Maintenance and Publication Tool for WHO-FIC Classifications - a status report

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Abstract

The German Collaborating Centre has been working on the development of a maintenance and publication tool for WHO-FIC classifications for the last year. Based on the features of the current German software we designed a concept for handling WHO-FIC classifications based on a XML structure in a user-friendly tool as well as a production tool. The tools will be language independent and will be able to handle all WHO-FIC classifications. This paper will describe the planned features, functionalities and routines of the new tools.

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Introduction

DIMDI has been maintaining medical classifications in electronic format over more than 10 years [2,3]. An SGML structured file was used to produce various target formats of the classifications like ASCII, HTML, RTF, PDF.

Some of the tools that were used by DIMDI to produce the classifications are coming of age and are no longer supported commercially, furthermore SGML has never been widely accepted. Therefore DIMDI has taken up the task of developing a new XML based maintenance and publication tool using the experience and knowledge attained in the last 10 years.

As representatives of WHO were involved in the design of the functionalities of the tools and as the international use of such tools would strengthen the collaborative work on WHO-FIC classifications, DIMDI decided to develop the tool language independent.

General structure

DIMDI is maintaining the classification and its index separately. For the new tools it was decided to keep it this way as the structure of the German index is completely different from the ICD-10 tabular list: the hierarchical structure of the German index does not match the structure of the inclusion notes. There will however be cross links between the two maintenance systems.

In a first step the structure of the data and the desired functionality of classification maintenance and publication were described. From these requirements DIMDI derived the structure of the system. It was decided to develop two separate tools, one for classification maintenance and another for publication. Both tools will access the same database.

The development of a new tool for the indexes was postponed until technical specifications of the classification maintenance tool could be stated more precisely but it is planned to make them accessible from the maintenance tool.

Maintenance tool

The classifications will be maintained in a database derived from an XML file [1]. Each classification (ICD-10, ICF, others) will be kept in a separate database that can be chosen upon startup of the tool for browsing or editing. (figure 1). Two editions of one classification (like ICD-10-GM and ICD-10-WHO) may be kept in one database. This will avoid redundancies for maintenance. Different languages will be handled in different databases but can be accessed by the same tool. This keeps the amount of data for one database small and therefore the access time short..

User rights

Different users will have different authorization. The user with read permission can browse the classification without being able to make any changes. The classification specialist will have read and write permissions. An administrator will for instance be able to add a new database to the system, to configure certain values for one classification or implement structural changes to a classification and to close a version for publishing.

Changes and Editing

As some of the WHO-FIC classifications are quite voluminous and sophisticated, proofreading is quite time consuming. Therefore we decided to enable changes to the classification only to specialists and to allow editing only with additional assurance (prompts for confirmation, deletions only as a marker and final deletion only by administrator, etc.).

A user can edit the text of a code, its notes, the code itself, add codes and delete codes. All these options can directly be accessed from the main screen. This screen will also include cross links to the index. In full chapter mode the user can browse the classification as it will later appear in the book format. Changes are visible in preview mode immediately after being saved.

Plausibility checks

With each editing and saving of changes a minor plausibility check will be performed. This check comprises a spell check, a check for duplicates (did a code entered as new already exist), a check for compatibility with the classification structure (rules for compatibility will vary for each classification) and a check for references.

In addition it will be possible to do a major plausibility check of the full classification. This means that the tests of the minor check described above will be conducted for the full classification, the XML-structure of the file will be validated, the superclass of each code verified and external references checked. The results of these tests will be presented in a list with links to the codes and therefore can easily be corrected by the user.

History

As DIMDI is convinced that a proper documentation of changes is essential to the maintenance of classifications, the maintenance tool will have a broad history that will be kept separately. Every change to the classification will be documented automatically in the history with the name of the user who entered the changes, the date and an automated text like “Code deleted”, “New code entered” or “inclusion note changed”. Additionally the user will be able to change the automated text manually in the same session and thereby can document the reason for the change. (figure 2)

Metadata

DIMDI offers an electronic file for the Metadata of each classification to the customer. The data that can not be produced automatically (e.g. age edits) will be kept with each code [1]. From the main screen of the maintenance tool the user can access a screen for the metadata and easily change it for example by checking a box.

Import and Export of Codes and Chapters

For revision it has been found helpful to save the status of a code before changing it. Later on if the changes should prove wrong the old code can be imported back into the classification.

Sometimes it is also necessary to export a full chapter in order to revise it. This chapter can then be kept by the tool as a separate classification (private version). Here the user can make changes as he wishes and even produce output files from the chapter to discuss with experts. When the revision of the chapter is finished it can be imported back to the main classification. This feature was especially designed to facilitate work for the revision of the ICD-10 towards ICD-11.

Crosswalks

The maintenance tool will support the production of crosswalks from one version to another. Therefore a set of rules will be implemented in the system to be performed at the end of a revision. These rules have been tested in the old german software and have proven quite effective. Most parts of the crosswalks can be generated automatically by the system, however, manual adjustments and editing are still necessary.

Publication tool

The publication tool will access the same database as the maintenance tool. Therefore it will be possible to produce up-to-date versions of the classification at any given time. The output of the tool will include XML, HTML, RTF and/or PDF and ASCII. As DIMDI has been offering the classification, the metadata, the bridge coding files and the printable formats to the customers in electronic form in the past, the publication tool will enable the user to produce all the formats and files above. Lists of modifications can be generated by the “compare documents” features of word processing software.

Especially for the ICD-10-GM and the OPS (German procedure catalogue) it is essential for the German Centre to produce lists of modifications a couple of times throughout the year for discussion with medical specialists, health insurances and the ministry. As these lists often cover only a couple of codes it will be possible to select single codes, code blocks, chapters or the full classification for production with the

tool in all the formats described above.

As the history of the changes to a classification will contain mostly information intended for internal use only, DIMDI did not include the possibility to produce a history file in the production tool.

The publication tool will only have read access to the databases. Therefore any user can produce the output files.

Future Prospects

By now DIMDI is working on the technical specification of the software and will start the actual programming this winter. The aim of DIMDI is to have a prototype by next summer to test it with the new version of ICD-10-GM and OPS. The tools will then be finalized and ready for use in 2007.

References

[1] Maintaining Medical Classifications in XML – ClaML redefined for use with WHO-FIC classifications; S. Weber et al; submitted for Annual Meeting of the Heads of the WHO Collaborating Centres for the Classification of Diseases 2005 in Tokyo

[2] Electronic Publishing of the German Language Edition of ICD-10; M. Schopen; Annual Meeting of the Heads of the WHO Collaborating Centres for the Classification of Diseases 1998 in Paris. WHO/GPE/ICD/C/98.24

[3] Electronic Publishing of the Alphabetical Index to ICD-10; M. Schopen; Annual Meeting of the Heads of the WHO Collaborating Centres for the Classification of Diseases 1999 in Cardiff. WHO/GPE/ICD/C/99.33

Technical Annex

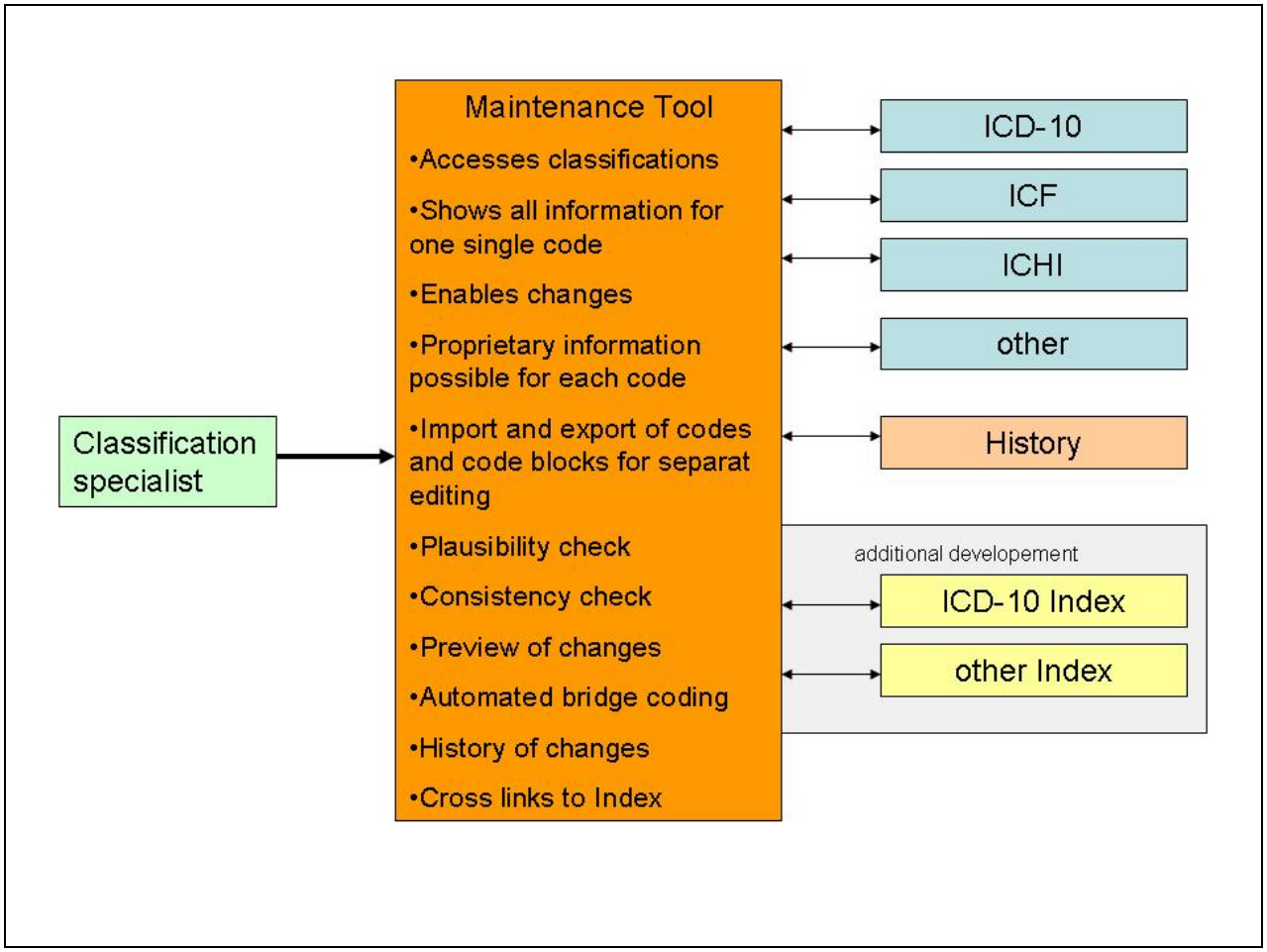


figure 1 Classification maintenance

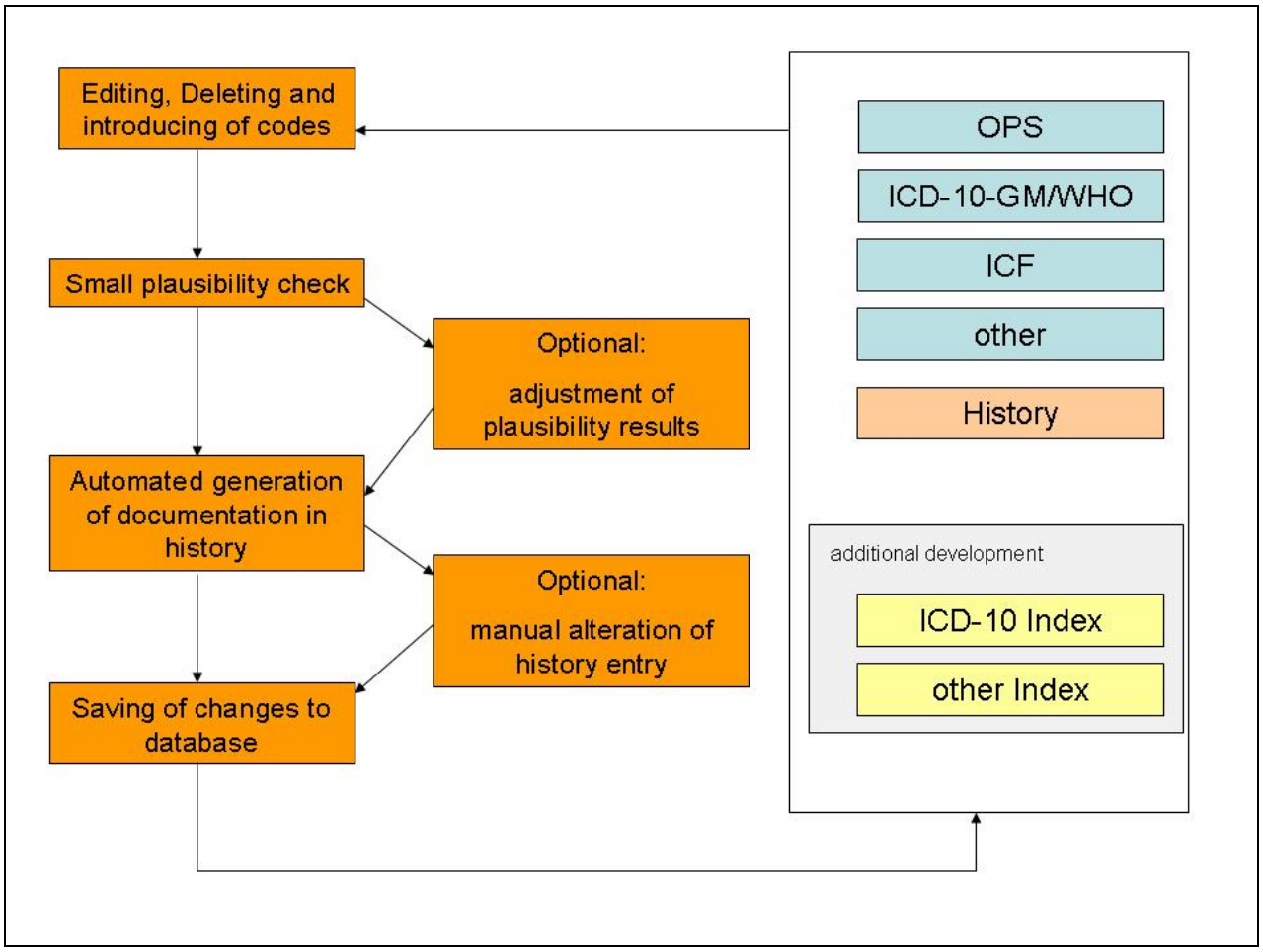


figure 2 flow chart of changes