

Technical Report

Guide to HL7 V2 message parsing and management of character escaping with reference to backward compatibility



This Australian Technical Report was prepared by Committee IT-014, Health Informatics. It was approved on behalf of the Council of Standards Australia on 6 January 2012. This Technical Report was published on 17 February 2012.

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Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Technical Report through their representation on the Committee

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First published as TR 5416—2012.

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ISBN 978 1 74342 027 0

PREFACE

This Technical Report was prepared by the Standards Australia Committee IT-014, Health Informatics, Subcommittee IT-014-06, Messaging and Communication and Working Group IT-014-06-05, Diagnostic Messaging.

The objective of this Technical Report to describe HL7 V2 message parsing and management of character escaping with reference to backward compatibility.

Funding for this publication has been provided by the Commonwealth Department of Health and Ageing. The Commonwealth makes no representation or warranty that the information in this publication is correct and accurate.

Standards Australia wishes to thank the Department of Health and Ageing for their continued financial support in helping us develop this Technical Report.

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1 SCOPE

This Technical Report describes HL7 V2 message parsing and management of character escaping with reference to backward compatibility.

2 INTRODUCTION

HL7 V2 was created prior to the advent of XML and established its own encoding formats to allow complex hierarchical data structures to be encoded into text strings. It was a significant advance on the previously standard fixed length data formats and was designed to allow backward and forward compatibility. Unlike XML it does not add the field names to the message and prior out of band metadata is required to read the values in the message. This makes it less human readable than XML but results in very small messages which were originally designed to pass through 7 bit only transmission pathways. It is highly efficient but does require a careful parser implementation to take advantage of the format. These days XML parsers are common and widely available and jump start a developer's ability to read a XML message, however this comes at a cost of message size. HL7 V2 parsers are not difficult to write but a careful implementation is required and this Technical Report is designed to bring together the relevant information into one document to allow a high quality implementation of HL7 V2 parsers.

3 HL7 MESSAGE ENCODING

HL7 V2 messages are most commonly ASCII text files with strict ASCII encoding (8 bit strings). They should only have cursor return (ASCII 13) and characters between ASCII 32 and ASCII 127 in the file. White space (the space character) is important. In more recent times some users have used Unicode or UTF-8 encoding of HL7 V2 messages which avoids the need for escaping characters above ASCII 127 but requires special processing. These characters can be included in strict ASCII files by escaping the Unicode characters above the ASCII set, but in non-English speaking locales this can incur significant overhead as most characters need to be escaped. A Unicode HL7 V2 message should use a byte order mark (BOM) at the start of the file to indicate that it is Unicode and can in general only be used with prior agreement. In Australia, all standard HL7 Messages should use strict ASCII encoding as support of other encodings is very limited and would need to be handled by specific site agreements. For the purposes of this Technical Report, ASCII, encoded messages are assumed.

4 HL7 MESSAGE STRUCTURE

HL7 Messages are collections of ASCII characters (between ASCII 32 and ASCII 127) separated by cursor return (ASCII 13) characters. Each string is called a segment and each segment is further divided into fields (which can optionally repeat), components and sub-components. There is no ability to extend the hierarchy any deeper than this. However segments, while a flat list in the message, can form their own hierarchies using the message structures detailed in the relevant chapters. This allows a further level of nesting to represent hierarchies (e.g. in ORU Messages, OBX is a child of the preceding OBR Segment).

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