail into smaller parts as per the size (in bytes) specified in the subject line of the mail.
filpart@robobrainle.org partirficheiro@robobrainle.org verdeel@robobrainle.org	As above but with user responses in Danish, Portuguese, Dutch

Formatting and embossing documents

RoboBraille includes a number of facilities to convert character sets, format and emboss Braille documents. Internally, RoboBraille uses the OctoBraille character set, a Braille variant of the standard Windows 1252 character set also known as Latin 1.

Converting to the character set of the embosser

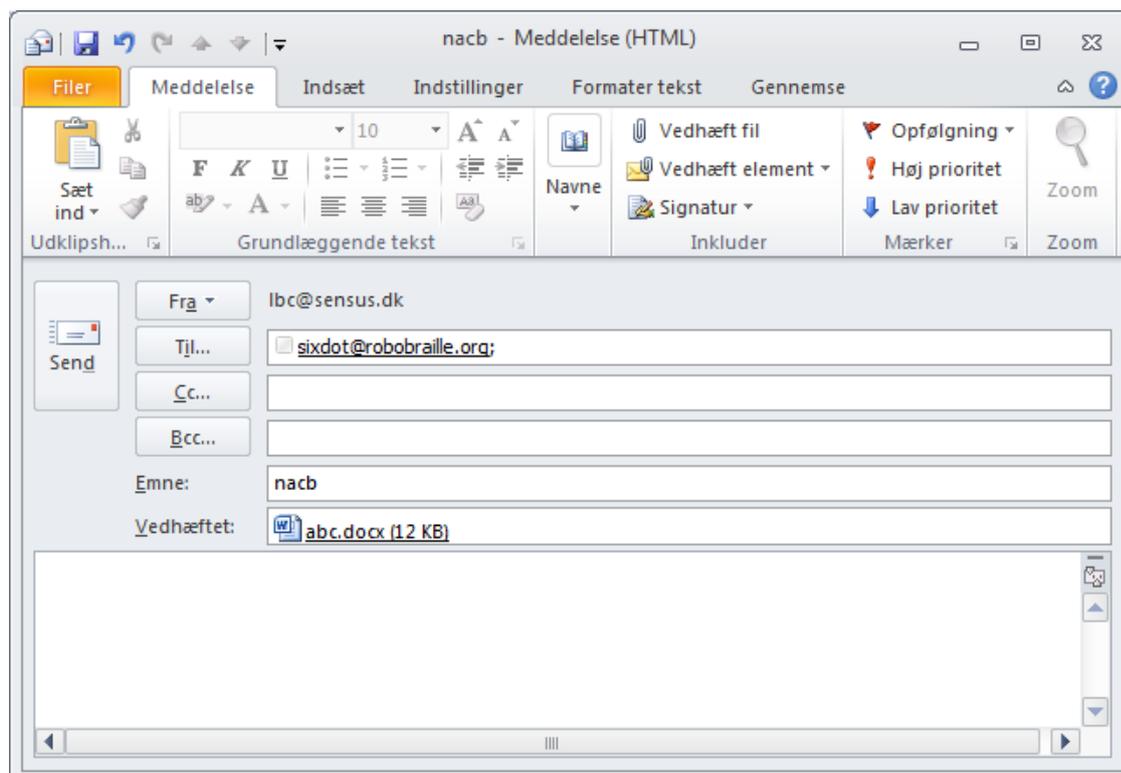
If your Braille embosser is capable of formatting, word-wrapping and paginating Braille documents, then you may only want RoboBraille to return your document in the Braille character set that your embosser uses, and let the embosser handle the rest. To do that, simply specify the Braille character set of your Braille embosser in the subject line of your mail to RoboBraille. In RoboBraille terminology, such a character set specification is called an export filter. The table below lists the export filters currently supported by RoboBraille:

Export filter	Function
logtext5	Log-Text Braille notetaker with old character set.
logtext	Log-Text Braille notetaker with old character set.
braillelite	Braille Lite with US character set.
braille-lite	Braille Lite with US character set.
nacb	North American Computer Braille. This is the standard character set of many Braille embossers.
computerbraille	North American Computer Braille. This is the standard character set of many Braille embossers.
uscomputerbraille2	North American Computer Braille. This is the standard character set of many Braille embossers.
us437	IBM code page 437.
germanascii	German computer ASCII.

Export filter	Function
german_ascii	German computer ASCII.
ibm850	IBM code page 850.
eurobraille	EuroBraille.
italianjaws	Italian JAWS.
italian_jaws	Italian JAWS.
braillenote	Braillenote note taker.
braille-note	Braillenote note taker.
db	InterpointElekul at the Danish Association of the Blind.
db_elekul	InterpointElekul at the Danish Association of the Blind.
ibos_elekul6	InterpointElekul at the Institute for the Blind and Partially Sighted
Unicode	Unicode Braille (in the 2800-28FF range).

If your Braille character set is not included in the list above, please send an email to contact@robobraille.org with a character-by-character specification of the character set. The character set will then be added to RoboBraille when the system is next updated.

The figure below illustrates how to specify that the Braille should be returned by RoboBraille in North American Computer Braille:



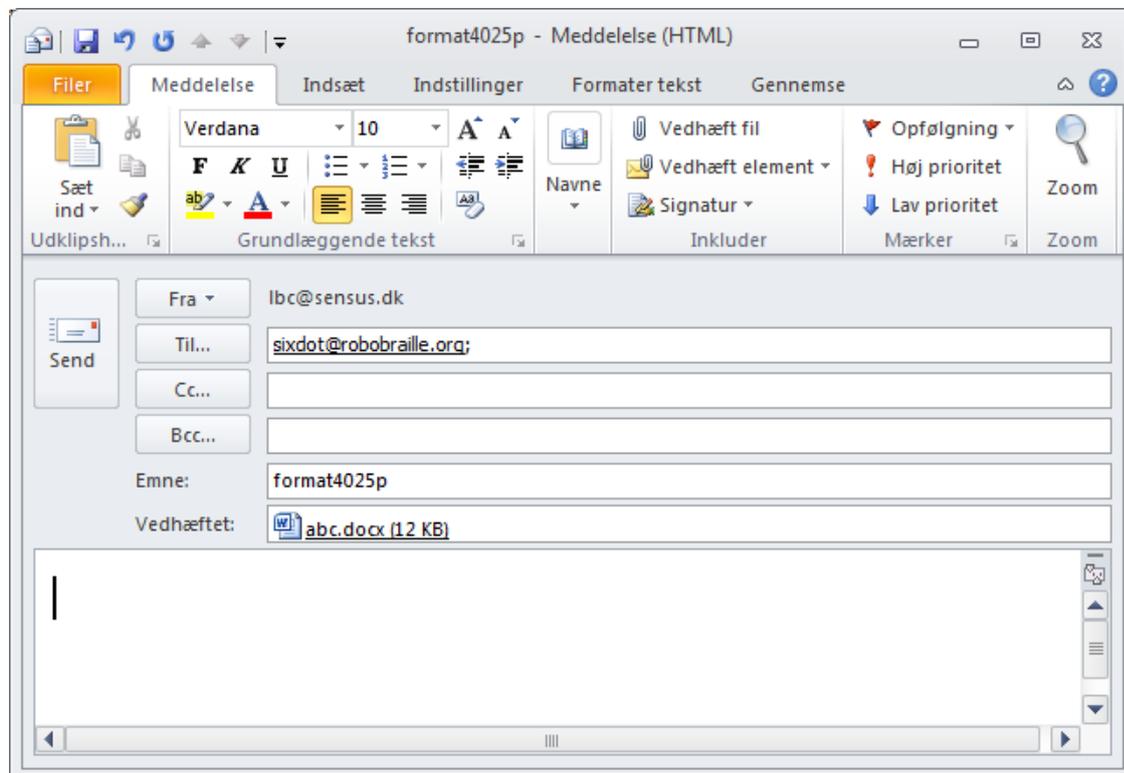
Formatting your document

To format your Braille document to a particular paper format, you can use a special export filter called *format*. Along with the keyword *format*, you need to specify the requested page width, page length and whether you want your document paginated, in the form *formatXXYYp* where *XX* specifies the number of characters per line, *YY* the number of lines per page and *p* pagination. The use of *p* is optional. The table below lists the formatting options currently supported by RoboBraille:

Format filters	Function
format2929	29 characters per line, 29 lines per page without pagination
format2929p	29 characters per line, 29 lines per page with pagination
format3025	30 characters per line, 25 lines per page without pagination
format3025p	30 characters per line, 25 lines per page with pagination
format3028	30 characters per line, 28 lines per page without pagination
format3028p	30 characters per line, 28 lines per page with pagination
format3227	32 characters per line, 27 lines per page without pagination
format3227p	32 characters per line, 27 lines per page with pagination
format3229	32 characters per line, 29 lines per page without pagination
format3229p	32 characters per line, 29 lines per page with pagination
format3329	33 characters per line, 29 lines per page without pagination
format3329p	33 characters per line, 29 lines per page with pagination
format4025	40 characters per line, 25 lines per page without pagination
format4025p	40 characters per line, 25 lines per page with pagination

If your paper format is not included in the list above, please send an email to contact@robobraille.org with a specification of format. The format will then be added to RoboBraille when the system is next updated.

The figure below illustrates how to specify that the Braille should be returned by RoboBraille formatted to 40 characters per line, 25 lines per page with pagination:



In many cases, you will need both formatting and conversion to the character set of your Braille embosser. In such cases, you will need to go through two steps:

1. Transcribe and format your document by submitting it to an appropriate Braille account (say, sixdot@robobrace.org) specifying the formatting details in the subject line (e.g., format4025p).
2. Convert the resulting document to the correct Braille character set by submitting it to export@robobrace.org, specifying the export filter in the subject line of the email.

Using Portable Embosser Format

Portable Embosser Format – or PEF – constitutes a standardised way of embossing Braille documents, and is the recommended format for Braille produced by RoboBraille. Based on XML and Unicode, PEF is a document type that represents braille pages in digital form, accurately and unambiguously; regardless of language, location, embosser settings, braille code and computer environment. It can be used for Braille embossing and archiving anywhere in the world, no matter where nor how it was produced.

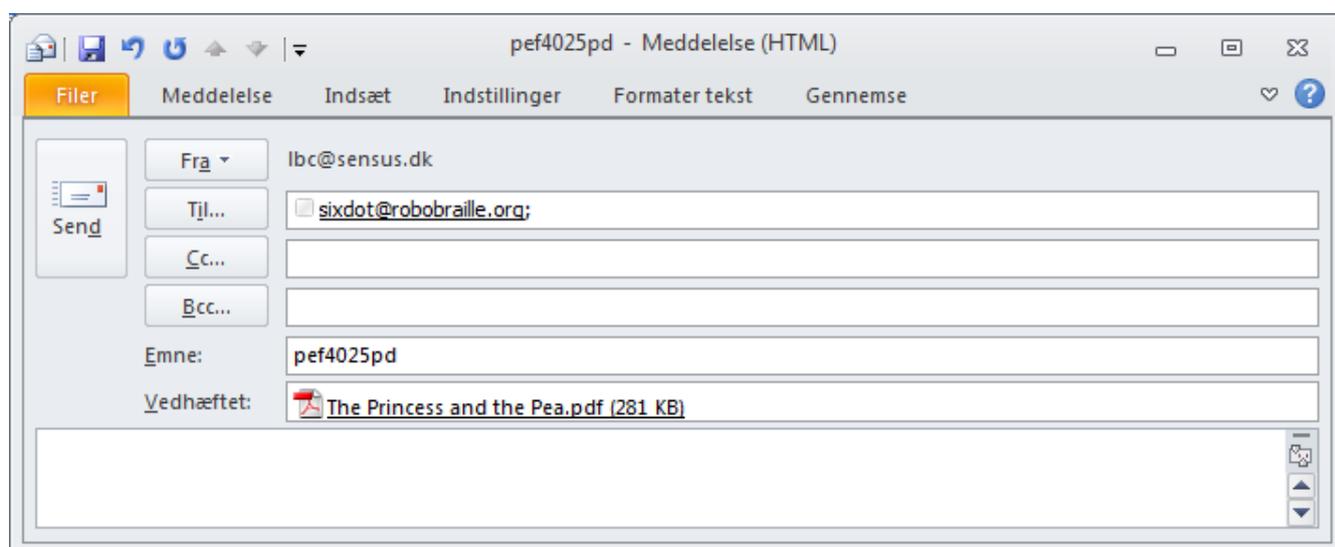
RoboBraille uses a special export filter called pef to render Braille in PEF. Along with the keyword *pef*, you need to specify the requested page width, page length, whether you want your document paginated, and whether you want duplex printing in the form *pefXXYYpd* where *XX* specifies the number of characters per line, *YY* the number of lines per page, *p* pagination and *d* duplex. The use of *p* and *d* are optional, and either one can be used irrespective of the other. The table below lists the pef options currently supported by RoboBraille:

PEF filters	Function
pef2929	29 characters per line, 29 lines per page without pagination.
pef2929p	29 characters per line, 29 lines per page with pagination.
pef2929d	29 characters per line, 29 lines per page with duplex.
pef2929pd	29 characters per line, 29 lines per page with pagination and duplex.
pef3025	30 characters per line, 25 lines per page without pagination.
pef3025p	30 characters per line, 25 lines per page with pagination.
pef3025d	30 characters per line, 25 lines per page with duplex.
pef3025pd	30 characters per line, 25 lines per page with pagination and duplex.
pef3028	30 characters per line, 28 lines per page without pagination.
pef3028p	30 characters per line, 28 lines per page with pagination.
pef3028d	30 characters per line, 28 lines per page with duplex.
pef3028pd	30 characters per line, 28 lines per page with pagination and duplex.
pef3227	32 characters per line, 27 lines per page without pagination.
pef3227p	32 characters per line, 27 lines per page with pagination.
pef3227d	32 characters per line, 27 lines per page without duplex.

PEF filters	Function
pef3227pd	32 characters per line, 27 lines per page with pagination and duplex.
pef3229	32 characters per line, 29 lines per page without pagination.
pef3229p	32 characters per line, 29 lines per page with pagination.
pef3229d	32 characters per line, 29 lines per page without duplex.
pef3229pd	32 characters per line, 29 lines per page with pagination and duplex.
pef3329	33 characters per line, 29 lines per page without pagination.
pef3329p	33 characters per line, 29 lines per page with pagination.
pef3329d	33 characters per line, 29 lines per page without duplex.
pef3329pd	33 characters per line, 29 lines per page with pagination and duplex.
pef4025	40 characters per line, 25 lines per page without pagination.
pef4025p	40 characters per line, 25 lines per page with pagination.
pef4025d	40 characters per line, 25 lines per page without duplex.
pef4025pd	40 characters per line, 25 lines per page with pagination and duplex.

If your paper format is not included in the list above, please send an email to contact@robobraille.org with a specification of format. The format will then be added to RoboBraille when the system is next updated.

The figure below illustrates how to specify that the Braille should be returned by RoboBraille in PEF formatted to 40 characters per line, 25 lines per page with pagination and duplex printing:



Similarly, the RoboBraille web interface can be used to the same effect by selecting pef4025pd as the target format:

Follow the four easy steps below to have your document converted into an alternative, accessible format. The result is delivered in your email inbox. The form expands as you make your selections.

Step 1 - Upload the file

Select your file and upload it to the server (max 32 mb). Supported file types are .doc, .docx, .pdf, .txt, .xml, .html, .htm, .rtf, .epub, .mobi, .tiff, .tif, .gif, .jpg, .bmp, .pcx, .dcx, .j2k, .jp2, .jpx, .djv and .asc

File name:

The file The Princess and the Pea.pdf has been successfully uploaded to the server.

Step 2 - Select output format

Specify the target format of your document. For this document type, the following formats are available:

Target format

- mp3 audio
- e-Book
- Document conversion
- Braille

Step 3 - Specify Braille options

Specify the natural language of your document, requested contraction level and target format of the Braille document. Note that American Braille is currently produced according to the British English Braille rule set.

Options

Language:

Contraction level:

Target format:

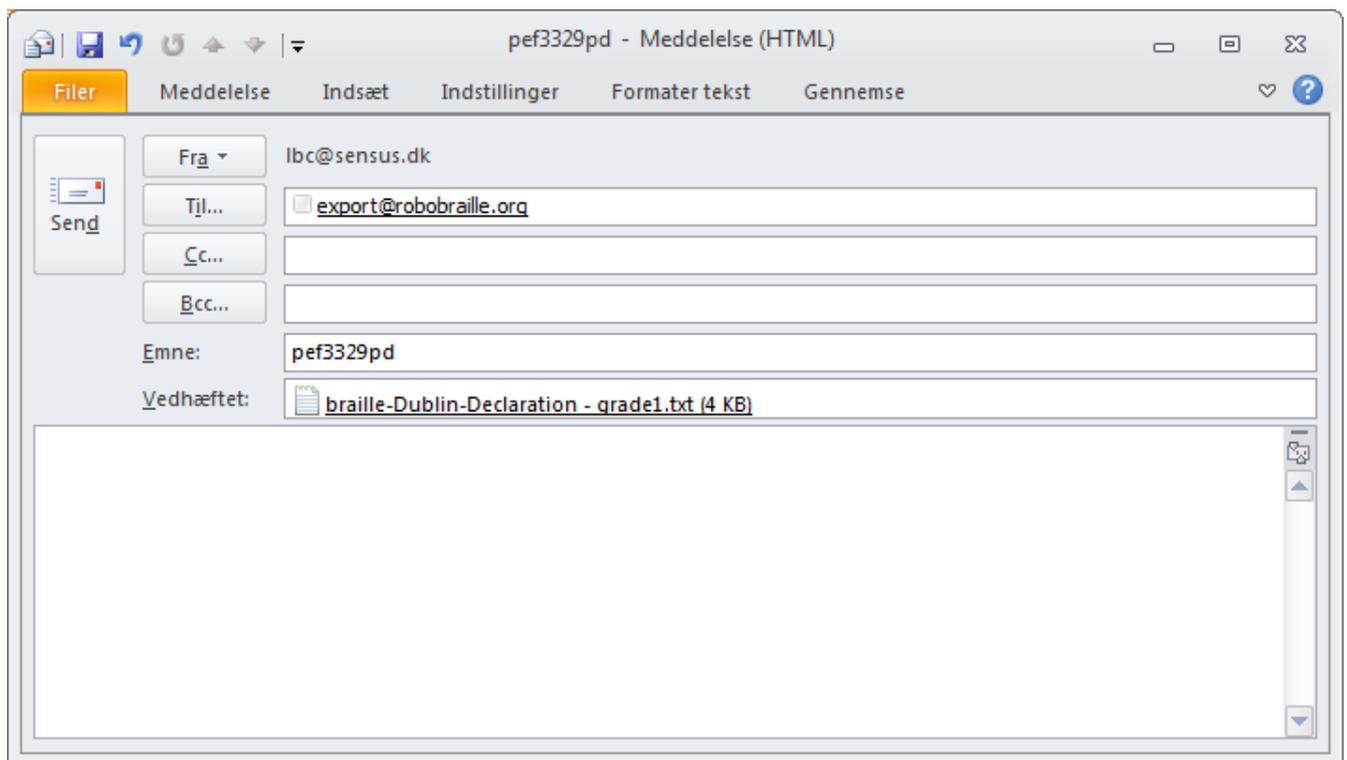
Step 4 - Enter email address and submit request

Email address:

The result from RoboBraille is an xml file in Unicode with a .pef extension. In order to emboss the file on a Braille embosser, you will need an embossing application.

It is also possible to produce a Braille document, conduct minor editing in the result convert the end result to PEF. In order to achieve this, submit the document to the appropriate Braille account without specifying an export filter (or by using a format-filter), edit the result in a text editor and finally submit the edited Braille document to an export-account with the requested pef format in the subject line. The example below

shows how to convert an already transcribed Braille document into PEF, formatted to 33 characters per line, 29 lines per page with pagination and duplex printing:



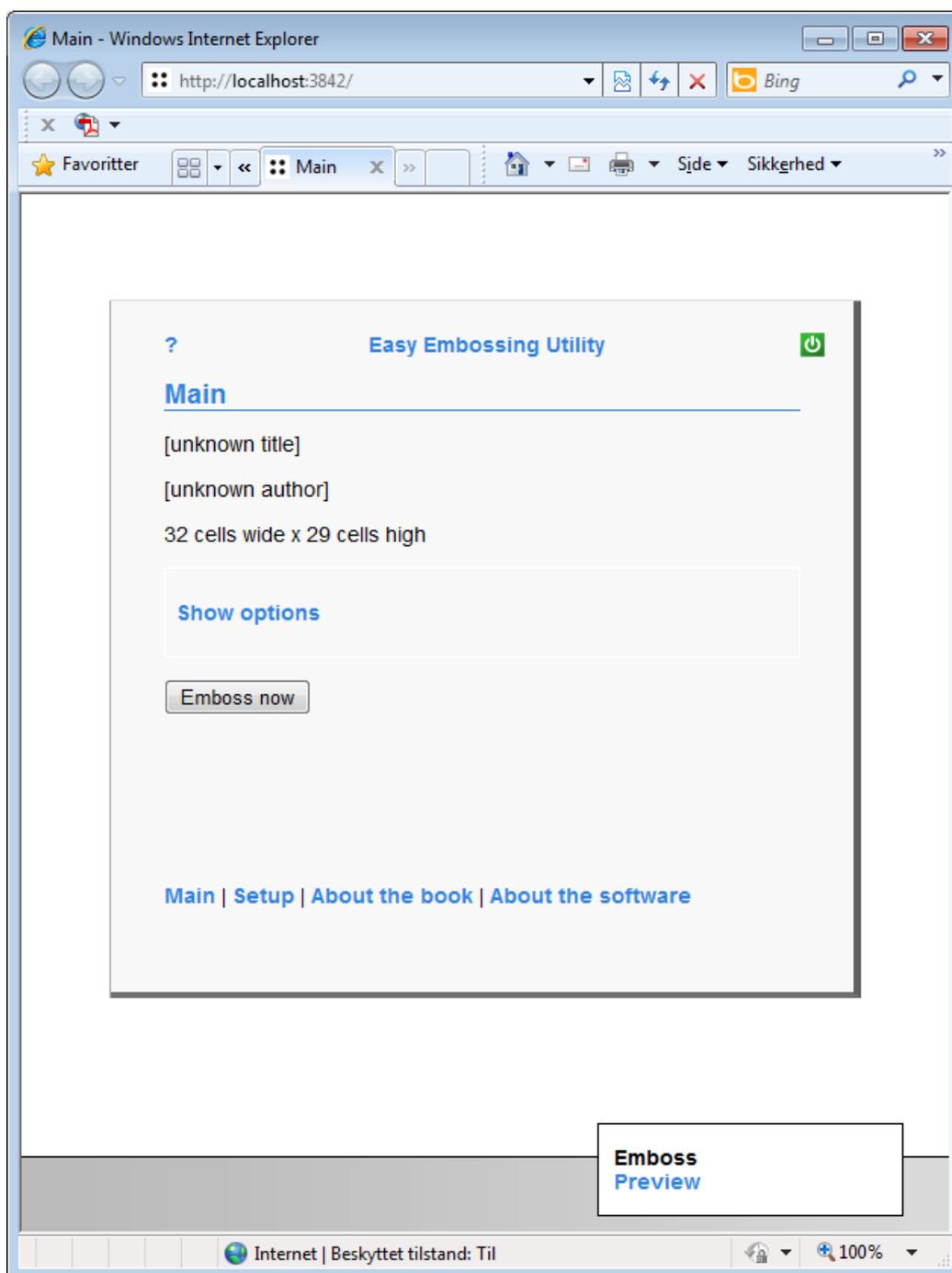
RoboBraille recommends the use of the freeware Easy Embossing Utility, developed by the inventors of PEF. The PEF Easy Embossing Utility supports most available Braille embossers and can be downloaded from the following link: www.pef-format.org. As an alternative, the Daisy Pipeline includes a script for embossing PEF files.

Once installed, files with the *.pef* extension are associated with the PEF Easy Embossing Utility and double-clicking on a pef file will open the interface to the utility. The first time the application is launched, you will need to specify the brand and model of your Braille embosser, the paper format and the Braille character set used by the embosser.

In addition to embossing, the PEF Easy Embossing Utility also features a preview option.

In order to view the contents of a PEF file in a text editor, it may be necessary to install a Unicode font that includes the Braille range of characters. An example is the Code2000 shareware font that can be downloaded from the web.

The figure below shows the main interface to the PEF Easy Embossing Utility.



The figure below shows how the text and Braille contents of a PEF file can be previewed in a standard text editor such as Notepad:

The RoboBraille Conversion Matrix

		Input formats																					
		doc	docx	pdf	txt, asc	xml	htm, html	rtf	tiff	gif	jpg	bmp	pcx	dcx	j2k	jp2	jpg	djv	epub	mobi	ppt	pptx	
Output formats	Braille																						
	txt																						
	pef																						
	htm																						
	ebook																						
	mobi																						
	epub																						
	Conversion																						
	txt																						
	pdf (tagged)																						
	doc																						
	docx																						
	csv																						
	xls																						
	xlsx																						
	rtf																						
	xml																						
	htm																						
	htm (zip)																						
	Daisy																						
	full audio																						
	text only																						
	Audio																						
	mp3																						