

The HL7 Comprehensive Database

Documentation

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# Introduction

The German HL7 user group has edited a German adaptation of the version 2.1, 2.2 and 2.3 of the HL7 standard. The careful analysis of the standard during the translation process and the attempt to map the standard into a comprehensive database has displayed some problems which should be taken into consideration in future developments.

The general paradigm of HL7 is the exchange of messages which consist of sequences of mandatory or optional segments, fields, components and sub­components. Fields represent the semantic content of the message. In the standard the meaning of these segments and the content of fields are explicitly described.

Messages are initiated by trigger events, i.e. real world event which require the transmission of a specific data set.

It became shortly aware that the chapters of the standard has been developed by different groups and that there have been no distinct rules or guidelines for the development of various parts of the standard. We started therefore to define a comprehensive database of the HL7 standard to allow consistency checks of items and to support also the application of the standard by the user.

## Objects used in the HL7 Standard

The following Objects are used within the standard and are the basis for developing this database:

|  |  |
| --- | --- |
| Event: | The occurrence of an event triggers the assembling and transmission of a message e.g. the admission of a patient is an event. |
| Message: | The message is the smallest object exchange between applications. It consists of a con­catenation of segments which can be optional or repeatable. |
| Segment: | A segment is an aggregation of data items logically belonging together. Segments can be used in different messages. |
| Data item: | A character string representing the data to be transmitted. |
| Data type: | The data type defines the format of the data item. Atomic and composite data types can be distinguished. Composite data types consist of different components. |
| Component: | A component is part of a data item. |
| Sub­component: | Components can consist of subcomponents. |
| Table: | Some data items or components require the use of special values which are defined by standard or user defined tables. |

## Structure of a Message

The objects used for defining the standard are arranged into a hierarchy:



# Contents

## Entity-Relationship-Model of this database

Developing an analytic object model for the definition of a comprehensive HL7 Database we became aware that two problems are not handled satisfactory in the standard:

1. the relationship between message types, event types and the structure of a message
2. the relationship between data items, data types, com­ponents and tables

The following analytic object model has been established from the HL7 standard version 2.2, but is also valid for subsequent versions.

The notation of Peter Coad is used for describing the relations.



Within this database every message is defined in correspondence with its event, though there are a lot of events with identical messages. That is why we introduced a message structure identifier, which is made known to the public with version 2.3.1.

In some cases – especially for the event O01 and O02 – different messages have to be defined. Here we use the relationship from event to message structure identifier to message.

Tables are generally related to data items. But in multiple component fields attribute tables are really related to components. For that purpose we have to introduce a logical data type.

## Logical Data Type (data\_structure)

The logical data type has been introduced to allocate tables to components in multiple component fields.



The dotted lines from data items to logical data types and simple data types represent the relations we really have to define within the database. Though MS-Access doesn´t allow for adding such conditional relations we have to reduce it to two direct relations (dashed lines). As a result we have to relate tables either to data items directly ‑ in case we have no components ‑ or to components.

## What does this database contain?

This database contains four different HL7 versions but to different extinct. This table describes it a little bit more in detail:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 2.1 | 2.2 | 2.3 | 2.3.1 | 2.4 | 2.5 | 2.5.1 | 2.6 | 2.7 | 2.7.1 | 2.8 | 2.8.1 | 2.8.2 | 2.9 |
| Events | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Messages:  From event to message  By the help of message structure IDs | ✓ | ✓ | ✓  ✓ | ✓  ✓ | ✓  ✓ | ✓  ✓ | ✓  ✓ | ✓  ✓ | ✓  ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Segments | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Data Elements | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Data Types (Components) |  | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Comparison of data elements with next version | ✓ | ✓ | ✓ | ✓ | - | - | - | - |  |  |  |  |  |  |
| Message Structure Identifiers |  | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Tables | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Table Values | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Queries (previously called Conformance Statements) | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Sections from Standard Documents | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

All data added is checked for its consistency. Referential integrity among relations assures this consistency. The side effect of referential integrity is to modify the data from the standard documents because the standard is defined in form of a document but not in form of a database. All changes made so far are listed on my private home page:

http://www.oemig.de/HL7

At the moment no attribute is maintained to store information about changes made due to consistency!

### Goodies

This database contains individual information about sub-components for data elements. Beginning with version 2.5 the components are made explicit by the help of component tables.

### What's not in this database

There is no comparison of components neither direct by the help of a table nor indirect by a sub-program!

### What's different to the previous release

Due to new functionality and tables some changes to the database are required. The following list gives an overview about the most important ones:

* Table Names
  + <table> ⇒ HL7<table>
  + x<table> ⇒ GeneratedData<table>
* Attributes
  + hl7\_version ⇒ version\_id
  + chapter ⇒ Section
  + HtmlStandard ⇒ Anchor

## Constraints

This database is defined to use referential integrity wherever it is feasible.

The relation between event message types and messages requires a two-to-many relationship. But this feature is not supported by a relational database. Therefore, the referential integrity is defined among events and messages. The rest must be checked by additional queries. (compare with chapter 5)

## History of the data contained in this database

We started building up this database by using the data of version 2.1. Adding the data of version 2.2 has been made apparent that the table for storing data elements has to be refined because of multiple usage. This version was also the first one for which the data types was extended.

This version was also the first one for which the data structures in form of individual components has been filled. This was made possible by extracting the necessary information out of the documents by hand.

Version 2.3 was added out of the first draft. The second draft ‑ it was a very simple access database ‑ has been used to correct the data already stored. The third draft and the final standard has been used to refine the data further.

The data structures of version 2.2 was extended.

The data for version 2.3.1 came out of the final standard by the help of WinWord macros (see below). The data structures of version 2.3 are copied and adapted by hand.

Version 2.4 has been extracted using tools and a lot of manual processing. Version 2.5 has been extracted by an enhanced toolset with more automatic procedures. Nevertheless, a lot of manual processing is still necessary.

# Tables

This chapter describes the database tables and its contents. Changes according to the last version of the database published are marked in red.

All links i.e. relationship among tables requires referential integrity. Therefore, one can only add information which is consistent to all related information.

Only a few exceptions are made due to special functionality which cannot be reached by using referential integrity. These exceptions are listed below:

HL7EventMessageTypes : HL7EventMessageTypeSegments

These exceptions must be checked by the help of specialized queries:

xInconsistency EventMessagetypen without EventMessagetypeSegments

xInconsistency EventMessagetypeSegments without EventMessagetypes

The tables are sorted according to their contents. To add new information a special sequence of steps must be followed. They are described within chapter 4.

## Notation

The descriptions of the used tables is divided into several parts. It starts with a short description of the contents. Next comes a table describing the attributes. The primary key is marked in bold. Appendix A contains a list of additional keys and links to other tables.

The table names are kept in plural form in order to demonstrate that they contain a set of records. Whereas the attribute names are in singular form because they can only contain a single value.

Some tables are used to store information describing a one to many relationship. In such a case both names are appended to each other ‑ the first (superior) one in singular, the second one in plural form.

## Tables with Superior Information

These tables with superior information are related to most of the other tables. Therefore, describe them directly at the beginning but please keep in mind that they must be filled with information before any other table can be filled with data.

### Table HL7Versions

This table defines the HL7 versions this database can contain.

This database is designed using the following structure:

version -> events

events -> message types (sender + recipient) -> segments

events -> queries -> input + comments + RCP + display

version -> segments

segments -> data elements

segments -> tables

version -> data elements

data elements -> tables

data elements -> data structures

version -> message types

version -> message structures

version -> data structures

version -> tables -> table values

version -> chapters -> chapter headings + chapter sections

comments -> any element

The structure of this database is designed to fit the needs of HL7 best. Furthermore I added a lot of attributes to store information about chapter/ pages and references into the original HL7 HTML document which itself is a collection of files not yet added to the database. If you are interested in these files too, please don't hesitate to send my an email.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **version\_id** | Long |  |  | HL7\_52 | Version ID |
| hl7\_version | Text | 8 |  | HL7\_36 | official HL7 version number |
| Description | Text | 80 |  | HL7\_36 | Short description of this HL7 version |
| status | Text | 50 |  | HL7\_52 |  |
| date\_release | Time | 8 |  | HL7\_36 | Date of releasing this version |
| HtmlPath | Text | 50 |  | HL7\_36 | Path to HL7 standard documents within the file system. This pathname is used as a prefix for HtmlStandard to compute the links from the computed HTML files to the standard HTML files. |
| HtmlFile | Text | 50 |  | HL7\_36 | index Filename of HL7 standard document  This file is built up by hand out of the converted HL7 HTML files. Therefor one has to combine all links into one file. These links are automatically prepended to HTML files. |
| filename\_prefix | Text | 10 |  | HL7\_53 | Prefix to be used for this version for generating filenames |
| previous\_version | long integer |  |  | HL7\_53 | What is the previous version to compare with? |
| sort | long integer |  |  | HL7\_60 | in which order to sort the versions |
| HtmlGeneration | yes/no |  |  | HL7\_60 | is this version to be considered when generating the HTML files? |
| display | yes/no |  |  | HL7\_60 | list this version in the main form |
| Base\_standard | Long integer |  |  | HL7\_68 | References the base standard; 0 if it is a base standard issued by HQ |
| XML\_schema\_path | Text | 50 |  | HL7\_64 | path to directory where XML schemas are generated |
| Compare\_tables | Yes/no |  |  | HL7\_75 | should this version be considered in the pivot table comparison for their values in PHP? |

### Table HL7Modification

This database also stores information not contained within the standard document. One intention for using a database is to add information for other purposes. Aside our German translation we also added information for national defined segments, data elements and some other data. To mark these fields the attribute „usage“ is used.

Attention: In previous versions of the database this table was named “HL7Usage”. But as name this causes confusion with the different usage codes being used in message profiles, it has been renamed.

| Attribute | Type | Size | Default | Database | Description |
| --- | --- | --- | --- | --- | --- |
| **modification** | Text | 1 | „O“ | HL7\_66 | Code for defining the modification of this record according to the original HL7 version |
| description | Text | 80 |  | HL7\_36 | Short Description for this modificaiton |

### Table HL7Optionalities

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **Req\_opt** | Text | 8 |  | HL7\_66 |  |
| description | Text | 80 |  | HL7\_66 |  |

### Table HL7TableTypes

Table types specify who is responsible for defining the values of a table:

HL7

user defined

HL7 and user defined

....

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **table\_type** | Text | 1 |  | HL7\_36 | Number specifying the type of this table |
| description | Text | 80 |  | HL7\_36 | Textual description of this type |

### Table HL7TableValuePropertyTypes

This table specifies the properties for a specific table independent from the HL7 version.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **table\_id** | Zahl |  |  | HL7\_100 | Table number for which these properties are defined |
| **Table\_value\_property** | Text | 20 |  | HL7\_100 | Name of the property |
| description | Text | 255 |  | HL7\_100 | Textual description of this property |

### Table HL7CodesystemTypes

|  |  |
| --- | --- |
| Type | Description |
| 0 | undefined |
| 1 | classification |
| 2 | terminology |
| 3 | ontology |
| 9 | rule set |
| 99 | No codesystem |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **Codeystem\_type** | Integer | 1 |  | HL7\_100 | Type of the codesystem |
| description | Text | 80 |  | HL7\_100 | Description |
| Explanation | Text | 100 |  | HL7\_100 | explanation |

### Table HL7TableValueCategories

This table specifies the categories for a specific table value.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **categoryi\_id** | Zahl |  |  | HL7\_100 | category |
| description | Text | 30 |  | HL7\_100 | Textual description of this category |

The values are excluding each other:

|  |  |
| --- | --- |
| Type | Description |
| 0 | Not set |
| 1 | 1st level |
| 2 | 2nd level |
| 3 | 3rd level |
| 10 | “oher” |
| 11 | “unknown” |

### Table HL7TableCLDs

Content Logical Definitions describe how the expansion is done. Currently, all possibilities are listed in this talbe instead of finding a general representation form:

Type Description

0 undefined

1 all codes

2 enumerated per table content

3 HL7 V3 Value Set

4 ISO 3166-1 alpha-3 axis

5 See content logical definition of the referenced value set

6 "This value set includes codes from the following code systems:   
  
Include codes from http://snomed.info/sct where concept is-a 49062001 (Device)"

7 take text from separate field

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **table\_cld** | Integer | 1 |  | HL7\_94 | Number indicating the CLD |
| description | Text | 255 |  | HL7\_94 | Textual description of this CLD |

The provision in form of a table reduces maintenance efforts.

### Table HL7Governance

This table maintains goverance organisations that are in charge of the specification. In most cases this is “HL7 International”, but alos Affiliates are possible.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **governance** | Text | 3 |  | HL7\_100 |  |
| governance\_description | Text | 80 |  | HL7\_100 | Name of the governance organisation |

### Table HL7Realms

This table maintains the realm where this specification should be applied/used. This information helps to select specific standards.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **Realm** | Text | 2 |  | HL7\_100 |  |
| Realm\_description | Text | 80 |  | HL7\_100 | Textual description of this realm |

### Table HL7SegmentTypes

This table maintains type of segments, which are currently either technical or content oriented.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **segment\_type** | Byte |  |  | HL7\_100 |  |
| description | Text | 80 |  | HL7\_100 | Textual description of this type |

### Table HL7VocabTypes

This table maintains metadata to identify the contents of this table:

* Vocabulary domain w/ or w/o examples
* Value sets
* codesytems

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **vocab\_type** | Byte |  |  | HL7\_100 |  |
| description | Text | 80 |  | HL7\_100 | Textual description of this type |
| Explanation | Text | 100 |  | HL7\_100 |  |

## Tables with Main Information

The tables explained now can be used to start adding new information.

### Table HL7Events

Every event used within this database must be made known by the help of this table. Beside a short description no additional relevant information must be stored.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **event\_code** | Text | 3 |  | HL7\_36 | Code of this event |
| **version\_id** | Long |  |  | HL7\_52 | Version ID |
| description | Text | 80 |  | HL7\_36 | Description |
| interpretation | Text | 80 |  | HL7\_36 | Interpretation of the German HL7 User Group |
| Generate | Yes/No |  | No | HL7\_37 | Indicator whether this event should be documented into a WinWord file. |
| section | Text | 15 |  | HL7\_36 | Chapter where this event code is described |
| Anchor | Text | 50 |  | HL7\_36 | reference to the standard (HTML-Link) |
| Owl\_gen | Yes/No |  |  | HL7\_65 | Specifies whether the OWL generator should generate information for this event |
| Folder | Text | 50 |  | HL7\_66 | In which folder to store the schemas generated by Microsoft tool |

### Table HL7Segments

The same belongs to segments.

| Attribute | Type | Size | Default | Database | Description |
| --- | --- | --- | --- | --- | --- |
| **seg\_code** | Text | 3 |  | HL7\_36 | Segment |
| **version\_id** | Long |  |  | HL7\_52 | version ID |
| description | Text | 80 |  | HL7\_36 | Description |
| interpretation | Text | 80 |  | HL7\_36 | German Interpretation |
| function\_area | Text | 3 |  | HL7\_36 | functional area (can be deleted?) |
| Generate | Yes/No |  | No | HL7\_37 | Indicator whether this event should be documented into a WinWord file. |
| last\_field\_repeatable | Yes/No |  | No | HL7\_41 | is the last field of this segment repeatable? |
| visible | Yes/No |  | Yes | HL7\_41 | is this segment visible for editing?  Some segments are just entered for referential integrity, which can be made invisible. |
| section | Text | 15 |  | HL7\_36 | Chapter |
| anchor | Text | 50 |  | HL7\_36 | HTML-Reference to the Standard |
| steward | text | 10 |  | Hl7\_97 | Steward for this segment |

### Table HL7Tables

This table defines the tables which can be used within data elements. Therefore, it must be filled before the table with the information about data elements.

| Attribute | Type | Size | Default | Database | Description |
| --- | --- | --- | --- | --- | --- |
| **table\_id** | Long | 4 | 0 | HL7\_36 | ID of this table |
| **version\_id** | Long |  |  | HL7\_52 | version ID |
| Display\_name | Text | 50 |  | HL7\_77 | taken from original description, but modified to reflect a proper name for this table |
| Description\_as\_pub | Text | 80 |  | HL7\_36, HL7\_77 | title of this table; taken from the original documentation |
| table\_type | Text | 1 |  | HL7\_36 | number specifying the type of this table (user defined, HL7 defined, ..) |
| interpretation | Text | 50 |  | HL7\_36 | German Interpretation according to the German HL7 user group |
| Generate | Yes/No |  | No | HL7\_37 | Indicator whether this event should be documented into a WinWord file. |
| Oid\_table | Text | 50 |  | HL7\_62, HL7\_77 | identifying OID for this table  Note: this OID is the same across all versions and does not refer to the codesystem for the values! |
| section | Text | 15 |  | HL7\_36 | Chapter where this event code is described |
| anchor | Text | 40 |  | HL7\_55 | HTML-Reference to the Standard  (is used by MWB for deep integration with the HTML files) |
| Owl\_gen | Text |  |  | HL7\_67 | Should this table be used for the OWL generation? |
| Contains\_other | Yes/no |  |  | HL7\_68 | Does this table contain “other” as a value? |
| Contains\_unknown | Yes/no |  |  | HL7\_68 | Does this table contain “unknown” as a value? |
| Deleted\_values | Yes/no |  |  | HL7\_68 | Does this table miss values compared to previous version? |
| New\_values | Yes/no |  |  | HL7\_68 | does this table contain new values compared to the previous version? |
| Case\_insensitive | Yes/No |  |  | HL7\_84 | Defines whether the values are case insensitive or not. |
| Steward | Text | 100 |  | HL7\_71 | HL7 WG which is responsible for this table |
| v3\_harmonization | Text | 255 |  | HL7\_71 |  |
| v3\_equivalent | Text | 255 |  | HL7\_71 |  |
| where\_used | Text | 100 |  | HL7\_71 |  |
| Status | Text | 50 |  | HL7\_71 |  |
| ~~v2codetable~~ | ~~Text~~ | ~~15~~ |  | ~~HL7\_72~~ | ~~This attribute maintains some specific control information for the v2 code table project. Possible values: new cs, prev version, new version, domain only~~  Deleted with HL7\_100 |
| v2codetablecomment | Text | 50 |  | HL7\_72 |  |
| cs\_oid | Text | 30 |  | HL7\_68 | Generated OID for the codesystem; is controlled by the information from the v2 code table project |
| cs\_version | Text | 5 |  | HL7\_68 | Version for the generated OID for the codesystem; is controlled by the information from the v2 code table project |
| ~~cs\_symbolicName~~ | ~~Text~~ | ~~50~~ |  | ~~HL7\_77~~  HL7\_84 | ~~symbolic name of the OID~~  moved to HL7Objects |
| Vs\_oid | Text | 30 |  | HL7\_77 |  |
| ~~Vs\_symbolicName~~ | ~~Text~~ |  |  | ~~HL7\_77~~  HL7\_84 | ~~Symbolic name of the value set~~  Move to HL7Objects |
| Vs\_version | Texxt | 5 |  | HL7\_100 | Version of the value set |
| Audit\_track | Number |  |  | HL7\_77 |  |
| Modification\_date | Date/time |  |  | HL7\_77 |  |
| Width\_col1 | Integer |  |  | HL7\_77 |  |
| Width\_col2 | integer |  |  | HL7\_77 |  |
| Width\_col3 | integer |  |  | HL7\_77 |  |
| Width\_col4 | integer |  |  | HL7\_84 |  |
| Width\_col5 | integer |  |  | HL7\_100 |  |
| Binding | ~~Text~~  integer | ~~15~~ |  | ~~HL7\_77~~  HL7\_94 | Values:  0: unknown  1: example  2: representative  3: universal  4: US realm |
| ~~Object\_description~~ | ~~Memo~~ |  |  | ~~HL7\_77~~  HL7\_84 | ~~description of the table~~  moved to HL7Objects |
| Version\_description | Text | 255 |  | HL7\_77 | description of the version |
| Comment | Text | 255 |  | HL7\_84 | Comment |
| Version\_introduced | integer |  |  | HL7\_84 | Version identifier when the this table was introduced |
| Vs\_expansion | Integer |  |  | HL7\_84  HL7\_94 | Values from HL7TablesCLD |
| Vs\_expansion\_text | Memo |  |  | Hl7\_98 | Text for CLD |
| Vocab\_domain | Text | 30 |  | HL7\_84 | Name of the vocabulary domain |
| Vocab\_type | Zahl |  |  | HL7\_100 | This attribute maintains some specific control information for the v2 code table project.  Replaces v2codetable. |
| Codesystem\_type | Zahl |  |  | HL7\_100 | Type of codesystem |
| Hierarchic | Boolean |  |  | HL7\_100 | Is this codesystem hierarchic? |

### Table HL7DataElements

Every data element used is defined within this table. This table is also responsible for storing the information assigned to a data element. Therefore, it can be reused within different segments.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **data\_item** | Long | 4 | 0 | HL7\_36 | ID of the Data Element |
| **version\_id** | Long |  |  | HL7\_52 | Version ID |
| Description | Text | 78 |  | HL7\_36 | Field description according to the standard documentation |
| Interpretation | Text | 80 |  | HL7\_36 | German Interpretation according to the German HL7 user group |
| data\_structure | Text | 20 |  | HL7\_36 | Name of the Data Structure |
| Length\_old | Text | 10 | 0 | HL7\_66 | Length of the Data Element  This attribute should not be used any more as the next two fields replace it.  This change is required due to the XML generation.. |
| Min\_length | Long |  |  | HL7\_66 | Minimum length of data elements |
| Max\_length | Long |  |  | HL7\_66 | Maximum length of data elements |
| Conf\_length | Text | 10 |  | HL7\_66 | Conformance length of the data element |
| table\_id | Long | 4 | 0 | HL7\_36 | ID assigned table |
| Function\_area | Text | 3 |  | HL7\_36 | Functional Area (can be deleted) |
| Date | Time | 8 |  | HL7\_36 | Date of last change |
| Modification | Text | 1 | "O" | HL7\_36 | how is this data element used (Original, Added, Deleted) |
| section | Text | 15 |  | HL7\_36 | chapter |
| anchor | Text | 50 |  | HL7\_36 | HTML-Reference to the Standard |
| Owl\_gen | Yes/No |  |  | HL7\_65 | Generate into OWL file |

Two data elements are added which are not part of the standard:

99998: new number in next version assigned

99999: completely new within next version

Both data elements are used to compare the data elements with the one of the previous version. Here we need a record to reference this data element with an appropriate text in our comparison list.

### Table HL7MsgStructIDs

This table has been introduced to identify the different message structures. The only relevant additional information is a reference to an example.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **message\_structure** | Text | 7 |  | HL7\_36 | Message Structure ID |
| **version\_id** | Long |  |  | HL7\_52 | version ID |
| description | Text | 50 |  | HL7\_36 | Description of this message |
| example\_event | Text | 3 |  | HL7\_36 | Example of a message (event in EventMessagetypSegmente) |
| example\_msg\_type | Text | 3 |  | HL7\_36 | Example of a message (message type in EventMessagetypSegmente) |
| action | Text | 10 |  | HL7\_36 | Action to be executed |
| section | Text | 15 |  | HL7\_36 | Chapter where this event code is described |
| anchor | Text | 50 |  | HL7\_36 | reference to the standard (HTML-Link) |

Two special message structure identifier are introduced to indicate a special meaning: The “NUL” message structure identifier indicates that no message is sent at all. Whereas the “?” message structure identifier expresses that the corresponding message structure identifier is not identified yet. Therefore, it can be used as “unknown”. Within the generator no special handling is done so the according events can be identified very easily.

### Table HL7MessageTypes

The same belongs to message types.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **Message\_type** | Text | 3 |  | HL7\_36 | type code of this message |
| **version\_id** | Long |  |  | HL7\_52 | version ID |
| description | Text | 78 |  | HL7\_36 | Short textual description |
| section | Text | 15 |  | HL7\_39 | Chapter where this message type is used |
| anchor | Text | 50 |  | HL7\_60 |  |

### Table HL7Queries

This table contains the main information for each conformance statement. Other information is stored in associated tables.

| Attribute | Type | Size | Default | Database | Description |
| --- | --- | --- | --- | --- | --- |
| **query\_id** | Text | 5 |  | HL7\_40 | conformance statement identifier |
| **version\_id** | Long |  |  | HL7\_52 | version ID |
| description | Text | 255 |  | HL7\_40 |  |
| interpretation | Text | 255 |  | HL7\_55 |  |
| query\_type | text | 50 |  | HL7\_40 |  |
| query\_mode | Text | 255 |  | HL7\_40 |  |
| query\_msg\_type | Text | 3 |  | HL7\_40 |  |
| query\_trigger | Text | 3 |  | HL7\_40 |  |
| query\_msg\_struct | Text | 7 |  | HL7\_40 |  |
| query\_characteristics | Text | 255 |  | HL7\_40 |  |
| response\_msg\_type | Text | 3 |  | HL7\_40 |  |
| response\_trigger | Text | 3 |  | HL7\_40 |  |
| response\_msg\_struct | Text | 7 |  | HL7\_40 |  |
| response\_characteristics | Text | 255 |  | HL7\_40 |  |
| purpose | Text | 255 |  | HL7\_40 |  |
| segment\_pattern | Text | 255 |  | HL7\_40 |  |
| priority | Text | 50 |  | HL7\_55 |  |
| section | Text | 15 |  | HL7\_40 | Chapter where this query is specified |
| anchor | Text | 50 |  | HL7\_55 |  |

### Table HL7Chapters

This table contains the main information about the involved chapters.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **chapter** | Text | 10 |  | HL7\_55 | chapter identifier |
| **version\_id** | Long |  |  | HL7\_55 | version ID |
| description | Text | 100 |  | HL7\_55 | Title of the chapter |
| interpretation | Text | 100 |  | HL7\_55 | German Interpretation |
| section | Text | 15 |  | HL7\_55 | Section number |
| anchor | Text | 50 |  | HL7\_55 | Hyperlink |

### Table HL7Objects

This table contains all OIDs used within the database.

| Attribute | Type | Size | Default | Database | Description |
| --- | --- | --- | --- | --- | --- |
| **oid** | Text | 30 |  | HL7\_80 | Object identifier |
| SymbolicName | Text | 60 |  | HL7\_80 | Symbolic name |
| Object\_description | Memo |  |  | HL7\_80 | Full description |
| Version\_id\_introduced | Integer |  |  | HL7\_84 | in which version was this OID used first |
| Object\_type | Integer |  |  | HL7\_84 | 1: codesystem (#18),  2: valueset (#21);  3: domain;  4: table (#12) |
| webpage\_url | Text | 255 |  | HL7\_94 | HL7 Webpage with addt'l information |
| Comment | Text | 255 |  | HL7\_94 | Additional information |
| Utg\_url | Text | 255 |  | HL7\_97 | URL into UTG/THO |
| Utg\_name | Text | 255 |  | HL7\_97 |  |
| Utg\_title | Text | 255 |  | HL7\_97 |  |
| Utg\_full\_name | Text | 255 |  | HL7\_98 |  |

### Table HL7Files

This table holds all additional files.

| Attribute | Type | Size | Default | Database | Description |
| --- | --- | --- | --- | --- | --- |
| **Directory** | Text | 100 |  | HL7\_78 | (relative) Directory where this file should be placed |
| **Filename** | Text | 50 |  | HL7\_78 | Name of the file |
| Blob | Memo |  |  | HL7\_78 | base64 encoded content |
| Size | Integer |  |  | HL7\_78 | Size in bytes |
| Version\_id | Integer |  |  | HL7\_78 | To which version does this file belong |

## Tables with Information for Relations

A few tables are necessary to store information about relations. They are described below.

### Table HL7EventMessageTypes

There is no distinct rule defining the relationship between events and messages. Sometimes the event type describes the structure and the function of the message. In other cases like Master Files it defines the target file the data in the message have to be transmitted to.

On the one hand we have to specify more than one message for an event (like in M01), on the other we have to specify one message for the sender and one for the recipient as a response. The first aspect is the reason for the attribute „lfd\_nr“ and the second one for „message\_typ\_snd“ and „message\_typ\_return“. The second aspect also applies to the two attributes for the message structure.

|  |  |  |
| --- | --- | --- |
| Event | sent by sending application | sent by receiving application  (response) |
| A01 | ADT | ACK |
| ... |  |  |
| A19 | QRY | ACK |
| ... |  |  |
| Q01 | QRY | DST |
| ... |  |  |
| Q05 | UDM | ACK |
| ... |  |  |
| M01 | MFN  MFD  MFQ | MFK  ACK  MFR |
| ... |  |  |

#### Example

Event:

A01 ⇒ „Add the transmitted data into your database“ √

M01 ⇒ „Modify Master Table“ ?

including the second segment (MFI)

⇒ „Update or modify table xyz“ √

⇒ Z??-segment with data for table xyz √

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **event\_code** | Text | 3 |  | HL7\_36 | Code of this event |
| **version\_id** | Long |  |  | HL7\_52 | version ID |
| **seq\_no** | Integer | 2 | 1 | HL7\_36 | consecutive increasing number used for 1:n relation |
| message\_typ\_snd | Text | 3 | “NUL” | HL7\_36 | Standard Message Type (Sender) |
| message\_typ\_return | Text | 3 | “NUL” | HL7\_36 | Standard Message Type (Recipient) |
| message\_structure\_snd | Text | 7 | “NUL” | HL7\_36 | Message Structure (Sender) |
| message\_structure\_return | Text | 7 | “NUL” | HL7\_36 | Message Structure (Recipient) |
| section | Text | 15 |  | HL7\_36 | Chapter in which this message is described |

### Table HL7EventMessageTypeSegments

The concrete message for a special event itself is defined here.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **event\_code** | Text | 3 |  | HL7\_36 | Event-Code |
| **version\_id** | Long |  |  | HL7\_52 | version ID |
| **message\_type** | Text | 3 |  | HL7\_36 | Type of this Message |
| **seq\_no** | Integer | 2 | 1 | HL7\_36 | consecutive increasing number used for 1:n relation |
| seg\_code | Text | 3 |  | HL7\_36 | Segment-Code |
| groupname | Text | 10 |  | HL7\_36  HL7\_47 | string identifying the repetition of subsequent segments (logical embracement) |
| modification | Text | 1 | "O" | HL7\_36 | usage according to the standard |
| repetitional | Yes/No | 1 |  | HL7\_36 | Repetitional |
| optional | Yes/no | 1 |  | HL7\_36 | Optional |
| status | Text | 50 |  | HL7\_55 | Status as identified by the different TCs |

There have been some special segment codes defined in order to allow the correct description of a message. These segment codes are as follows:

| Special segment codes | purpose |
| --- | --- |
| „[„ | beginning set of optional segments |
| „]“ | ending set of optional segments |
| „{„ | beginning set of repeatable segments |
| „}“ | ending set of repeatable segments |
| „[{„ | beginning set of optional + repeating segments |
| „}]“ | ending set of optional + repeating segments |
| „<„ | Beginning of choice |
| „|„ | Next choice |
| „>“ | Ending of choice |
| „?“ | any other segment |
| “Zxx” | a Z-segment |
| "Hxx" | any HL7-defined segment |

These segment codes are also used for indentation.

**Restriction**: In order to reset the information for printing the first assigned number must be "1". It doesn´t matter when there are gaps but the first entry has to use number "1".

### Table HL7MsgStructIDSegments

This table is used to specify message structures, too. But in contrast to the previous table this defines a message for a special message structure identifier which can be used within different events. It allows to define one message which can be used more than once.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **message\_structure** | Text | 3 |  | HL7\_36 | Message Structure ID |
| **version\_id** | Long |  |  | HL7\_52 | version ID |
| **seq\_no** | Integer | 2 | 1 | HL7\_36 | consecutive increasing number used for 1:n relation |
| seg\_code | Text | 3 |  | HL7\_36 | Segment-Code |
| Groupname | Text | 10 |  | HL7\_36 | string identifying the repetition of subsequent segments (logical embracement) |
| modification | Text | 1 | "O" | HL7\_36 | usage according to the standard |
| repetitional | Yes/No | 1 |  | HL7\_36 | repetitional |
| optional | Yes/no | 1 |  | HL7\_36 | Optional |
| status | Text | 50 |  | HL7\_55 | Status as identified by the different TCs |

### Table HL7SegmentDataElements

Every segment uses a set of data elements. The ordering of the assignment is done by the help „lfd\_nr“.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **seg\_code** | Text | 3 |  | HL7\_36 | Name of the Segment |
| **version\_id** | Long |  |  | HL7\_52 | version ID |
| **seq\_no** | Integer | 2 |  | HL7\_36 | Position within the segment |
| data\_item | Long | 4 | 0 | HL7\_36 | Data Element ID |
| req\_opt | Text | 8 |  | HL7\_36 | required/ optional/backward compatibility |
| repetitional | Text | 1 |  | HL7\_36 | repetitional |
| repetitions | Integer | 2 |  | HL7\_36 | number of repetitions |
| section | Text | 15 |  | HL7\_36 | Chapter |
| anchor | Text | 50 |  | HL7\_36 | HTML-Reference to the Standard |

### Table HL7TableValues

For some of the tables the HL7 organization suggests values to be used. This table collects this kind of information.

| Attribute | Type | Size | Default | Database | Description |
| --- | --- | --- | --- | --- | --- |
| **table\_id** | Long | 4 | 0 | HL7\_36 | ID of this table |
| **version\_id** | Long | 4 |  | HL7\_52 | version ID |
| **table\_value** | Text | 12 |  | HL7\_36 | individual value for this special table |
| Display\_name | Text | 255 |  | HL7\_77 | taken from original description |
| Description\_as\_pub | Memo |  |  | HL7\_36, HL7\_77 | Description |
| Interpretation | Text | 100 |  | HL7\_36 | German Interpretation according to the German HL7 user group |
| table\_item | Text | 6 |  | HL7\_36 | this field contains the approach to number every value over all tables |
| sort\_no | Integer | 2 | 0 | HL7\_36 | number for sorting the values according to the official document |
| Modification | Text | 1 | "O" | HL7\_36 | how is this data element used (Original, Added manually, virtually Deleted) |
| Comment\_as\_pub | Memo |  |  | HL7\_55, HL7\_77 | Comments on different values |
| Comment | Text | 255 |  | HL7\_78 | Modified comment; taken from original publication, but deleted usage note |
| Usage\_note | Text | 255 |  | HL7\_77 | Usage note taken from original comment |
| section | Text | 15 |  | HL7\_36 | Chapter |
| Modification\_date | Date/time |  |  | HL7\_77 | Last modification of this entry |
| Active | Yes/no |  |  | HL7\_78 | Is this value active? |

The attribute table\_item is an approach to number all possible table values all over the different tables. This approach is only valid for version 2.1. Therefor I consider to drop this information within the near future.

### Table HL7TableValuesProperties

This table specifies the properties for a specific table independent from the HL7 version.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **table\_id** | Zahl |  |  | HL7\_100 | Table number for which these properties are defined |
| **Vession\_id** | Zahl |  |  | HL7\_100 | Version ID |
| **Table\_value** | Text | 30 |  | HL7\_100 | Code for which this property is defined |
| **Table\_value\_property** | Text | 20 |  | HL7\_100 | Name of the property |
| Value | Text | 30 |  | HL7\_100 | value of this property |

### Table HL7QueryRCP

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **query\_id** | Text | 5 |  | HL7\_39 | Event code of query |
| **version\_id** | Long | 4 |  | HL7\_52 | version ID |
| **seq\_no** | Integer |  |  | HL7\_39 | consecutive number |
| sequence\_no | Text | 10 |  | HL7\_39 |  |
| name | Text | 50 |  | HL7\_39 |  |
| component | Text | 50 |  | HL7\_39 |  |
| length | Text | 10 |  | HL7\_39 |  |
| data\_type | Text | 255 |  | HL7\_39 |  |
| description | Text | 255 |  | HL7\_39 |  |

### Table HL7QueryDisplay

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **query\_id** | Text | 5 |  | HL7\_39 | Event code of query |
| **version\_id** | Long | 4 |  | HL7\_52 | version ID |
| **seq\_no** | Integer |  |  | HL7\_39 |  |
| line | Text | 255 |  | HL7\_39 |  |

### Table HL7QueryInput

This table contains the main information for the input fields of a conformance statement. But the information for virtual tables is maintained here as well.

| Attribute | Type | Size | Default | Database | Description |
| --- | --- | --- | --- | --- | --- |
| **query\_id** | Text | 5 |  | HL7\_39 | conformance statement identifier |
| **version\_id** | Long | 4 |  | HL7\_52 | version ID |
| **query\_type** | Text | 8 |  | HL7\_39 | QPD/QBE/VIRTUAL |
| **seq\_no** | Integer |  |  | HL7\_39 | consecutive number |
| field | Text | 255 |  | HL7\_39 |  |
| key\_search | Text | 255 |  | HL7\_39 |  |
| sort | Text | 255 |  | HL7\_39 |  |
| length | Integer |  |  | HL7\_39 |  |
| data\_type | Text | 255 |  | HL7\_39 |  |
| opt | Text | 10 |  | HL7\_39 |  |
| rep | Text | 10 |  | HL7\_39 |  |
| match\_op | Text | 10 |  | HL7\_39 |  |
| table\_id | Integer |  |  | HL7\_39 |  |
| segment\_field\_name | Text | 255 |  | HL7\_39 |  |
| loinc | Text | 255 |  | HL7\_39 |  |
| element\_name | Text | 255 |  | HL7\_39 |  |

### Table HL7QueryInputParameter

This table contains the comments on input fields of a conformance statement.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **query\_id** | Text | 5 |  | HL7\_39 | Event code of query |
| **version\_id** | Long | 4 |  | HL7\_52 | version ID |
| **qry\_type** | Text | 8 |  | HL7\_39 |  |
| **seq\_no** | Integer |  |  | HL7\_39 | consecutive number |
| input\_field | Text | 30 |  | HL7\_39 |  |
| input\_comment | Text | 50 |  | HL7\_39 |  |
| data\_type | Text | 50 |  | HL7\_39 |  |
| description | Memo |  |  | HL7\_39 |  |

## Tables with Information from the standard documents

These two tables maintain the information from the original standard documents.

### Table HL7ChapterParagraphs

This table contains the main information about the involved chapters.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **chapter** | Text | 10 |  | HL7\_55 | chapter identifier |
| **version\_id** | Long |  |  | HL7\_55 | version ID |
| **section** | Text | 15 |  | HL7\_55 | Section number |
| **paragraph** | Long |  |  | HL7\_55 | see below |
| **sort** | Text | 10 |  | HL7\_55 | sort information |
| style | Text | 40 |  | HL7\_55 | style used for formatting |
| contents | Memo |  |  | HL7\_55 | real contents |
| Row | Integer |  |  | HL7\_94 | Row in a table |
| Col | Integer |  |  | HL7\_94 | Column in a table |

"Paragraph" is a counter within a specific section.

The attribute "sort" is presented as a text field in order to allow for later add ins, i.e. you can add a suffix to insert the information at the right place. This field is necessary because the section is also character field, which prevents from sorting ("1.10" comes before "1.2").

The style refers to the formatting style as used within the standard document.

In case a basic table like an attribute table, message table, table values or components is introduced, only a reference is listed to indicate the existence of this table.

In such a case the following information is stored:

| attribute paragraph | attribute contents | explanation |
| --- | --- | --- |
| segment | seg\_code | code of the segment, e.g. "PID" |
| table | table\_id | table number, e.g. "0001" |
| message | msg\_type^event\_code^msg\_struct\_id | message identification, e.g. "ADT^A01^ADT\_A01" |
| component | data type | date type code, e.g. "XPN" |

Using this information the original document can be recreated.

### Table HL7ChapterHeadings

This table contains the main information about the involved chapters.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **chapter** | Text | 10 |  | HL7\_55 | chapter identifier |
| **version\_id** | Long |  |  | HL7\_55 | version ID |
| **section** | Text | 15 |  | HL7\_55 | Section number |
| heading | Text | 255 |  | HL7\_55 | original heading |
| anchor | Text | 40 |  | HL7\_55 | HTML reference to standard document |
| sort | Text | 10 |  | HL7\_55 | sort information |

## Tables with Additional Information

The following tables contain information which is not stored directly within the standard. You can compute it out of the official documents by hand.

### Table HL7VersionComments

This table provides additional information to be generated into the HTML files. The lines are printed into the introductory page for the different versions. The version “head” provides the information for the “home page”. This special “version” is the reason why there is no relation to table “Versions”, i.e. referential integrity.

The lines are generated directly into the HTML files. Hence they contain HTML tags. The special string “$ANNOTATIONS” refer to the path where the annotations will be found.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **version\_id** | Long | 4 |  | HL7\_52 | version ID or “head” (=0) |
| **seq\_no** | Long | 4 |  | HL7\_39 | sequence number |
| line | Text | 120 |  | HL7\_39 | display line |

### Table HL7Comments

During the translation/adaptation process the German user group has detected that some elements require additional hints for using them. The attributes 3 to 8 define the corresponding element. Therefor they are optionally filled.

| Attribute | Type | Size | Default | Database | Description |
| --- | --- | --- | --- | --- | --- |
| **Nr** | Long | 4 |  | HL7\_36 | counter |
| version\_id | Long | 4 |  | HL7\_52 | version ID |
| event\_code | Text | 3 |  | HL7\_36 | Event Code |
| table\_id | Long | 4 | 0 | HL7\_36 | ID of this table |
| table\_value | Text | 10 |  | HL7\_36 | individual value for this special table |
| data\_structure | Text | 20 |  | HL7\_36 | logical data type |
| seg\_code | Text | 3 |  | HL7\_36 | Segment code |
| seq\_no2 | Integer | 2 | 0 | HL7\_36 | Position within the segment |
| data\_item | Long | 4 | 0 | HL7\_36 | Data element |
| comment | Memo |  |  | HL7\_36 | comment on the specified element |
| comment\_by | Text | 15 |  | HL7\_36 | who made this comment |
| date | Time | 8 |  | HL7\_36 | date of this comment |
| interpretation | Yes/No |  | true | HL7\_65 | does this entry refer to an interpretation? |

### Table HL7Components

Every data type consisting of more than one component needs some refinement. Therefor this table is used for the definition of individual components. A component identifier assures uniqueness. The rest of the information is used for the recursive definition of data types according to the standard.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **comp\_nr** | Long | 4 | 0 | HL7\_36 | Component Number (ID) |
| **version\_id** | Long | 4 |  | HL7\_52 | Version ID |
| description | Text | 50 |  | HL7\_36 | Description |
| interpretation | Text | 50 |  | HL7\_36 | German Interpretation according to the German HL7 user group |
| data\_item | Text | 5 |  | HL7\_36 | assigned data element (can be deleted) |
| table\_id | Long | 4 | 0 | HL7\_36 | reference to an assigned Table |
| modification | Text | 1 |  | HL7\_36 | how is this data element used (Original, Added, Deleted) |
| data\_type\_code | Text | 3 | "ST" | HL7\_36 | Data type |
| data\_structure | Text | 20 |  | HL7\_36 | reference to the data structure if this component contains components itself  (here we make a recursive loop) |
| last\_change | Time | 8 | Now() | HL7\_36 | Date of last change |
| section | Text | 15 |  | HL7\_36 | Chapter |

### Table HL7DataStructures

Every data element needs a data structure which is defined here. By the help of this new definition a table can be assigned to each component of a field.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **data\_structure** | Text | 20 |  | HL7\_36 | logical data type |
| **version\_id** | Long | 4 |  | HL7\_52 | version ID |
| Description | Text | 80 |  | HL7\_36 | description |
| interpretation | Text | 50 |  | HL7\_36 | German Interpretation according to the German HL7 user group |
| data\_type\_code | Text | 3 |  | HL7\_36 | reference to the data type according to the standard |
| Repeating | Yes / No | 1 |  | HL7\_36 |  |
| elementary | Yes / No | 1 |  | HL7\_36 | is this data structure elementary? |
| date | Time | 8 | Now() | HL7\_36 | date of last change |
| section | Text | 15 |  | HL7\_36 | Chapter where this data structures is described |
| anchor | Text | 50 |  | HL7\_36 | HTML-Reference to the Standard |
| Owl\_gen | Yes / no | 1 |  | HL7\_65 | Specifies whether the OWL generator should generate information for this event |
| Mixed\_content | Yes / No | 1 |  | HL7\_80 | does this data type allow for mixed content with escape sequences |

In principle this table is used to fully specify the details.

### Table HL7DataStructureComponents

This table is used to assign the components to the data structures.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **data\_structure** | Text | 20 |  | HL7\_36 | logical data type |
| **version\_id** | Long | 4 |  | HL7\_52 | version ID |
| **seq\_no** | Integer | 2 | 1 | HL7\_36 | consecutive increasing number used for 1:n relation |
| comp\_no | Long | 4 | 0 | HL7\_36 | identifying number of the cKomponent |
| table\_id | Long | 4 | 0 | HL7\_36 | Number of assigned table if different from component (overwrites table number of component) |
| modification | Text | 1 | "O" | HL7\_36 | how is this data element used (Original, Added, Deleted) |
| Length\_old | Text | 10 |  | HL7\_56 | length of this component |
| Min\_length | Long |  |  | HL7\_66 |  |
| Max\_length | Long |  |  | HL7\_66 |  |
| Conf\_length | Text | 10 |  | HL7\_66 | Conformance length |
| req\_opt | Text | 8 |  | HL7\_56 | optionality of this component |
| Comments | Text | 255 |  | HL7\_97 | Comments like "deprecated as of .." |

### Table HL7AckChoreography

The standard defines a set of responses to be used for response messages for a specific event.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **msg\_type** | Text | 15 |  | HL7\_96 | reference to the data type according to the standard |
| **Event** | Text | 15 |  | HL7\_96 | Event code |
| **Msg\_struct\_id** | Text | 10 |  | HL7\_96 | Message structure identifier |
| **version\_id** | Long | 4 |  | HL7\_96 | version ID |
| **Row** | Long |  |  | HL7\_96 | Sequence number |
| Msh15 | Text | 30 |  | HL7\_96 |  |
| Msh16 | Text | 30 |  | HL7\_96 |  |
| ImmediateAck | Text | 60 |  | HL7\_96 |  |
| ApplAck | Text | 60 |  | HL7\_96 |  |
| Section | Text | 15 |  | HL7\_96 |  |
| anchor | Text | 40 |  | HL7\_96 | HTML-Reference to the Standard |

### Table HL7DataTypes

The standard uses data types which are referred to by data structures. The reference from data elements to data types is indirectly done by data structures.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **data\_type\_code** | Text | 3 |  | HL7\_36 | reference to the data type according to the standard |
| **version\_id** | Long | 4 |  | HL7\_52 | version ID |
| description | Text | 80 |  | HL7\_36 | description |
| length | Integer | 2 |  | HL7\_36 | proposed length of this data type |
| anchor | Text | 50 |  | HL7\_36 | HTML-Reference to the Standard |
| Owl\_gen | Yes/no |  |  | HL7\_65 | Specifies whether the OWL generator should generate information for this event |

### Table HL7Mapping-Table DataElements

On account of the fact that data element identifiers are reused from version to version a mapping among consecutive versions become necessary. This is especially true for the version change from 2.1 to 2.2.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| version\_id | Long | 4 |  | HL7\_52 | version ID |
| data\_item | Long | 4 | 0 | HL7\_36 | ID of the Data Element |
| data\_item\_prev | Long | 4 | 0 | HL7\_36 | ID of the Data Element within the previous version |
| version\_id\_prev | Long | 4 |  | HL7\_52 | version number of the previous version |
| annotation | Text | 20 |  | HL7\_36 | comment on this mapping |

## Tables with Control Information

Relations beginning with „DB“ are used to maintain additional information about the database and changes to the database.

### Table DBChanges

The changes made on the database are recorded within this table. Therefor you can find the history of the development process right here.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **Datum** | Time | 8 |  | HL7\_36 | date of change |
| change | Memo | 0 |  | HL7\_36 | comment on this change |
| filename | Text | 50 |  | HL7\_36 | Name of Database |

### Table DBOpenPoints

On account of the fact that not everything can be done right now the points left for further work are stored here.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **Datum** | Time | 8 |  | HL7\_36 | date of this topic |
| **seq\_no** | Integer | 2 | 1 | HL7\_36 | subsequent number |
| version\_id | Text | 8 |  | HL7\_36 | version numer |
| open\_issue | Memo | 0 |  | HL7\_36 | description |

### Table DBOptions

This relation substitutes an INI-file for configuration. At the moment it only contains one record which specifies the target directory for the generator.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **seq\_no** | Long | 4 | 0 | HL7\_36 | Number of this option |
| Description | Text | 50 |  | HL7\_36 | description |
| value | Text | 100 |  | HL7\_36 | value of this option |
| datatype | Text | 50 |  | HL7\_37 | Describes the data type of the value. This is used for displaying what kind of information is requested for this option. |

### Table DBVersion

This table only contains one record. It is used to store information about the author like his e-mail address.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **Db\_name** | Text | 10 |  | HL7\_92 | Number/Name of this database |
| Author | Text | 50 |  | HL7\_36 | name of the author |
| E-Mail | Text | 50 |  | HL7\_36 | email address for annotations/questions/etc. |
| Last\_release | Date |  |  | HL7\_77 |  |

## Tables for external files

### Table HL7Files

This table contains external files which are stored as ASCII of Base64 encoded strings. These files are necessary for the HTML generation.

| Attribute | Type | Size | Default | Database | Description |
| --- | --- | --- | --- | --- | --- |
| Directory | Text | 100 |  | HL7\_72 |  |
| Filename | Text | 50 |  | HL7\_72 |  |
| Blob | Memo |  |  | HL7\_72 |  |
| Size | Long |  |  | HL7\_72 |  |
| Version\_id | Long |  |  | HL7\_72 |  |

## Tables with Temporary Information

Relations beginning with „Generated“ are used to store data temporarily.

### Table GeneratedDataDifferences

This table is only used when generating the HTML version. Therefore, it is deleted at the beginning of the generating process. During the process this table is filled with data. At the end it contains all differences among the different versions.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| version\_id | Long |  |  | HL7\_52 | version ID |
| version\_id\_pre | Long |  |  | HL7\_52 |  |
| type | Text | 4 |  | HL7\_63 | type of element (segm, dt) |
| element | Text | 20 |  | HL7\_63 | element which has been changed (segment, data structure) |
| lfd\_nr | Long |  |  | HL7\_52 |  |
| value\_old | Text | 80 |  | HL7\_52 |  |
| value\_new | Text | 80 |  | HL7\_52 |  |
| diff\_type | Text | 50 |  | HL7\_52 | What field is different |

### Table GeneratedDataIndex

This table is only used for generating the HTML version. Therefore, it is deleted at the beginning of the generating process (depending on the option). During the process this table is filled with data. At the end the contents is used to generate an index for the HTML files.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| version\_id | Long |  |  | HL7\_52 | version ID |
| language | Text | 3 |  | HL7\_36 | Language of this entry (deu, eng) |
| character | Text | 3 |  | HL7\_36 | Character for sorting (first alphabetic character within the text) |
| text | Text | 78 |  | HL7\_36 | textual description |
| value | Text | 60 |  | HL7\_61 | text to be displayed in the hyperlink entry |
| section | Text | 15 |  | HL7\_36 | Chapter where this event code is described |
| anchor | Text | 50 |  | HL7\_55 | HTML-Reference to the Standard |
| type | long | 4 |  | HL7\_61 | type of entry (number is oriented according to the HTML generation script) |

In contrast to the previous release (v3.0) of the database the necessary information is stored to generate the link directly. This feature is required in order to generate different links for the generated HTML files and the PHP scripting.

## Tables for Generating Documentation

### Table DbDocumentation

This table is used to store the SQL statement for generating arbitrary views into Word documents.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **doc\_id** | Long |  |  | HL7\_64 |  |
| Beschreibung | Text |  |  | HL7\_64 |  |
| sql\_statement | Text |  |  | HL7\_64 | SQL statement to be performed |
| group\_by | Text |  |  | HL7\_64 | which field defines the group, i.e. the beginning of the next group |
| Title | Text |  |  | HL7\_64 | which field defines the title |
| sql\_select1 | Text |  |  | HL7\_64 |  |
| sql\_select2 | Text |  |  | HL7\_64 |  |
| sql\_from1 | Text |  |  | HL7\_64 |  |
| sql\_from2 | Text |  |  | HL7\_64 |  |
| sql\_where1 | Text |  |  | HL7\_64 |  |
| sql\_where2 | Text |  |  | HL7\_64 |  |
| sql\_order\_by1 | Text |  |  | HL7\_64 |  |
| sql\_order\_by2 | Text |  |  | HL7\_64 |  |
| title\_level | Long |  |  | HL7\_64 |  |
| Border | Yes/No |  |  | HL7\_64 |  |

### Table DbDocumentationcolumns

This table contains the information for displaying and formatting the individual fields for the generated Word documents.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **doc\_id** | Long |  |  | HL7\_64 |  |
| **lfd\_nr** | Long |  |  | HL7\_64 | sequence number |
| header | Text |  |  | HL7\_64 | text for header |
| Field | Text |  |  | HL7\_64 | fieldname from SQL statement |
| background\_header | Text |  |  | HL7\_64 | RGB value for background colour |
| background\_field\_odd | Text |  |  | HL7\_64 | RGB value for background colour |
| background\_field\_even | Text |  |  | HL7\_64 | RGB value for background colour |
| style\_header | Text |  |  | HL7\_64 |  |
| style\_field | Text |  |  | HL7\_64 |  |
| Width | Long |  |  | HL7\_64 | width of this column |
| border | Yes/no |  |  | HL7\_64 |  |

## Tables for generating v2plus

These tables maintain the information which is used to generate v2plus.

### Table HL7v2plusControl

This table contains the main information about the involved chapters. This table mainly is intended to ensure referential integrity.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **Main\_type** | Long |  |  | HL7\_96 | Special section for generating the different parts of the standard:  1: home,  2: vocabulary  3: control  4: encoding  5: transport  6: data type  7: message structure  8: segment,  9 : domain  10: profiling  11: datatype flavors |
| description | Text | 30 |  | HL7\_96 | description |

### Table HL7v2plus

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Type | Size | Default | Database | Description |
| **Main\_type** | Long |  |  | HL7\_96 | Special section for generating the different parts of the standard |
| **subtype** | Long |  |  | HL7\_96 | 1: prefix,  2: main,  3: suffix |
| **Sort** | Text | 10 |  | HL7\_96 | used for grouping and sorting |
| **Seq\_no** | Long |  |  | HL7\_96 |  |
| version\_id | Long |  |  | HL7\_96 | version ID |
| vonSection | Text | 15 |  | HL7\_96 |  |
| bisSection | Text | 15 |  | HL7\_96 |  |
| vonSort | Text | 255 |  | HL7\_96 |  |
| bisSort | Text | 255 |  | HL7\_96 |  |
| Chapter | Text | 10 |  | HL7\_96 |  |
| Text | Text | 100 |  | HL7\_96 | For display |
| key | Text | 10 |  | HL7\_97 | Originally same as « sort ;  To be used as a key to query detailed information (depending on main\_type) |

Special Subtype values:

|  |  |
| --- | --- |
| **Subtype** | **Description** |
| Prefix | Used to generate the contents that should appear before the main list on the generated overview pages |
| Main | Main contents that is used to generate the subpages  If the key contains “xxx” then the text is just rendered, but not subcontents is added. |
| suffix | Same as prefix, but after the contents |

Special “key” values:

* Xxx: only print the text as-is, do not dig into details, just go to the next entry

For specific contents some special substructures are defined:

6 = Data structures/types:

1. Logical data structure (important)
2. Logical (technical)
3. Logical (other)
4. Supportive
5. Complex Data Types
6. Simple Data Types
7. Coding
8. Unused
9. deprecated

8 = Segments:

Segments are generated as a table with additional information:

* Code
* Description
* Original chapter
* Steward

### Table HL7v2plusv282

Same as HL7v12plus, but for v2.8.2.

# Queries

Queries are mainly used to reduce the amount of data for viewing. Queries beginning with „xInconsistency“ are used to find inconsistencies not covered by referential integrity.

| Query | Database | Purpose |
| --- | --- | --- |
| Comments sorted by Segment, LfdNr, Table | HL7\_36 |  |
| Comparison of Message Structures sorted | HL7\_36 | used the next query to display a sorted comparison of message structures. |
| Comparison of Message Structures for Version and Event | HL7\_36 | generates a cross table about message structures (to the right) for an event code and a version ‑ both can be entered using wildcards („\*“). |
| Comparison of Message Structures sorted | HL7\_36 |  |
| Components inconsistent with DataStructure-Component | HL7\_36 |  |
| CreateAppA DataElementNames | HL7\_37 | Query for Appendix A.6 |
| CreateAppA MsgType | HL7\_37 | Query for Appendix A.2 |
| CreateAppA Segments | HL7\_37 | Query for Appendix A.3 |
| CreateAppA Tables AlphabeticSort | HL7\_37 | Query for Appendix A.4 |
| CreateAppA Tables NumericSort | HL7\_37 | Query for Appendix A.5 |
| CreateDoc Events | HL7\_37 | Query for documenting events |
| CreateDoc Segments | HL7\_37 | Query for documenting segments |
| CreateDoc Tables | HL7\_37 | Query for documenting tables |
| DataElements not yet translated sorted by Segments for Version | HL7\_36 |  |
| DataElements sorted by Segment, LfdNr for Version | HL7\_36 |  |
| DataStructureComponents complete | HL7\_36 | joins the tables DataStructure, Components according with the definitions of DataStructureComponents. |
| DataType for Version | HL7\_36 |  |
| Events for Version | HL7\_36 | Creates a virtual table with all events for one version.  Parameter: The currently selected version within the main form. |
| FrmQryChapters for Version | HL7\_55 | Reduces alls chapters to the ones belonging to the selected version.  Relation: Chapters  Parameter: MainForm.version\_id |
| FrmQryComponents for Version | HL7\_39 | creates a list of all components for a special verison |
| FrmQryDataElements for Segment | HL7\_36 | Generates a joined table for one segment with all the information about data elements.  Relations: DataElements + SegmentDataElements  Parameter: MainForm.version\_id + FormSegments.seg\_code |
| FrmQryDataElements for Version | HL7\_36 | Extracts the data elements for one version.  Relation: DataElements |
| FrmQryDataElements with DataStructure for Version | HL7\_36 |  |
| FrmQryDataStructure for Version | HL7\_36 | Extracts the data structures for one version. |
| FrmQryDataStructureComponents for Version | HL7\_36 | joins the tables DataStructure, Components according with the definitions of DataStructureComponents for one version. |
| FrmQryEventMessages for Version | HL7\_36 | virtual table for all event codes with the specification of the sending resp. Receiving message for one version |
| FrmQryMsgStructIDs for Version | HL7\_36 | Creates a virtual table with all message structures for one version.  Parameter: The currently selected version within the main form. |
| FrmQrySegments for Version | HL7\_36 | Reduces alls segments to the ones belonging to the selected version.  Relation: Segments  Parameter: MainForm.version\_id |
| Mapping Data-Items among Versions | HL7\_36 | This query extracts the mapping of data elements among adjacent versions. |
| RepQryEventMessages for Version | HL7\_46 | List of all messages for a version |
| RepQrySegments (indented) | HL7\_36 |  |
| Segments for Events | HL7\_36 | Virtual table with segments (sender and recipient) for an event for one version. |
| Segments with DataElements | HL7\_36 | virtual table with the data items for a segment for one version. |
| Statistics | HL7\_42 | counts the different sets of information by version |
| Statistics\_Kreuztabelle | HL7\_42 | converts the statistics information into pivot form |
| TableValues for Version | HL7\_36 |  |
| TableValues sorted by Table-ID, Sot-No, for Version | HL7\_36 |  |
| Translate DataElement | HL7\_38 | Translates the data elements from one version to another |
| Translate TableValues | HL7\_38 | Translates table values from one version to another |
| TranslationCheck Events - Table 0003 for Version | HL7\_36 |  |
| XCheck Mapping | HL7\_37 | Displays a list of data elements without an entry within the mapping table to the next version |
| xCopy Components | HL7\_38 | Copies all components from one version to a new one |
| xCopy DataStructures | HL7\_38 | Copies all data structures from one version to a new one |
| Xinconsistency: EventMessagetypes without EventMessagetypSegments | HL7\_36 |  |
| Xinconsistency: EventMessagetypes without corresponding Events | HL7\_36 |  |
| Xinconsistency: EventMessagetypSegments without EventMessagetypes | HL7\_36 |  |
| Xinconsistency: Events without EventMessagetypes | HL7\_36 |  |
| Xinconsistency: Events without Values in Table 0003 | HL7\_36 | Lists all events out of the table events with no corresponding table value in table 0003. |
| Xinconsistency: Messagetypes without Values in Table 0076 | HL7\_36 |  |
| Xinconsistency: Table 0003 Values without Events | HL7\_36 |  |
| Xinconsistency: Table 0076 Values without Messagetypes | HL7\_36 |  |
| xReduce EvntMsgTypSegm xx | HL7\_42 | tries to reduce the amount of information to specify messages for events |
| xReduce MsgStructIdSegm xx | HL7\_42 | dto, but for message structures |
| XTransfer Events description | HL7\_39 | Transfers the event description from another version |
| XTransfer Events interpretation | HL7\_39 | Transfers the event interpretation from another version |
| XTransfer MessageTypes description | HL7\_39 | Transfers the message type description from another version |
| XTransfer Segments description | HL7\_39 | Transfers the segment description from another version |
| XTransfer Events interpretation | HL7\_39 | Transfers the segment interpretation from another version |

# Forms

| Form | Database | Purpose |
| --- | --- | --- |
| HL7Chapters | HL7\_55 | Administration of Chapters and related sections. |
| HL7ChapterParagraphs |  |  |
| HL7Components for Data Structure | HL7\_36 | Administration of Data Structures including the according components. |
| HL7QueryInput | HL7\_39 | Administration of Input fields for conformance statements |
| HL7QueryInputParameter | HL7\_39 | Administration of comments on input fields for conformance statements |
| HL7Data Elements | HL7\_36 | Administration of data elements. |
| HL7Data Type | HL7\_36 | Administration of data types. |
| HL7Events with Messages | HL7\_36 | Administration of all events with according properties |
| HL7FunctionCopyMessage2MsgStruct | HL7\_36 | A form which allows for copying one message description into the table with message structures. |
| HL7FunctionCopyMessages | HL7\_36 | A form which takes the event of MainForm (source event) and queries for the target event to copy all message information to. |
| HL7FunctionCopyMsgStructs | HL7\_36 |  |
| HL7FunctionGenerateHTML | HL7\_36 | A form with buttons to start the HTML generating process. All buttons has to be pressed in subsequent order (top down). |
| HL7GenerateAppendixA | HL7\_37 | A form with buttons to control the generation of a winword document equivalent to Appendix A. |
| HL7GenerateDocuments | HL7\_37 | A form with buttons to control the generation of a winword document which contains especially marked information out of events, segments and tables. |
| HL7MessageStructures | HL7\_36 | Administration of message structures |
| HL7RemoveVersion | HL7\_36 | Presents a list box naming all version contained within this database. |
| HL7Segments | HL7\_36 |  |
| HL7StartFunctions | HL7\_37 | Provides buttons to start the additional functionality. |
| HL7StartReports | HL7\_36 | Provides buttons to start one report. |
| HL7Tables | HL7\_36 |  |
| MainHL7 | HL7\_36 | This form is opened automatically with the database. You have to select an HL7 version first. According with this selection infor­mation about events and segments become available. A double click into one data line opens a secondary form to edit the data.  The buttons on the right side allow to open further forms with more functions:  HTML-Generator ⇨ Subform GenerateHTML  Edit Options ⇨ Table DBOptions  Copy Messages ⇨ CopyForm  Data Elements ⇨ Data Elements  Data Structures ⇨ Components for Data Structure  Message Structures ⇨ MessageStructures |
| Subform HL7 ChapterHeadings | HL7\_57 |  |
| Subform HL7 Chapters | HL7\_57 |  |
| Subform HL7 EventMessageTypeSegments | HL7\_46 | List of all events using a special segment |
| Subform HL7 MsgStructIDSegments | HL7\_46 | List of all message structures using a special segment |
| Subform HL7 Components for Data Structure | HL7\_36 | Subform of components for data structure with components for a special data structure |
| Subform HL7 Queries | HL7\_39 | Subform of queries for events |
| Subform HL7 DataElements | HL7\_36 | Subform of FormSegments with according data elements |
| Subform HL7 Events | HL7\_36 | Subform of MainForm with events. |
| Subform HL7 Messages for Events | HL7\_36 | Administration of message descriptions for an event |
| Subform HL7 MsgStructIDSegments1 | HL7\_36 | Subform of FormMessageStructures |
| Subform HL7 MsgStructIDSegments2 |  |  |
| Subform HL7 MsgStructs for Events | HL7\_36 | Administration of message descriptions for an message structure identifier assigned to one event |
| Subform HL7 Segments | HL7\_36 | Subform of MainForm with segments. |
| Subform HL7 TableComp for Table |  |  |
| Subform HL7 Tables | HL7\_37 |  |
| Subform HL7 TableValues for Table | HL7\_37 |  |

## Form Hierarchy

MainForm ( + SubformSegments + SubformEvents + SubformTables + SubformQueries + SubformChapters)

FormComponents for Data Structure ( + SubformComponents for DataStructure)

FormQueries

FormQueryInput

FormQueryInputParameter

FormQueryRCP

FormChapters

FormData Elements

FormData Type

FormEvents with Messages ( + SubformEvents with Messages ( + 2\*SubformMessages for Event

+ 2\*SubformMsgStructs for Event

+ SubformConfStatements))

FormFunctionCopyMessage2MsgStruct

FormFunctionCopyMessages

FormFunctionCopyMessage2MsgStruct

FormMessageStructures ( + SubformMsgStructIDSegments)

FormFunctionCopyMsgStructs

FormSegments ( + SubformDataElements + SubformEventMessageTypeSegments

+ SubformMsgStructIDSegments)

FromStartFunctions

FormStartReports

FormFunctionGenerateHTML

FormGenerateAppendixA

FormGenerateDocuments

FormTables

DBOptions

DBChanges

DBOpenPoints

Versions

# Reports

|  |  |  |
| --- | --- | --- |
| Report | Database | Purpose |
| DataElements with DataStructure for Version | HL7\_36 | List of data elements with the used data structure. |
| DataStructure for Version | HL7\_36 | Generates a detailed list of data structures for one version. |
| Event-Code (Details) | HL7\_36 | Generates a detailed list of all event codes for one version. |
| Event-Codes (Overview) | HL7\_36 | Generates a overview list of all event codes for one version. |
| Mapping Versions Data Elements | HL7\_36 | Generates a list with the mapping of data elements among consecutive versions. |
| SubReport Segments for Messagetypes | HL7\_36 | Sub-report which generates the list of all segments of a specific message type. |
| Statistics | HL7\_42 | List of all elements (events, segments, etc.) for all versions |

## Report Hierarchy

Event-Codes (Detail)

SubReport Segments for Messagetypes

# Macros

|  |  |  |
| --- | --- | --- |
| Macro | Database | Purpose |
| AutoExec | HL7\_36 | Opens the main form when opening the database. |
| Close | HL7\_36 | Contains all functions for closing forms. |
| HTML | HL7\_36 | Calls the functions for generating the HTML files. |
| Open | HL7\_36 | Contains all functions for opening forms. |
| RemoveVersion | HL7\_36 | Calls the function for removing all information for a specific version. |

# Modules

| Module | Database | Purpose |
| --- | --- | --- |
| HL7Copy | HL7\_36 | The only function „CopyMessage“ takes its arguments out of the main form (the currently selected event) and the copy form (the target event). It copies the message structures assigned to the source event to the target event.  Hence it reduces the typing effort because you can copy one message (sender + recipient message) first and alter it subsequently. |
| HL7Indent | HL7\_36 | The only function „PrintIndented“ indents the segment code with every opening bracket one step further. The first parameter describes the file pointer to which the output is written. The second parameter is used for determining whether the next message begins. The third parameter is the segment code to test for. The fourth parameter is the text to print.  This function also checks for equal use of opening and closing brackets. |
| HL7HTML | HL7\_36 | Generates the HTML extract out this database. It is described in chapter 10: generator. |
| HL7RemoveVersion | HL7\_36 | Removes all information for one version. |
| HL7CreateAppendixA | HL7\_37 | Creates Appendix A |
| HL7CreateAppendixC |  | Creates Appendix C, but as eBNF grammar |
| HL7CreateDocuments | HL7\_37 | Creates Documents for events, segments and tables |
| HL7manageFiles | HL7\_72 | Import and export files from disk/hard drive and store them either directly or base64 encoded |
| Base64 | HL7\_72 | Base64 en-/decoder |
| Base64\_2 | HL7\_72 | Base64 en-/decoder (alternative) |
| HL7owl |  | Generate an OWL file for selected version  (the appropriate elements must be marked first) |
| HL7xml | HL7\_72 | Generate an XML representation for selected version |
| HL7xml-schema | HL7\_59 | generate XML schema for selected version |
| HL7generateOIDs | HL7\_73 | Generate codesystem and value set OIDs for tables |

# HTML-Generator (a VBA Program within the DB)

The generator allows for generating HTML out of the database. This set of files builds up network so every view onto the database is covered.

## Functions

Functions named with the prefix „x“ are sub-programs used by the other routines.

|  |  |  |
| --- | --- | --- |
| Function | Database | Purpose |
| AddInhaltTextzeilen | HL7\_36 | Adds a few lines of text onto the homepage of the HTML files. |
| beenden | HL7\_36 | Closes the database pointer at the end of the generation process. |
| GenContents | HL7\_36 | Generates the starting page with reference to the individual HL7 versions. It also uses AddInhaltTextzeilen to add an introductory text. |
| GenDataelement | HL7\_36 | Generates a list of all data elements. |
| GenDatentypen | HL7\_36 | Generates a list of all data structure and types. |
| GenEvent | HL7\_36 | Generates a list of all events. Additionally the corresponding messages are printed, too. |
| GenIndex | HL7\_36 | Generates the index out of the intermediately stored items. |
| GenMessageStructure | HL7\_36 | Generates message structures. |
| GenQuery | HL7\_40 | generates the conformance statements |
| GenSegment | HL7\_36 | Generates segments. |
| GenTable | HL7\_36 | Generates tables and their individual values. |
| GenVergleich | HL7\_36 | Generates the comparison between data elements. |
| GetOption | HL7\_36 | Sub-routine to query options for the generation process.  At the moment there are only two options (path to target directory and path name separator) which is used by the „init“ procedure. |
| init | HL7\_36 | Initializes the generation process:  reset counter, query options, initialize structures. |
| xAddIndex | HL7\_36 | Adds the information passed as arguments to a temporary table. |
| xFindVersion | HL7\_36 | Find information about a special version out of the internal data structures. |
| xGenButton | HL7\_36 | Generates a button using the java applet fphover.class |
| xGenFilename | HL7\_36 | Computes the filename for a file. |
| xGenFooter | HL7\_36 | Generates the footer information for the HTML files. |
| xGenHeader | HL7\_36 | Generates the header information for every file including a copy­right statement. |
| xGenKommentar | HL7\_36 | Generates the comment. |
| xGenLink | HL7\_36 | Generates the text to print for a HTML link. Therefore, it makes use of „xGenFilename“. |
| xGenLongFilename | HL7\_36 | For the generation process I need the filename including the path to it so I can create the HTML file. This function merely prepends the target file name in front of the generated filename.  The target information is determined within the initializing of the data structures out of option 1 (compare relation DBOptions). |
| xGenMessage | HL7\_36 | Sub-routine to generate the message for one event or one message structure ID. The last parameter defines which query to use. |
| xPrintCell | HL7\_36 | Prints the text in form of a cell for a HTML table. |
| xPrintHeaderCell | HL7\_36 | The functions prints the text in form of a header cell for a HTML table. |
| xxGetTyp | HL7\_36 |  |

## Generation

To generate the HL7 HTML version you have to click on the buttons of the generator form beginning at the top left corner!

But before doing so you have to adapt the information in relation „DBOptions“ so the generator knows where to store the files.

## File name convention

<filename\_prefix>\<filename\_prefix><version>[<element>].html

|  |  |  |
| --- | --- | --- |
| Element | Values | Description |
| version: | 21  22  23  231  24  25  251  26  27  271  28 | a short form for the current version |
| element: | conf + <conf. statement>  datel + <data element>  event + <event code>  idx  idx\_<language>\_<character>  MsgStruct  segm + <segment code>  tab + <table id>  typ + <data type>  <next version> | conformance statement  data elements  event  index  index for one language and one character (the first one)  message structure  segment  table  data types  comparison of this version with the previous one  (<element> is left empty) |

The starting page is

Hl7.html

"filename\_prefix" is taken from the Versions table.

## HTML file network

The network itself can be expressed best by a graphic:



The necessary HTML files for the standard are provided separately. They cannot be generated out of the database. But there is an integration so that from most points the corresponding chapter can be opened directly.

# Access GUI

How to handle the database is described within the user manual.

Be aware of the fact, that the forms directly operate on the tables. Therefore, every change is stored without an additional warning!

Some further functions are implemented to help adding information (copying messages or generating the HTML version).

A table with all forms can be found in chapter 6.

## Basic Functionality

When working with forms you have to select one version from the top level combo box. Afterwards you can edit information directly or you can double click on one element of one of the left list boxes. Then a new form appears where you can edit the message structures (Events) or data elements used within segments (Segments).

The rest of the forms should be clear!

# Sequence for adding new information into the database

On account of referential integrity it is important to add new information using the correct sequence of steps. I will specify the sequence in form of a list of tables:

1. HL7Versions
2. HL7TableTypes
3. HL7Events
4. HL7Segments
5. HL7Datatypes
6. HL7Datastructures
7. HL7Tables
8. HL7DataElements
9. HL7MsgStructureIDs
10. HL7MessageTypes
11. HL7EventMessagetypes
12. HL7EventMessageTypeSegments
13. HL7MsgStructureIDSegments
14. HL7SegmentDataElements
15. HL7TableValues
16. HL7Components
17. HL7DatastructureComponents
18. HL7Mapping-Table Dataelements
19. HL7Queries
20. HL7QueryInput
21. HL7QueryInputParameter
22. HL7QueryDisplay
23. HL7QueryRCP

# Appendix A: Additional Keys and Relations to Other Tables

The upper part of each row specifies the superior table with the according attributes listed in the second column. The lower part names the related table with the linked attributes in the second column, too. The attributes are linked one by one.

The third column optionally specifies, whether updating the value within the superior table is possible or not and this change of values is cascaded to related tables.

## Table HL7Versions

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7Versions  HL7Comments | version\_id  version\_id | Updates will cascade. |
| HL7Versions  HL7DataTypes | version\_id  version\_id | Updates will cascade. |
| HL7Versions  HL7Events | version\_id  version\_id | Updates will cascade. |
| HL7Versions  HL7MsgStructureIDs | version\_id  version\_id | Updates will cascade. |
| HL7Versions  HL7MessageTypes | version\_id  version\_id | Updates will cascade. |
| HL7Versions  HL7Tables | version\_id  version\_id | Updates will cascade. |
| HL7Versions  HL7TableTypes | version\_id  version\_id | Updates will cascade. |
| HL7Versions  HL7DataElements | version\_id  version\_id | Updates will cascade. |
| HL7Version  HL7Chapters | version\_id  version\_id | Updates will cascade. |

## Table HL7Modifications

|  |  |  |
| --- | --- | --- |
| Functionality | Functionality | Functionality |
| HL7Modification  HL7Components | modification  modification | Updates will cascade. |
| HL7Modification  HL7DataStructureComponents | modification  modification |  |
| HL7Modification  HL7EventMessageTypeSegments | modification  modification | Updates will cascade. |
| HL7Modification  HL7MsgStructIDSegments | modification  modification | Updates will cascade. |
| HL7Modification  HL7TableValues | modification  modification | Updates will cascade. |
| HL7Modification  HL7DataElements | modification  modification |  |

## Table HL7Events

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7Events  HL7EventMessageTypes | event\_code, version\_id  event\_code, version\_id | Updates will cascade. |
| HL7Events  HL7EventMessageTypeSegments | event\_code, version\_id  event\_code, version\_id | Updates will cascade. |
| HL7Versions  HL7Events | version\_id  version\_id | Updates will cascade. |
| HL7Events  HL7Queries | event\_code, version\_id  event\_code, version\_id | Updates will cascade. |

## Table HL7EventMessagetypes

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7Events  HL7EventMessageTypes | event\_code, version\_id  event\_code, version\_id | Updates will cascade. |
| HL7MessageTypes  HL7EventMessageTypes | message\_type, version\_id  message\_type\_snd, version\_id | Updates will cascade. |
| HL7MessageTypes  HL7EventMessageTypes | message\_type, version\_id  message\_typ\_return, version\_id |  |
| HL7MessageStructures  HL7EventMessageTypes | message\_structure, version\_id  message\_structure\_snd, version\_id | Updates will cascade. |
| HL7MessageStructures  HL7EventMessageTypes | message\_structure, version\_id  message\_structure\_return, version\_id | Updates will cascade. |

## Table HL7EventMessageTypeSegments

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7Events  HL7EventMessageTypeSegments | event\_code, version\_id  event\_code, version\_id | Updates will cascade. |
| HL7Segments  HL7EventMessageTypeSegments | seg\_code, version\_id  seg\_code, version\_id | Updates will cascade. |
| HL7Modifications  HL7EventMessageTypeSegments | modification, version\_id  modification, version\_id | Updates will cascade. |

## Table HL7Segments

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7Segments  HL7EventMessageTypeSegments | seg\_code, version\_id  seg\_code, version\_id | Updates will cascade. |
| HL7Segments  HL7SegmentDataElements | seg\_code, version\_id  seg\_code, version\_id | Updates will cascade. |

## Table HL7SegmentDataElements

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7DataElements  HL7SegmentDataElements | data\_item, version\_id  data\_item, version\_id |  |
| HL7Segments  HL7SegmentDataElements | seg\_code, version\_id  seg\_code, version\_id | Updates will cascade. |

## Table HL7DataElements

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7DataElements  HL7SegmentDataElements | data\_item, version\_id  data\_item, version\_id |  |
| HL7DataStructures  HL7DataElements | data\_structure, version\_id  data\_structure, version\_id |  |
| HL7Tables  HL7DataElements | table\_id, version\_id  table\_id, version\_id |  |
| HL7Modifications  HL7DataElements | modification, version\_id  modification, version\_id |  |
| HL7Versions  HL7DataElements | version\_id  version\_id |  |

## Table HL7Tables

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7Tables  HL7Components | table\_id, version\_id  table\_id, version\_id |  |
| HL7Tables  HL7DataStructureComponents | table\_id, version\_id  table\_id, version\_id | Updates will cascade. |
| HL7Tables  HL7TableValues | table\_id, version\_id  table\_id, version\_id | Updates will cascade. |
| HL7TableTypes  HL7Tables | table\_type, version\_id  table\_type, version\_id | Updates will cascade. |
| HL7Versions  HL7Tables | version\_id  version\_id | Updates will cascade. |
| HL7Tables  HL7DataElements | table\_id, version\_id  table\_id, version\_id |  |
| HL7Tables  Hl7Objects | Oid\_table  oid | Updates will cascase |
| HL7Tables  Hl7Objects | Cs\_oid  oid | Updates will cascase |
| HL7Tables  Hl7Objects | Vs\_oid  oid | Updates will cascase |

## Table HL7TableTypes

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7TableTypes  HL7Tables | table\_type, version\_id  table\_type, version\_id | Updates will cascade. |

## Table HL7TableValueCategories

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7TableValueCategories  HL7TablesValues | Category\_id  category\_id | Updates will cascade. |

## Table HL7TableValuePropertyTypes

This relationship ensures that correct/allowed properties are entered for a code:

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7TableValuePropertyTypes  HL7TableValuesProperties | table\_id, table\_value\_property  table\_id, table\_value\_property | Updates will cascade. |

## Table HL7TableValuesProperties

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7TableValuesProperties  HL7TableValues | table\_id, version\_id, table\_value  table\_id, version\_id | Updates will cascade. |

## Table HL7CodesystemTypes

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7CodesystemTypes  HL7Tables | Codesystem\_type  codesystem\_type | Updates will cascade. |

## Table HL7TableCLDs

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7TableCLDs  HL7Tables | table\_cld  vs\_expansion | Updates will cascade. |

## Table HL7TableValues

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7Tables  HL7TableValues | table\_id, version\_id  table\_id, version\_id | Updates will cascade. |
| HL7Modifications  HL7TableValues | modification, version\_id  modification, version\_id | Updates will cascade. |

## Table HL7Governance

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7Governance  HL7Versions | Governance  governance | Updates will cascade. |

## Table HL7Realms

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7Realms  HL7Versions | Realm  Realm | Updates will cascade. |

## Table HL7SegmentTypes

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7SegmentTypes  HL7Tables | segment\_type  segment\_type | Updates will cascade. |

## Table HL7VocabTypes

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7VocabTypes  HL7Tables | vocab\_type  vocab\_type | Updates will cascade. |

## Table HL7MsgStructureIDs

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7Versions  HL7MsgStructureIDs | version\_id  version\_id | Updates will cascade. |
| HL7MsgStructureIDs  HL7EventMessageTypes | message\_structure, version\_id  message\_structure\_snd, version\_id | Updates will cascade. |
| HL7MsgStructureIDs  HL7EventMessageTypes | message\_structure, version\_id  message\_structure\_return, version\_id | Updates will cascade. |
| HL7MsgStructureIDs  HL7MsgStructureIDSegments | message\_structure, version\_id  message\_structure, version\_id | Updates will cascade. |

## Table HL7MsgStructureIDSegments

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7MsgStructureIDs  HL7MsgStructureIDSegments | message\_structure, version\_id  message\_structure, version\_id | Updates will cascade. |

## Table HL7MessageTypes

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7MessageTypes  HL7EventMessageTypes | message\_type, version\_id  message\_typ\_snd, version\_id | Updates will cascade. |
| HL7MessageTypes  HL7EventMessageTypes | message\_type, version\_id  message\_typ\_return, version\_id |  |
| HL7Versions  HL7MessageTypes | version\_id  version\_id | Updates will cascade. |

## Table HL7Comments

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7Versions  HL7Comments | version\_id  version\_id | Updates will cascade. |

## Table HL7Components

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7Components  HL7DataStructureComponents | comp\_no, version\_id  comp\_no, version\_id |  |
| HL7DataTypes  HL7Components | data\_type\_code, version\_id  data\_type\_code, version\_id | Updates will cascade. |
| HL7Tables  HL7Components | table\_id, version\_id  table\_id, version\_id |  |
| HL7Modifications  HL7Components | modification, version\_id  modification, version\_id | Updates will cascade. |

## Table HL7DatastructureComponents

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7Components  HL7DataStructureComponents | comp\_no, version\_id  comp\_no, version\_id |  |
| HL7DataStructures  HL7DataStructureComponents | data\_structure, version\_id  data\_structure, version\_id | Updates will cascade. |
| HL7Tables  HL7DataStructureComponents | table\_id, version\_id  table\_id, version\_id | Updates will cascade. |

## Table HL7Datastructures

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7DataStructures  HL7DataStructureComponents | data\_structure, version\_id  data\_structure, version\_id | Updates will cascade. |
| HL7DataStructures  HL7DataElements | data\_structure, version\_id  data\_structure, version\_id | Updates will cascade. |

## Table HL7Datatypes

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7DataTypes  HL7Components | data\_type\_code  data\_type\_code | Updates will cascade. |
| HL7DataStructures  HL7Components | data\_type\_code; version\_id  data\_type\_code; version\_id | Updates will cascade. |
| HL7Versions  HL7DataTypes | version\_id  version\_id | Updates will cascade. |

## Table HL7Queries

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7Queries  HL7QueryDisplay | event\_code, version\_id  event\_code, version\_id | Updates will cascade. |
| HL7Queries  HL7QueryInput | event\_code, version\_id  event\_code, version\_id | Updates will cascade. |
| HL7Queries  HL7QueryInputParameter | event\_code, version\_id  event\_code, version\_id | Updates will cascade. |
| HL7Queries  HL7QueryRCP | event\_code, version\_id  event\_code, version\_id | Updates will cascade. |

## Table HL7QueryInput

|  |  |  |
| --- | --- | --- |
| Links: | Attributes | Functionality |
| HL7QueryInput  HL7QueryInputParameter | event\_code, version\_id  event\_code, version\_id | Updates will cascade. |

## Table HL7Chapters

| Links: | Attributes | Functionality |
| --- | --- | --- |
| HL7Chapters  HL7ChapterParagraphs | chapter, version\_id  chapter, version\_id | Updates will cascade. |
| HL7Chapters  HL7ChapterHeadings | chapter, version\_id  chapter, version\_id | Updates will cascade. |

## Table HL7Mapping-Table Dataelements

no relations

## Table DBChanges

no relations

## Table DBOpenPoints

no relations

## Table DBOptions

no relations

## Table DBVersion

no relations

## Table GeneratedDataIndex

no relations

## Table GeneratedDataDifferences

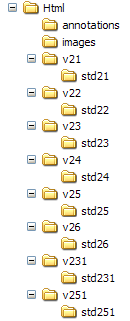
no relations

# Appendix B: Additional Files

Using MS Access allows for storing additional information within the database like the HTML generator. But it is not possible to store all information within this database. Therefor some files must be provided separately.

## Directory Structure

The generated files are placed into the following directory structure. The root directory is given by option "1".



## Files for HTML-Generation

In order to improve the layout a few buttons are shown:

AllVersions.gif

char\_<character>.gif

DataElements.jpg

Events.gif

DataElements.gif

DataStruct.gif

DataTypes.gif

MsgStructs.gif

MsgTypes.gif

Segments.gif

Tables.gif

ThisVersion.gif

char\_<character>.gif

v21.gif

v21v22.gif

v22.gif

v22v23.gif

v23.gif

v23v231.gif

v231.gif

v231v24.gif

v24.gif

v24v25.gif

v25.gif

v25v251.gif

v25v26.gif

v251.gif

v26.gif

v27.gif

v271.gif

v28.gif

At the top of each HTML file two images appear:

3dHL7\_deu.gif

3dHL7\_usa.jpg

lang\_deu.jpg

lang\_eng.jpg

splash\_db.jpg

splash\_full.jpg

Java class to replace some of the images:

fphover.class

fphovex.class

fprotate.class

fprotatex.class

I have tried to store these files within the database, too. You can do so but there is no easy way (except explicit programming) to extract the files to disc again.

## Files for the HTML version of the standard

| V 2.1 | V 2.2 | V 2.3 | V 2.3.1 | V 2.4 | V 2.5 | V 2.5.1 | V 2.6 | V 2.7 | V 2.7.1 | V 2.8 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Hl7.html | Hl7.html | Hl7.htm | Hl7.html | Hl7.htm | HL7.html | HL7.html | HL7.html | HL7.html | HL7.html | HL7.html |
| Kap1.html | Hl7chp1.html | ch1.htm | Ch1.html | ch01.htm | ch01.html | ch01.html | ch01.html | ch01.html | ch01.html | ch01.html |
| Kap2.html | Hl7chp2.html | ch2.htm | Ch2.html | ch02.htm | ch02.html  ch02\_01.gif  ch02\_02.gif  ch02\_03.gif  ch02\_04.gif  ch02\_05.gif  ch02\_06.gif | ch02.html  ch02\_01.gif  ch02\_02.gif  ch02\_03.gif  ch02\_04.gif  ch02\_05.gif  ch02\_06.gif | ch02.html  ch02\_01.gif  ch02\_02.gif | ch02.html  ch02\_01.gif  ch02\_02.gif | ch02.html  ch02\_01.gif  ch02\_02.gif | ch02.html  ch02\_01.gif  ch02\_02.gif |
|  |  |  |  |  | ch02A.html  ch02A\_01.gif | ch02A.html  ch02A\_01.gif | ch02A.html  ch02A\_01.gif | ch02A.html | ch02A.html  ch02A\_01.gif | ch02A.html  ch02A\_01.gif  ch02A\_02.gif |
|  |  |  |  |  |  |  | Ch02B.html  ch02B\_01.gif  ch02B\_02.gif  ch02B\_03.gif  ch02B\_04.gif | ch02B.html  ch02B\_01.gif  ch02B\_02.gif  ch02B\_03.gif  ch02B\_04.gif | ch02B.html  ch02B\_01.gif  ch02B\_02.gif  ch02B\_03.gif  ch02B\_04.gif | ch02B.html  ch02B\_01.gif  ch02B\_02.gif  ch02B\_03.gif  ch02B\_04.gif  ch02B\_05.gif  ch02B\_06.gif  ch02B\_07.gif |
|  |  |  |  |  |  |  |  | ch02c.html | ch02c.html | ch02c.html |
| Kap3.html | Hl7chp3.html | ch3.htm  ch301.gif  ch302.gif  ch303.gif  ch304.gif | Ch3.html  Ch301.gif  Ch302.gif  Ch303.gif  Ch304.gif | ch03.htm  ch0301.gif  ch0302.gif  ch0303.gif  ch0304.gif  ch0305.gif  ch0306.gif  ch0307.gif  ch0308.gif  ch0309.gif  ch0310.gif  ch0311.gif | ch03.html  ch03\_01.gif  ch03\_02.gif  ch03\_03.gif  ch03\_04.gif  ch03\_05.gif  ch03\_06.gif  ch03\_07.gif  ch03\_08.gif  ch03\_09.gif  ch03\_10.gif  ch03\_11.gif | ch03.html  ch03\_01.gif  ch03\_02.gif  ch03\_03.gif  ch03\_04.gif  ch03\_05.gif  ch03\_06.gif  ch03\_07.gif  ch03\_08.gif  ch03\_09.gif  ch03\_10.gif  ch03\_11.gif | ch03.html  ch03\_01.gif  ch03\_02.gif  ch03\_03.gif  ch03\_04.gif  ch03\_05.gif  ch03\_06.gif  ch03\_07.gif  ch03\_08.gif  ch03\_09.gif  ch03\_10.gif  ch03\_11.gif | ch03.html  ch03\_01.gif  ch03\_02.gif  ch03\_03.gif  ch03\_04.gif  ch03\_05.gif  ch03\_06.gif  ch03\_07.gif  ch03\_08.gif  ch03\_09.gif  ch03\_10.gif  ch03\_11.gif | ch03.html  ch03\_01.gif  ch03\_02.gif  ch03\_03.gif  ch03\_04.gif  ch03\_05.gif  ch03\_06.gif  ch03\_07.gif  ch03\_08.gif  ch03\_09.gif  ch03\_10.gif  ch03\_11.gif | ch03.html  ch03\_01.gif  ch03\_02.gif  ch03\_03.gif  ch03\_04.gif  ch03\_05.gif  ch03\_06.gif  ch03\_07.gif  ch03\_08.gif  ch03\_09.gif  ch03\_10.gif  ch03\_11.gif |
| Kap4.html | Hl7chp4.html | ch4.htm | Ch4.html | ch04.htm | ch04.html  ch04\_01.gif  ch04\_02.gif  ch04\_03.gif  ch04\_04.gif  ch04\_05.gif  ch04\_06.gif  ch04\_07.gif  ch04\_08.gif  ch04\_09.gif  ch04\_10.gif | ch04.html  ch04\_01.gif  ch04\_02.gif  ch04\_03.gif  ch04\_04.gif  ch04\_05.gif  ch04\_06.gif  ch04\_07.gif  ch04\_08.gif  ch04\_09.gif  ch04\_10.gif | ch04.html  ch04\_01.gif  ch04\_02.gif  ch04\_03.gif  ch04\_04.gif  ch04\_05.gif  ch04\_06.gif  ch04\_07.gif  ch04\_08.gif  ch04\_09.gif  ch04\_10.gif | ch04.html  ch04\_01.gif  ch04\_02.gif  ch04\_03.gif  ch04\_04.gif  ch04\_05.gif  ch04\_06.gif  ch04\_07.gif  ch04\_08.gif  ch04\_09.gif | ch04.html  ch04\_01.gif  ch04\_02.gif  ch04\_03.gif  ch04\_04.gif  ch04\_05.gif  ch04\_06.gif  ch04\_07.gif  ch04\_08.gif  ch04\_09.gif | ch04.html  ch04\_01.gif  ch04\_02.gif  ch04\_03.gif  ch04\_04.gif  ch04\_05.gif  ch04\_06.gif  ch04\_07.gif  ch04\_08.gif  ch04\_09.gif  ch04\_10.gif |
|  |  |  |  |  |  |  |  | ch04A.html  ch04A\_01.gif | ch04A.html  ch04A\_01.gif | ch04A.html  ch04A\_01.gif |
| Kap5.html | Hl7chp5.html | ch5.htm | Ch5.html | ch05.htm  ch0501.gif  ch0502.gif | ch05.html  ch0501.gif  ch0502.gif | ch05.html  ch0501.gif  ch0502.gif | ch05.html  ch0501.gif  ch0502.gif | ch05.html  ch0501.gif  ch0502.gif | ch05.html  ch0501.gif  ch0502.gif | ch05.html  ch0501.gif  ch0502.gif |
| Kap6.html | Hl7chp6.html | ch6.htm | Ch6.html | ch06.htm | ch06.html | ch06.html | ch06.html | ch06.html | ch06.html | ch06.html |
| Kap7.html | Hl7chp7.html | ch7.htm  ch701.gif | Ch7.html  Ch701.gif | ch07.htm  ch0701.gif | ch07.html  ch07\_01.gif | Ch07.html  ch07\_01.gif | ch07.html  ch07\_01.gif | ch07.html  ch07\_01.gif  ch07\_02.gif  ch07\_03.gif | ch07.html  ch07\_01.gif  ch07\_02.gif  ch07\_03.gif | ch07.html  ch07\_01.gif  ch07\_02.gif  ch07\_03.gif |
|  | Hl7chp8.html | ch8.htm | Ch8.html | ch08.htm | ch08.html | ch08.html | ch08.html  ch08\_01.gif | ch08.html  ch08\_01.gif | ch08.html  ch08\_01.gif | ch08.html  ch08\_01.gif |
|  |  | ch9.htm | Ch9.html | ch09.htm | ch09.html | ch09.html | ch09.html | ch09.html | ch09.html | ch09.html |
|  |  | ch10.htm  ch1001.gif | Ch10.html  Ch1001.gif | ch10.htm  ch1001.gif | ch10.html  ch10\_01.gif | ch10.html  ch10\_01.gif | Ch10.html  ch10\_01.gif | ch10.html  ch10\_01.gif | ch10.html  ch10\_01.gif | ch10.html  ch10\_01.gif |
|  |  | ch11.htm  ch1101.gif | Ch11.html  Ch1101.gif | ch11.htm  ch1101.gif | ch11.html  ch11\_01.gif | ch11.html  ch11\_01.gif | ch11.html  ch11\_01.gif | ch11.html  ch11\_01.gif | ch11.html  ch11\_01.gif | ch11.html  ch11\_01.gif |
|  |  | ch12.htm | Ch12.html | ch12.htm | ch12.html | ch12.html | Ch12.html | ch12.html | ch12.html | ch12.html |
|  |  |  |  | ch13.htm  ch1301.gif  ch1302.gif  ch1303.gif  ch1304.gif | ch13.html  ch13\_01.gif  ch13\_02.gif  ch13\_03.gif  ch13\_04.gif  ch13\_05.gif  ch13\_06.gif | ch13.html  ch13\_01.gif  ch13\_02.gif  ch13\_03.gif  ch13\_04.gif  ch13\_05.gif  ch13\_06.gif | ch13.html  ch13\_01.gif  ch13\_02.gif  ch13\_03.gif  ch13\_04.gif  ch13\_05.gif  ch13\_06.gif | ch13.html  ch13\_01.gif  ch13\_02.gif  ch13\_03.gif  ch13\_04.gif  ch13\_05.gif  ch13\_06.gif | ch13.html  ch13\_01.gif  ch13\_02.gif  ch13\_03.gif  ch13\_04.gif  ch13\_05.gif  ch13\_06.gif | ch13.html  ch13\_01.gif  ch13\_02.gif  ch13\_03.gif  ch13\_04.gif  ch13\_05.gif  ch13\_06.gif |
|  |  |  |  | ch14.htm | ch14.html | ch14.html | ch14.html | ch14.html | ch14.html | ch14.html |
|  |  |  |  | ch15.htm | ch15.html | ch15.html | ch15.html | ch15.html | ch15.html | ch15.html |
|  |  |  |  |  |  |  | ch16.html | ch16.html | ch16.html | ch16.html |
|  |  |  |  |  |  |  | ch17.html | ch17.html | ch17.html | ch17.html |
|  |  | appa.htm | AppendixA.html | AppendixA.htm |  |  |  |  |  |  |
|  |  | appa2.htm |  |  |  |  |  |  |  |  |
|  |  | appa3.htm |  |  |  |  |  |  |  |  |
|  |  | appa4.htm |  |  |  |  |  |  |  |  |
|  |  | appa5.htm |  |  |  |  |  |  |  |  |
|  |  | appa6.htm |  |  |  |  |  |  |  |  |
|  |  | appb.htm | AppendixB.html | AppendixB.htm |  |  |  |  |  |  |
|  |  | appc.htm | AppendixC.html | AppendixC.htm |  |  |  |  |  |  |
|  |  | appd.htm | AppendixD.html | AppendixD.htm |  |  |  |  |  |  |
|  |  | appe.htm | AppendixE.html |  |  |  |  |  |  |  |
|  |  | img00001.gif |  |  |  |  |  |  |  |  |
|  |  | img00002.gif |  |  |  |  |  |  |  |  |
|  |  | img00003.gif |  |  |  |  |  |  |  |  |
|  |  | img00004.gif |  |  |  |  |  |  |  |  |
|  |  | img00005.gif |  |  |  |  |  |  |  |  |

Starting with HL7\_73 these files are included in the database. The appropriate module allows for im- and exporting them from and to disk.