

eICR CDA Parser

Open-Source Tool

August 2020

Introduction

PHII contracted with Lantana to create an Electronic Initial Case Report (eICR) Clinical Document Architecture (CDA) parser and database to assist the Illinois Department of Public Health to consume and process XML documents. The eICR CDA Parser is an open-source tool available for anyone to use. The C# source code is also available on GitHub for anyone to download and configure. This tool extracts discrete eICR data elements from XML files and stores these data elements in a database. Additionally, the parser is configurable to enable/disable validation against standard eICR Schematron (currently both STU 1.1 and 2.0).

Users can select between MS Access, MS Excel, or DB2 for target output environments for their parsed data. For parsing to database environments, users can use the included schema configuration file to generate the schema or modify a local copy of the configuration file to change the database structure. The user is responsible for obtaining the necessary licensing to use the desired output database. This package includes database structure guidance. It does not include the database/output environments themselves or the associated licenses for the environments.

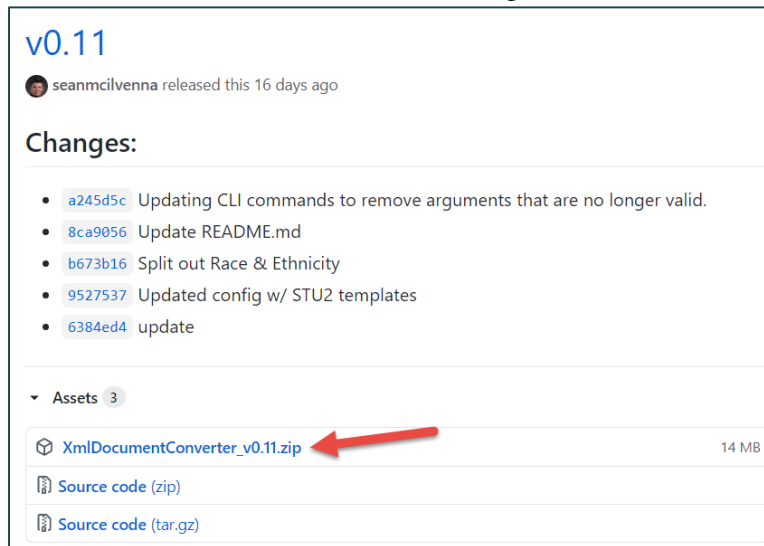
This tool contains a basic user interface for manually selecting the XML files to process. It can also be run from the command line. Instructions for both are below. While each user's set up, experience using GitHub, and general knowledge of HL7 IG packages may vary, the below instructions are intended as a guide for setting up the parser. Direct specific set up questions to your IT Systems Administrator.

Download, Setup, and Execution Instructions

To install and run the eICR CDA Parser, follow these steps:

1. Download the eICR Implementation Guide (IG) release packages from the HL7 Standards Product Brief website:
http://www.hl7.org/implement/standards/product_brief.cfm?product_id=436
 - To download the entire eICR IG package, users will need both a [G Forge](#) account and an [HL7](#) account. Both are free.
 - Ensure all files from the eICR IG package are present including the XML support files referenced on the HL7 webpage and located on GForge.
2. From <https://github.com/lantanagroup/XmlDocumentConverter>, click on the **Samples** folder.
3. Click the **Config** folder.
4. Click the **eicr.xml** mapping file link. The XML code will display.
5. Copy the XML code and paste it into a text editor such as Notepad++.
6. Save the file as eicr.xml. Remember where you save the file.
 - Using the user interface, you will insert this file pathway into the XML Document Converter user interface (User Interface step 13).

- Using the command prompt, you will type this file pathway (Command Line: step 15)
7. Return to the main GitHub page. On the right side of the page, click **Releases**.
 8. Under **Assets**, click the XmlDocumentConverter zip file to download.



9. Extract all the files from the XmlDocumentConverter zip file
10. Run the eICR CDA Parser via User Interface or Command Prompt

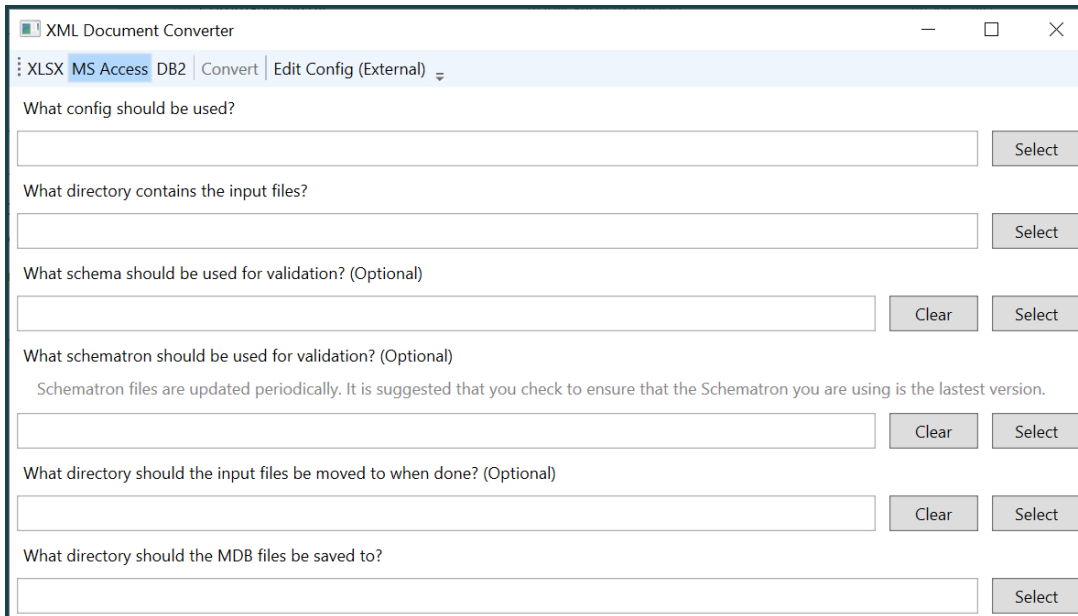
User Interface

11. Open the **Release** folder.

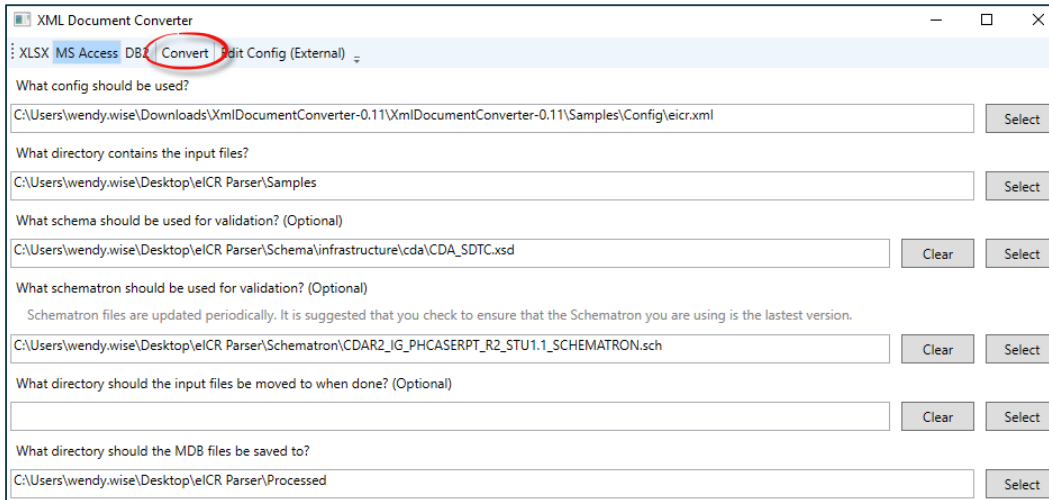
Double click **XmlDocConverterUI.exe** to launch the XML Document Converter user interface. A pop-up window displays XML Document Converter editing screen.

Note: Various pop-up boxes regarding running this application may display. Follow the prompts and discuss with your IT Systems Administrator if you have questions.
12. Select the file format that you want the eICR data to be in after it is parsed by clicking the tab at the top (i.e. XLSX, MS Access, DB2). If you click the XLSX tab, your converted parsed data will be in an Excel file.

The following steps are specific to an MS Access file output. Steps for XLSX and DB2 are similar.

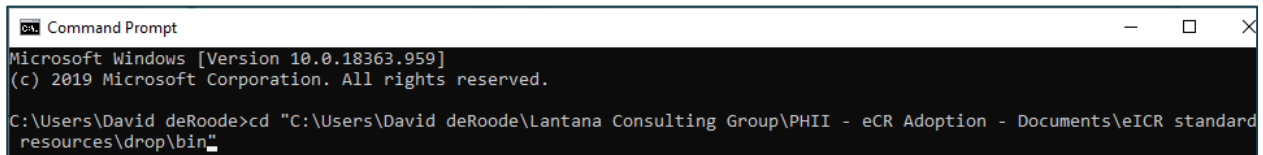


13. Under the **What config should be used?** field, click **Select**. Browse to the directory where you saved the eICR Config Mapping file and insert it here.
14. Under the **What directory contains the input files?** field, click **Select**. Browse to the directory with the eICR files (.xml) you want to parse and insert that folder here.
Note: GitHub has sample files in the Samples/Input/eICR folder, but you can use any eICR CDA files.
15. Under the **What schema should be used for validation (Optional)** field, click **Select**. Browse to the directory where you downloaded the schema included in the eICR IG package you downloaded.
16. Under the **What schematron should be used for validation (Optional)** field, click **Select**. Browse to the directory where you downloaded the schematron included in the eICR IG package.
17. Under the **What directory should the input files be moved to when done? (Optional)** field, click **Select**. Browse to the directory where you would like the eICR files to be moved to after they are processed.
Note: This is an optional feature; eICR files do not need to be moved after they are processed. If you would like the files to remain in the source/pickup folder, click the **Clear** button.
18. Under **What directory should the MDB files be saved to?** field, click **Select**. Browse to the directory where you would like the output (i.e. MS Access database) to be saved once the parser has completed processing all xml files.
19. On the top menu bar, click **Convert**. Check the output file for the parsed eICR data.



Command Line

11. Type cmd in the search bar of the home screen (Windows 10) to open a Command prompt.
12. Navigate (type **cd** for change directory) to the directory where you saved the XmlDocConverterCli.exe from the Release folder (step 6 above). See example screen shot below.



13. Press **Enter** to apply your command prompt.

Note: You have moved directories and are now within the directory where the XmlDocConverterCli.exe is saved. The screenshot directory shown below is C:\Users\David deRoode\Lantana Consulting Group\PHII - eCR Adoption - Documents\eICR standard resources\drop\bin.

```
C:\Users\David deRoode\Lantana Consulting Group\PHII - eCR Adoption - Documents\eICR standard resources\drop\bin>
```

14. Type **XmlDocConverterCli.exe [output file type] [parameters] [optional parameters]**

For **[output file type]**, type the file format that you want your parsed data to be in:

- **MS Excel (.xlsx):** Type xlsx. **Example:** XmlDocConverterCli.exe xlsx
- **MS Access (.mdb):** Type mdb. **Example:** XmlDocConverterCli.exe mdb (screenshot below)
- **DB2:** Type db2. **Example:** XmlDocConverterCli.exe db2

```
C:\Users\David deRoode\Lantana Consulting Group\PHII - eCR Adoption - Documents\eICR standard resources\drop\bin> XmlDocConverterCli.exe mdb -c "C:\Users\David deRoode\OneDrive - Lantana Consulting Group\Desktop\SourceControl\Git\Lantana\XmlDocConverter\Samples\Config" -i "C:\Users\David deRoode\Lantana Consulting Group\PHII - eCR Adoption - Documents\ICR standard resources\pickup" -o "C:\Users\David deRoode\Lantana Consulting Group\PHII - eCR Adoption - Documents\eICR standard resources\pickup\processed"
```

15. For **[parameters]**, enter the file locations for the config file, input file, and output file. Add a space after each element. If your pathway contains spaces, put quotation marks around the pathway

Required Parameter	Enter:	Pathway
Config file location	-c or --config	The folder pathway of the saved config file
Input file location	-i or --input	The folder pathway of the saved input files, the data to be parsed.
.xlxs or .mdb output file location*	-o or --output	The folder pathway for the saved parsed data

*If the output file location is db2, type **-d** or **--database** instead of **-o** or **--output** entering the folder pathway for the output. Enter two additional required parameters: username and password. For username, type **-u** and the database username. For password, type **-p** and the database password.

Example:

```
C:\Users\David deRoode\Lantana Consulting Group\PHII - eCR Adoption - Documents\eICR standard resources\drop\bin> XmlDoc
ConverterCli.exe mdb -c "C:\Users\David deRoode\OneDrive - Lantana Consulting Group\Desktop\SourceControl\Git\Lantana\XM
DocumentConverter\Samples\Config" -i "C:\Users\David deRoode\Lantana Consulting Group\PHII - eCR Adoption - Documents\
ICR standard resources\pickup" -o "C:\Users\David deRoode\Lantana Consulting Group\PHII - eCR Adoption - Documents\
standard resources\pickup\processed"
```

See <https://github.com/lantanagroup/XmlDocumentConverter> for [output file type] and associated [parameters]

16. For [optional parameters]:

Optional Parameter	Enter:	Pathway
Move files after processing	-m or --move	File pathway of moved parsed files
Add a schema to validate the structure of the XML document processes	-x or --xsd	File pathway of XML Schema
Insert the file location of the ISO Schematron file	-s or --sch	File pathway for ISO Schematron file

17. Press **Enter** to apply your command prompt. Check the output file for the parsed eICR data.