1. Introduction

1．绪论

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1.2 PURPOSE

1.2 目的

This document contains the specifications for Version 2.4 of the Health Level Seven (HL7) Standard for electronic data exchange in all healthcare environments, with special emphasis on inpatient acute care facilities (i.e., hospitals). It summarizes the work of a committee of healthcare providers (i.e., users), vendors and consultants established in March 1987 on the occasion of a conference hosted by Dr. Sam Schultz at the Hospital of the University of Pennsylvania. Its participants, who represent users as well as vendors, share a common goal of simplifying the implementation of interfaces between computer applications from different, and often competing, vendors. This

committee, which subsequently became known as the HL7 Working Group, endeavors to standardize the format and protocol for the exchange of certain key sets of data among healthcare computer application systems. Meetings are held approximately every four months in scattered locations throughout the United States. HL7 sanctioned national groups also exist in many other countries outside of the United States including Australia, Canada, China, Finland, Germany, India, Japan, Korea, New Zealand, Southern Africa, Switzerland, Taiwan, The Netherlands, and the United Kingdom.

本文件提供了 HL7 标准 2.4 版的技术规范，HL7 标准是在所有卫生服务领域中，特别是提供住院服务的医疗机构（即医院），电子数据交换的标准。本文总结了卫生服务提供者（即 HL7 使用者）、厂商和卫生服务咨询者组成的委员会的工作成果，该委员会成立于 1987 年 3 月由 Sam Schultz 博士主持的在宾西法尼亚大学医院召开的一次大会中。参加会议的 HL7 使用者代表和厂商代表有着共同目标：简化由不同的、通常彼此竞争的厂商所提供的计算机应用软件界面。这个委员会是 HL7 工作小组的前身，它致力于对卫生服务计算机应用软件系统中某些关键的数据交换格式与协议进行标准化。HL7 工作小组大约每 4 个月召开一次会议，会议地点遍布全美。其他国家也建立了经 HL7 认可的国家级的机构，这些国家包括澳大利亚、加拿大、中国、芬兰、德国、印度、日本、韩国、新西兰、南非、瑞士、台湾、荷兰和英国。

This document is being presented to interested parties. It is a status report that is periodically published to solicit the involvement of the broadest possible group of participants as this protocol is being put into use. Comments are solicited on all aspects of the Standard.

我们将本文件发送给对此感兴趣的人士。这是一个阶段性的报告，定期出版，目的是在 HL7 的实施过程中吸引更多的团体加入。希望能得到关于标准的各方面的意见。

This effort is expected to yield a balloted standard that is open to **all** who develop healthcare data processing systems. As the Standard has been put into production, experience has been gained and is reflected in this latest revision.

我们希望通过以上工作能够产生一个广泛认可的标准，这个标准对所有致力于开发卫生服务数据处理系统的人都是公开的。在标准的开发过程中，已经积累了一些经验，这些都体现在最新的版本中。

There have been two parallel efforts since the publication of Version 2.2. First, Version 2.3 represents an evolutionary change over Version 2.2 that was published in December 1994. Version 2.3 is the result of more than two years work, and thousands of hours of volunteer effort by active HL7 members since the publication of Version 2.2. Its primary goals include maintaining backward compatibility with Version 2.2, correcting errors discovered after the publication of 2.2, and extending the Standard within the format and context of Version 2.2.

自从 2.2 版发行以来，我们同时在两方面尽了努力。首先，标准 2.3 版代表了自 1994 年 12 月 2.2 版发行以来的发展变化。自 2.2 版发行以来，积极的 HL7 成员们付出了数千小时的工作，2.3 版是 2 年多时间的辛苦工作的结晶。它的主要目标包括：保持对 2.2 版的兼容性、纠正 2.2 版颁布以来发现的错误、在 2.2 版中的格式和环境中进一步扩展标准。

HL7 is operating under formal bylaws and balloting procedures. These procedures are modeled on the balloting procedures of other relevant healthcare industry computer messaging standards organizations (e.g., ASTM) and are designed to conform to the requirements of the American National Standards Institute (ANSI). HL7 is participating in ANSI's Healthcare Informatics Standards Board (HISB). In June 1994, HL7 became an ANSI Accredited Standards Developing Organization. Version 2.2 of HL7 was accepted by ANSI as an accredited standard in 1996 and HL7 Version 2.3 received ANSI approval in May of 1997. Version 2.3.1 received ANSI approval in April of 1999. Version 2.4 is being submitted to ANSI for similar consideration.

HL7 是在正式的规范和公认的程序下运作的。这些程序是根据其他相关的卫生服务计算机信息处理标准 (比如 ASTM)的公认程序，并按照美国国家标准局(ANSI)的要求来设计。HL7 参与了 ANSI 卫生服务信息委员

会。1994 年 6 月，HL7 成为经 ANSI 认证的标准开发组织。HL7 标准 2.2 版于 1996 年成为 ANSI 认证的标准，1997 年 5 月，2.3 版获得 ANSI 的认证。2.3.1 版于 1999 年 4 月获得 ANSI 认证。目前，标准 2.4 版正在提交给 ANSI 审核。

HL7, as an organization, has experienced significant growth over the last several years. Currently, HL7's membership consists of approximately 2000 members in all membership categories and regularly attracts 400-500 members and non- members to each of its three yearly meetings. As of 1998, HL7 had documented several hundred healthcare provider organizations that have implemented computer interfaces based on the HL7 Standard. It is possible for a healthcare provider institution to use HL7 without actually being an HL7 member through a member vendor or through outright purchase of the Standard without joining HL7.

作为一个组织，HL7 在过去的几年里取得了显著的发展。目前，HL7 拥有各种类别的成员约 2000 名，在三次年度会议中，每次都吸收了 400-500 个成员和非成员。至 1998 年，HL7 已经为数百个使用以 HL7 标准为基础的计算机界面的卫生服务提供者组织进行了书面认证。对于一个卫生服务机构而言，不一定非要成 为 HL7 成员后才可以使用 HL7 标准，它们可以通过 HL7 成员的厂商或者直接购买标准来获得 HL7 标准的使用权。

1.3 BACKGROUND

1.3 背景

The term "Level 7" refers to the highest level of the Open System Interconnection (OSI) model of the International Organization for Standardization (ISO). This is not to say that HL7 conforms to ISO defined elements of the OSI's seventh level. Also, HL7 does not specify a set of ISO approved specifications to occupy layers 1 to 6 under HL7's abstract message specifications. HL7 does, however, correspond to the conceptual definition of an application- to-application interface placed in the seventh layer of the OSI model.

"等级 7"一词是指国际标准化组织(ISO)的开放系统互连(OSI)模式的最高等级。这并不意味着 HL7 遵循 ISO 等级 7 所制定的基本原则。并且，HL7 还没有指定一套 ISO 批准的规范，对 HL7 的抽象信息规范之下的第 1 至 6 等级进行详细说明。但 HL7 确实符合 OSI 模式第 7 等级的用户界面的概念性定义。

In the OSI conceptual model, the functions of both communications software and hardware are separated into seven layers, or levels. The HL7 Standard is primarily focused on the issues that occur within the seventh, or application, level. These are the definitions of the data to be exchanged, the timing of the exchanges, and the communication of certain application-specific errors between the applications. However, of necessity, protocols that refer to the lower layers of the OSI model are sometimes mentioned to help implementors understand the context of the Standard. They are also sometimes specified to assist implementors in establishing working HL7-based systems.

在 OSI 的概念性模式中，通讯软件和硬件的功能可以分成 7 层次或等级。HL7 标准主要着眼于解决出现在第 7 应用等级上的问题。这些问题主要是交换数据的定义、交换的时间和在应用软件之间某种特定应用错误的信息传递等。如果有必要的话，有时也会提及有关 OSI 模式较低层的协议，用来帮助用户理解标准的来龙去脉。有时还通过这些协议来帮助用户建立以 HL7 标准为基础的工作系统。

The HL7 Working Group is composed of volunteers who give their time on a personal basis or under sponsorship of their employers. Membership in the HL7 Working Group has been, and continues to be, open to anyone wishing to contribute to the development and refinement of Level 7 Interface Standard for network technology in healthcare.

HL7 工作小组是由自己支配时间的或在雇主资助下的志愿者组成。HL7 工作组将继续吸收那些愿意致力于发展和改善卫生服务领域中等级 7 界面网络技术标准的人士成为其成员。

The Standard currently addresses the interfaces among various systems that send or receive patient admissions/registration, discharge or transfer (ADT) data, queries, resource and patient scheduling, orders, results, clinical observations, billing, master file update information, medical records, scheduling, patient referral, and patient care. **It does not try to assume a particular architecture with respect to the placement of data within applications but is designed to support a central patient care system as well as a more distributed environment where data resides in departmental systems. Instead, HL7 serves as a way for inherently disparate applications and data architectures operating in a heterogeneous system environment to communicate with each other.**

目前，标准针对不同系统之间的界面，包括传送或接收住院登记，出院或转院(ADT)数据、查询，资源和患者安排，医嘱， 检查结果，临床指征，帐单，主文件的更新信息，病历，计划表，患者转诊和患者保健等。**对于应用软件中数据的位置，标准并没有采用一种特定的体系结构，而是将它设计成一种患者保健中央系统，数据位于较分散环境的周边系统。HL7 适用于运行在不同的系统环境中不可兼容的软件和数据结构之间的通讯。**

If we consider the multitude of healthcare information systems applications as well as the variety of environments in which healthcare is delivered, it is evident that there are many more interfaces which could benefit from standardization. The interfaces chosen were considered to be of high priority by the members participating in the standards writing process. HL7's intent is to prepare a complete standard for these interfaces, built on a generic framework that is sufficiently robust to support many other interfaces. This Standard has been put into production and is being used as a basis for extending the existing interface definitions and also adding other definitions.

如果我们考虑到卫生服务信息系统应用软件的多样性和卫生服务提供环境的多变性，很明显标准化将使许多界面从中受益。参与标准编写过程的成员优先考虑的是界面的选择。HL7 的目的就是为这些界面提供一种完整的标准，构建一个通用的、强有力的框架支持其他的各种界面。这个标准已经产生，并且作为扩展现有界面定义的基础，并增加了其他定义。

It is expected that one result of publishing this specification will be the recruitment of more Working Group members with special interest in some newer and not yet fully specified areas. Some of the areas that have already been identified are:

希望这个技术规范发行之后，能够吸纳更多的工作组成员，他们对一些新的未完全明确的领域有着特别的兴趣。目前已经确定的部分领域主要有：

a) decision support

a) 决策支持

b) additional specific ancillary departments

b) 额外的特定的辅助部门

c) information needs associated with healthcare delivery systems outside of the acute care setting

c) 住院医疗服务环境之外的卫生服务提供系统的信息需要

The above notwithstanding, the Working Group members feel that the interfaces addressed here are sufficient to provide significant benefit to the healthcare community.

尽管如此，工作小组成员还是认为此处提及的界面足以为卫生服务部门提供重要的帮助。

This document is structured as follows. The balance of this chapter contains a rationale for developing the Standard, the goals of the Standard, and issues that have been considered by the Working Group pertaining to scope and

operational approach. It is hoped that this will help the readers understand the basis for decisions that have been made in developing the Standard. Subsequent chapters specify, respectively:

这个文件的结构如下所示。本章的着眼点是阐述建立标准的基本原理，标准的目的，以及工作组成员考虑的有关标准的使用范围和操作途径等问题。希望本章有助于读者了解完善标准过程中所作出的决策的依据。以后的章节分别详述以下内容：

a) overall structure for all interfaces including a generalized query interface

a) 包括一般询问界面在内的所有界面的总体结构

b) patient administration (admission, discharge, transfer and registration)

b) 病人管理(入院，出院，转院和登记注册)

c) order entry

c) 登录

d) patient accounting (billing) systems

d) 病人帐目(帐单)系统

e) clinical observation data, such as laboratory results, that are sent as identifiable data elements (rather than display oriented text)

e) 临床观察资料，比如实验室结果，作为可识别的资料成分(而不是显示指导内容)来传送

f) a generalized interface for synchronizing common reference files (master files)

f) 使普通参考文件(主文件) 同步的通用界面

g) medical information management

g) 医疗信息管理

h) patient and resource scheduling

h) 病人和资源安排

i) patient referral messages for referring a patient between two institutions

i) 两个医疗机构之间转诊的信息

j) patient care messages that support communication of problem-oriented records, and to provide functionality for the implementation of clinical pathways in computer information systems

j) 支持以问题为导向的病历的交流的医疗信息，为实现计算机信息系统的临床应用提供功能性。

1.4 NEED FOR A STANDARD

1.4 需要一种标准

The organization and delivery of healthcare services is an information- intensive effort. It is generally accepted that the efficacy of healthcare operations is greatly affected by the extent of automation of information management functions. Many believe that healthcare delivery agencies that have not automated their information systems are not able to compete effectively in the healthcare market of the 1990's.

卫生服务的组织和供给是一项信息密集型工作。一般认为信息管理功能的自动化程度极大地影响卫生服务运行的效率。许多人认为，未实现信息系统自动化的卫生服务提供机构将难以在二十世纪九十年代的卫生服务市场中有效地参与竞争。

In the past two decades, healthcare institutions, and hospitals in particular, have begun to automate aspects of their information management. Initially, such efforts have been geared towards reducing paper processing, improving cash flow, and improving management decision making. In later years a distinct focus on streamlining and improving clinical and ancillary services has evolved, including bedside (in hospitals and other inpatient environments) and "patient-side" systems (in ambulatory settings). Within the last few years, interest has developed in integrating all information related to the delivery of healthcare to a patient over his or her lifetime (i.e., an electronic medical record). It has also been envisioned that all or part of this electronic medical record should be able to be communicated electronically anywhere as needed.

在过去的 20 年中，卫生服务机构尤其是医院，都已经开始在信息管理的某些方面实现自动化。最初，主要是减少文件处理，改进现金周转和提高管理决策。在随后的几年中，显然已经关注了如何协调和改善临床和辅助服务，包括“病床旁”(医院和其他住院环境)和“病人旁”系统(急救或流动的医疗环境)。在最近几年中，已经关注如何统一储存病人一生中的所有有关卫生服务的信息 (即医疗电子记录)。展望未来，所有或者部分的医疗电子记录将能够在任何地方以电子方式进行传输交流。

It is not uncommon today for the average hospital to have installed computer systems for admission, discharge, and transfer; clinical laboratories; radiology; billing and accounts receivable, to cite a few. Often these applications have been developed by different vendors or in-house groups, with each product having highly specific information formats. As hospitals have gradually expanded information management operations, a concomitant need to share critical data among the systems has emerged. Comprehensive systems that aim at performing most, if not all, healthcare information management are in production by selected vendors. These systems may be designed in a centralized or a distributed architecture. Nevertheless, to the extent that such systems are truly complete, their use would mitigate the need for an external data interchange standard such as HL7.

目前，对于一般的医院而言，在入院，出院，转院；临床实验室；放射科；财务等部门都安装计算机系统还是比较常见的。这些应用软件常常是由不同的厂商们或者医院内的工作组研制的，每一种产品都有专门的信息格式。随着医院信息管理的逐渐扩展，在不同系统之间能够享用重要数据的需要也应运而生。某些厂商正在研制针对大多数（如果不是所有的）卫生服务信息管理的综合系统。这些系统也许会设计成集中的或分散式的结构。不过，这些系统有一定的完善性，它们的使用将缓解对外来数据交换标准比如 HL7 标准的需要。

There are, however, many pressures on an institution to develop or acquire individual departmental applications on a modular basis. One source of such pressure is the special departmental needs that may not be addressed well (or perhaps at all) by a comprehensive vendor (i.e., so called "best-of-breed"). Another is the need to evolve the overall systems environment of a hospital through a series of incremental, departmental decisions rather than in a single, revolutionary acquisition. These pressures could be met by an environment containing a comprehensive system supplemented by departmental systems, or one consisting entirely of separate and discrete systems.

然而，一个机构要在以模式的基础上产生或获得自己本部门的应用软件面临着许多困难。困难的来源之一是综合厂商(即所谓的“最好的”) 也许没有很好地(或者根本就没有) 关注特定部门的需要。发展一个医院要求的全面系统环境需要通过一系列的不断积累的经验和各部门意见，而不能一下子获得。当环境包含了由几个部门系统凑成的综合系统，或者由几个独立分散的系统构成一个系统时，这些困难就出现了。

Network technology has emerged as a viable and cost-effective approach to the integration of functionally and technically diverse computer applications in healthcare environments. However, these applications have developed due to market structure rather than through a logical systems approach; they are therefore often ad hoc and idiosyncratic. At the very least, they do not possess a common data architecture and their combined data storage

actually constitutes a highly distributed and severely de-normalized database. Extensive site- specific programming and program maintenance are often necessary for interfacing these applications in a network environment. This occurs at considerable expense to the user/purchaser and vendor while often keeping vendor staff from other initiatives such as new product development. The need for extensive site- specific interface work could be greatly reduced if a standard for network interfaces for healthcare environments were available and accepted by vendors and users alike.

在卫生服务领域中，在解决对不同功能和技术的计算机应用软件一体化问题中，网络技术是一个富有生命力，并且成本效益比较高的解决方法。然而，这些应用软件的研制是顺应市场结构，而不是通过一定的逻辑系统途径，因此它们都有各自的特色。至少，它们不具备一致的数据结构，事实上，其组合数据的存储形成了高度分散的、严重非规范化的数据库。在网络环境中，这些软件的应用就需要大量的特定地址的编程和程序维护工作。这将给软件使用者/购买者和厂商带来昂贵的费用，从而阻碍厂商的雇员从事其他创新性的工作，比如开发新产品。如果在卫生服务领域中存在一个标准的网络界面，能为厂商和软件使用者得到并且接受的话，不同地址之间的交互所要求的工作将大为减少。

Finally, the lack of data and process standards between both vendor systems and the many healthcare provider organizations present a significant barrier to application interfaces. In some cases, HL7 becomes an effective template to facilitate negotiations between vendors and users but cannot, by itself, serve as an “off-the-shelf” complete interface.

最后，在厂商和许多卫生服务提供组织之间缺少数据和程序标准成为应用软件之间交流的一个重要阻碍。在某些情况下，HL7 成为一种有效的模板，来达成厂商和 HL7 使用者之间的协议，但是它本身不能成为一种“流行”的完善的界面。

In summary, it is important that both vendors and users not be faced with the problem of supporting incompatible transaction/communications structures. Instead, a framework must be developed for minimizing incompatibility and maximizing the exchange of information between systems. It is proposed that HL7 can act as a superstructure in this environment to facilitate a common specification and specifications methodology. It is indeed both practical and economical to develop, and commit to, standard interfaces for computer applications in healthcare institutions.

总之，最重要的是让厂商和用户无须面临支持不相容的交易/通讯结构的问题。而研制的构架必须是系统之间不相容性的最小化和信息交换的最佳化。这种环境中，HL7 可能作为上层结构使统一的技术规范的发展和应用变得容易。应用于卫生服务机构中的计算机软件标准界面的开发需要有实用性和经济可行性。

1.5 GOALS OF THE STANDARD

1.5 标准的目标

The specifications of this Standard were developed in accordance with **a priori** specified goals. Future extensions of the Standard should also support these goals.

HL7 标准的技术规范是根据优先的特定目标而产生的。此标准未来的扩展也将支持这些目标。

HL7’s purpose is to facilitate communication in healthcare settings. The **primary goal** is to provide standards for the exchange of data among healthcare computer applications that eliminate or substantially reduce the custom interface programming and program maintenance that may otherwise be required. This primary goal can be delineated as a set of goals:

HL7 的目的是促进卫生服务领域的信息交流。其基本的目标是为卫生服务计算机应用软件之间的数据交换提供标准，消除或显著减少用户界面程序和所必需的程序维护。这些基本的目的可以叙述如下：

a) the Standard should support exchanges among systems implemented in the widest variety of technical environments. Its implementation should be practical in a wide variety of programming languages and operating systems. It should also support communications in a wide variety of communications environments, ranging from a full, OSI-compliant, 7-level network "stack" to less complete environments including primitive point-to-point RS-232C interconnections and transfer of data by batch media such as floppy disk and tape.

a) 标准应该支持在最广泛多样的技术环境中运行的系统之间的信息交换，并且在不同的编程语言和操作系统下中实用可行。标准还应该支持在多种通讯环境下的交流，这些通讯环境包括从完全符合 OSI 的第 7 等级网络的“栈”，到比较不完整的环境，包括最初的点对点的 RS-232C 互连和采用批量媒介如软盘和磁带来传递数据的环境。

b) immediate transfer of single transactions should be supported along with file transfers of multiple transactions.

b) 标准同时支持单一处理的即刻传递和多处理的文件传递。

c) the greatest possible degree of standardization should be achieved, consistent with site variations in the usage and format of certain data elements. The Standard should accommodate necessary site-specific variations. This will include, at least, site-specific tables, code definitions and possibly site-specific message segments (i.e., HL7 Z-segments).

c) 应该尽可能地达到标准化，并与某些数据成分的用法和格式在地址变化上保持一致。此标准应提供必要的特定地址的变化，至少包括特定地址表，编码定义和可能的特定地址信息段(即 HL7 Z-信息段)。

d) the Standard must support evolutionary growth as new requirements are recognized. This includes support of the process of introducing extensions and new releases into existing operational environments.

d) 标准必须支持随着新的要求不断被认识而出现的变革，包括支持现有版本扩充过程，以及新版本引入现有的操作环境的过程。

e) the Standard should be built upon the experience of existing production protocols and accepted industry-wide standard protocols. It should not, however, favor the proprietary interests of specific companies to the detriment of other users of the Standard. At the same time, HL7 seeks to preserve the unique attributes that an individual vendor can bring to the marketplace.

e) 标准应该建立在现有产品协议以及为全行业所接受的标准协议的使用经验之上。然而，它不应是迎合某些集团的私有利益而损害标准的其他使用者。同时，HL7 希望能够具有个体厂商就能够将其引入市场的独特的特征。

f) while it is both useful and pertinent to focus on information systems within hospitals, the long-term goal should be to define formats and protocols for computer applications in all healthcare environments.

f) 虽然将注意力集中在医院内的信息系统是有益的和切合实际，远期目标应该是定义所有卫生服务环境中的计算机应用软件的格式和协议。

g) the very nature of the diverse business processes that exist within the healthcare delivery system prevents the development of either a universal process or data model to support a definition of HL7's target environments. In addition, HL7 does not make a priori assumptions about the architecture of healthcare information systems nor does it attempt to resolve architectural differences between healthcare information systems. **For at least these reasons, HL7 cannot be a true "plug and play" interface standard.** These differences at HL7 sites will most likely require site negotiated agreements.

g) 卫生服务提供系统内部存在多种多样的交易过程，这一特点妨碍了用来支持 HL7 目标环境的定义的通用程序或数据模型的发展。另外，HL7 既没有对卫生服务信息系统的构架作出优先假定，也不打算消除不同卫生服务信息系统之间构架的差别。**至少基于上述的这些原因，HL7 不是一个真正意义上的"即插即用"界面标准。**在 HL7 地址上的这些差别将很可能需要针对地址的协议。

h) a primary interest of the HL7 Working Group has been to employ the Standard as soon as possible. Having achieved this, HL7 has also developed an infrastructure that supports a consensus balloting process and has been recognized by the American National Standards Institute (ANSI) as an Accredited Standards Organization (ASO).

h) HL7 工作小组最大兴趣在于尽快地使用这个标准。完成这个目标以后，HL7 还开发了一种基本结构，这一结构支持公认的程序，并且已经成为通过美国国家标准局(ANSI)认证的标准组织(ASO)。

i) cooperation with other related healthcare standards efforts (e.g., ACR/NEMA DICOM, ASC X12, ASTM, IEEE/MEDIX, NCPDP, etc.) has become a priority activity of HL7. HL7 has participated in the ANSI HISPP (Health Information Systems Planning Panel) process since its inception in 1992.

i) 与其他相关卫生服务标准(比如 ACR/NEMA DICOM，ASC X12，ASTM，IEEE/MEDIX，NCPDP 等)的共同合作已经成为 HL7 一项优先的活动。自 1992 年创始以来，HL7 已经参加了 ANSI HISPP(美国国家标准局卫生信息系统计划研究小组)所有的活动。

1.6 HISTORY OF HL7 DEVELOPMENT

1.6 HL7 的发展历史

The HL7 Working Group has met approximately every three to four months since March 1987 to develop and review this specification. The group is structured into committees to address each of the functional interfaces under development, with additional committees to address the overall control structure and various administrative aspects of the group. These committees have the responsibility to author and maintain the chapters in the HL7 Interface Standard. In addition, from time to time various special interest groups are formed within HL7 to develop ideas and sponsor particular perspectives that are not covered by any single existing committee. If a special interest group's activities warrant and a new chapter is considered necessary, they may petition the HL7 Technical Committee Chair and the Executive Committee to form a Technical Committee.

自 1987 年 3 月以来，HL7 工作小组大约每 3 个或 4 个月会面一次来修订和讨论这份技术规范。这个工作小组被分成几个委员会，各自负责每一功能性界面的完善，另有其他委员会负责整体控制结构和各方面的管理工作。这些委员会负责对 HL7 界面标准各个章节的书写和维护。此外，HL7 内部也经常成立许多专门兴趣小组，来提出目前任何委员会所没有的想法和独特的观点。如果一个专门兴趣小组的工作获得认可，认为有必要增加一章新的内容，他们可以向 HL7 技术委员会主席和执行委员会请求成立一个技术委员会。

In the initial three meetings, a Version 1.0 draft Standard was prepared covering the overall structure of the interfaces, ADT, order entry, and display- oriented queries. Although the patient accounting system was recognized as very important, the time frame did not allow it to be addressed in the first draft. This draft was presented to a Plenary meeting of the overall group in Tyson's Corner, V.A., on October 8, 1987.

在最初的三次会议中，标准 1.0 版(草案)包括了界面、ADT、命令登录和显示询问的所有结构。尽管病人帐户系统被认为是非常重要的，但是在最早的草案中，并没有被列入日程的计划之中。1987 年 10 月 8 日，在 VA 洲 Tyson's Corner 召开的一次全体会议上介绍了该标准的草案。

Version 2.0 was prepared subsequent to Plenary I in Tyson's Corner and presented at Plenary II in Tucson in September 1988. Since Plenary II, editing and revisions for Version 2.1, 2.2, 2.3, 2.3.1, and 2.4 have been ongoing and the Working Group has grown to nearly 400 individuals, far exceeding its original size of 12 and the following has been accomplished:

在 Tyson's Corner 召开的第一次全全体会议之后，工作组着手准备标准 2.0 版，并在 1988 年 9 月在 Tucson 召开的第二次全体会议上作了介绍。自第二次全体会议之后，先后编写和修正了标准 2.1，2.2，2.3，2.3.1 版，标准 2.4 版已经在编写之中，工作小组也已经从最初的 12 个人扩大到将近 400 个人，并完成了如下工作：

a) specifications for the various functional areas have been refined and expanded.

a) 改进并扩展了不同功能区域的技术规范。

b) formal liaison was developed with several other standards efforts: the ANSI HISPP (Healthcare Information Standards Planning Panel) for the coordination of healthcare standards efforts that has since been replaced by the ANSI HISB (Healthcare Information Standards Board), the ASC X12N group for external EDI Standards, the ASTM E31.11 group for Clinical Data Exchange Standards, the ACR/NEMA DICOM group for standards relating to imaging and other aspects of Radiology Information Systems, and the IEEE P1157 group for medical data interchange (MEDIX).

b) 和其他几个标准的工作组建立了正式的关系：致力于协调卫生服务标准工作的“卫生服务标准计划小组”（ANSI HISPP）（现为“卫生服务信息标准委员会”（ ANSI HISB）），致力于外部 EDI 标准的 ASC X12N 小组，致力于临床资料交换的标准的 ASTM E31.11 小组，致力于有关影像和其他放射学信息系统的标准的 ACR/NEMA DICOM 小组，以及致力于医疗资料的互换(MEDIX)的 IEEE P1157 小组。

c) the generic control structure was modified, on the basis of comments, to be adaptable to a wider variety of communications environments and to facilitate cooperation with other standards groups.

c) 根据评论的意见来修改一般的控制结构，以适应更加广泛多样的通讯交流环境，并促进与其他标准小组的合作。

d) a chapter on the interface to a patient accounting system has been added.

d) 增加了关于病人帐户系统界面的章节。

e) a chapter on the reporting of ancillary results, clinical trials, product experience and waveform data has been prepared, harmonized with the ASTM 1238- 91 Standard and with the direct, active participation of members of the ASTM E31.11 committee.

e) 准备编写有关辅助检查，临床试验，产品经验，以及波形图资料的章节，通过与直接、积极地参与的 ASTM E31.11 委员会成员通力合作，该章内容将符合 ASTM 1238- 91 标准，。

f) a chapter with a set of transactions to support the synchronization of master files between related information systems has been added.

f) 增加了关于支持相关信息系统之间主文件同步性处理程序的章节。

g) a chapter on the interface to applications that support medical record functions including transcription management, chart location and tracking, deficiency analysis, consents and release of information.

g) 增加了支持医疗记录功能包括记录管理，图象定位和追踪，缺陷分析，信息索取等功能的应用软件界面的章节。

h) a chapter on messages to support the communication of various events related to the scheduling of appointments for services or for the use of resources has been added.

h) 增加了支持安排医疗服务或医疗资源利用的预约等活动的信息交流的章节。

i) a chapter defining the message set used in patient referral communications between mutually exclusive healthcare entities has been added.

I) 增加了关于在相互独立的卫生服务实体之间病人转诊时需要交流的信息群定义的章节。

j) a computerized data dictionary of all data elements and other message components has been created. Appendix A contains cross references and other information generated from this electronic data dictionary.

j) 编写了关于所有数据成分和其他信息要素的计算机数据字典。附录 A 包含了从这个电子数据字典摘录下来的交叉参考条目，以及其他信息。

k) inconsistencies and mistakes which were discovered in the previous Versions 2.0, 2.1, 2.2 and 2.3 of the Standard have been addressed and documented in Version 2.3.1.

k) 在标准 2.3.1 版中已经陈述和列出过去标准 2.0、2.1、2.2、2.3 版中发现的前后矛盾和错误的内容。

l) extensive additions have occurred in the Order/Entry and Clinical Observations chapters to include data element oriented results, pharmacy orders and administrations interface.

l) 在开单/登录和临床观察章节增加了大量的内容，包括了数据成分导向的结果，药品定购和管理界面。

m) message acknowledgments have been extended to include a separate enhanced mode that defines the "accept acknowledgment." While this mode of acknowledgment has always been allowed, it is now obvious how HL7 supports any environment when intermediaries exist in the network with implicit time delays (such as store and forward services, "Interface Engines" that perform fan out services, etc.). Immediate acknowledgments are available to release the sending system from the need to resend the message.

m) 扩展了信息的认可，包括了定义"接受认可"的独立的增强模式。尽管这种认可模式一直被承认，但是显然，当网络中存在媒介时，HL7 支持环境 (比如储存和运送服务，执行服务分散的"接口编译程序"等) 存在固有的时间滞后。可以采用即刻的认可来免除发送系统重新发送信息的必要。

n) distinctions have been documented between the HL7 abstract message definition which is purely a level 7 (application level) definition vs. the HL7 encoding rules for converting an abstract message into a string of characters that comprises an actual message. These encoding rules are actually a suggested potential alternative where a fully defined level 6 (presentation level) definition does not exist (e.g., ISO's ASN.1 Basic Encoding Rules (BER)).

n) 说明了纯粹的第 7 等级(应用等级)的 HL7 抽象信息定义和将抽象的信息转化成具有实际信息意义的字符串的 HL7 编码规则之间的差别。这些编码规则实际上是一种潜在的选择，在这个规则中不存在详细的第 6 等级(描述等级)定义(比如，ISO 的 ANS.1 基本编码规则，BER)。

1.7 OVERVIEW

1.7 总览

This section contains a description of the conceptual basis of the HL7 Standard, the approach to accommodating intra- site variations and evolutionary changes, and the way it has been structured in order to accommodate varying current and future communications environments.

本节描述了 HL7 标准概念性的基本知识，适应内址变更和发展变化的途径，以及为了适应不断变化的现有的和将来的通讯环境所构成的方式。

1.7.1 HL7 encoding rules

1.7.1 HL7 编码规则

Message formats prescribed in the HL7 encoding rules consist of data fields that are of variable length and separated by a field separator character. Rules describe how the various data types are encoded within a field and when an individual field may be repeated. The data fields are combined into logical groupings called segments. Segments are separated by segment separator characters. Each segment begins with a three- character literal value that identifies it within a message. Segments may be defined as required or optional and may be permitted to repeat. Individual data fields are found in the message by their position within their associated segments.

HL7 编码规则中规定的信息格式由不同长度，并用字段分隔符分开的数据字段组成。规则描述了如何对字段的数据类型进行编码，以及当个别字段需要重复时如何编码。信息段是指组成逻辑群的数据字段。信息段由信息段分隔符分隔。每一个信息段由 3 个字母打头，这 3 个字母用于识别该信息段。信息段可以被定义为必需的或可选择的，还允许重复。信息中的数据字段可以通过它们在相关的信息段中的位置来识别。

All data is represented as displayable characters from a selected character set. The ASCII displayable character set (hexadecimal values between 20 and 7E, inclusive) is the default character set unless modified in the MSH header segment. The field separator is required to be chosen from the ASCII displayable character set. All the other special separators and other special characters are also displayable characters, except that the segment separator is the ASCII Carriage Return character.

所有的数据都是采用已规定的字符集中的可显示字符来表示。除非在 MSH 开始部分信息段被修改，否则 ASCII 可显示字符集(包含 20 和 7E 之间的 16 进制数值)是缺省字符集。字符段的分隔值也

必须从 ASCII 可显示的字符集中进行选择。除了信息段分隔符是 ASCII 回车符，其他分隔符和字符都是可显示字符。

(1) There is nothing intrinsic to HL7 Version 2.4 or ASTM 1238 that restricts the legal data set to the printable ASCII characters. The former restriction was imposed to accommodate the limitations of many existing communication systems. Some existing systems would misinterpret some eight-bit characters as flow control characters instead of data. Others would strip off the eighth bit.

(1) HL7 标准 2.4 版或者 ASTM 1238 本质上没有限制逻辑数据集必须是可打印的 ASCII 字符。以前的限制是为了适应许多现有的通讯系统的局限性而被迫设置的。有些现有的系统会将一些 8 比特字符误认为是流控制字符而不是数据。其他系统则可能去除掉 8 比特字符。

(2) The European community (EC) has a need for printable characters (for example, the German oe, the French accent grave) that are not within the above-defined restricted data set. The personal computer market accommodates these alphabetic characters by assigning them to codes between 128 and 256, but it does this in many different ways. ISO 8859 is a 256-character set that does include all of the needed European letters and is a candidate for the European standards group. Where the Europeans define an eight-bit character set specification, HL7 will accept this data set in environments that require it, and can use it without complications.

(2) 欧共体(EC)需要一些上面规定的数据集之外的可打印的字符(比如德语的 oe，法语的重抑音)。微机市场则为了提供这些特殊字符，将这些字符的代码设在 128 至 256 之间，但具体操作中有许多方法。ISO 8859 是一个 256 个字符的字符集，包括了全部的欧洲字母，它也是欧洲标准小组的选择对象之一。HL7 将在一定环境中接受欧洲人定义的 8 比特字符集的技术规范，并且可以方便地使用。

(3) Multi-character Codes:

(3) 多字符编码：

(a) UNICODE - When communicants use UNICODE, and all characters are represented by the same number of bytes, all delimiters will be single characters of the specified bytes length, and the Standard applies just as it does for single-byte length, except that the length of the characters may be greater than one byte.

(a) 统一的字符编码标准 - 当信息传达者使用统一的字符编码标准时，所有的字符都用相同长度的字节来表示，所有的分隔符都是特定字节长度的单独的字符，除了字符的长度超过一个字节以外，标准的使用如同它应用于单字节时一样。

(b) JIS X 0202 - ISO 2022 provides an escape sequence for switching among different character sets and among single-byte and multi-byte character representations. Japan has adopted ISO 2022 and its escape sequences as JIS X 0202 in order to mix Kanji and ASCII characters in the same message. Both the single- and multiple-byte characters use only the low order 7 bits in JIS Kanji code with JIS X 0202 in order to ensure transparency over all standard communication systems. When HL7 messages are sent as JIS X 0202, all HL7 delimiters must be sent as single-byte ASCII characters, and the escape sequence from ASCII to Kanji and back again must occur within delimiters. In most cases the use of Kanji will be restricted to text fields.

(b) JIS X 0202 - ISO 2022 为不同字符集之间，以及单字节与多字节字符表达式之间的转换提供了转码指令序列。为了能在信息中混合使用日本汉字和 ASCII 字符，日本已经采用 ISO 2022 和它的转码指令序列作为 JIS X 0202。在用 JIS X 0202 编码的 JIS 日本汉字中，不管单字节还是多字节字符都只能应用低序列的 7 个字节，以保证在所有标准通讯系统中的

透明度。当采用 JIS X 0202 来发送 HL7 信息，所有的 HL7 分隔符必须采用单字节的 ASCII 字符，在分隔符内也须有在 ASCII 和日本汉字之间相互转换的转码指令序列。在大多数情况下，文本字段中限制使用日本汉字。

There are other parts of the JIS X series that support Katakana (JIS X 0201/ISO IR 13), Romaji (JIS X 0201/ISO IR 14) and Kanji (JIS X 0208/ISO IR 87) and JIS X 0212/ISO IR 159) that can be used in HL7 messages in the same manner as JIS X 0202.

JIS X 系列的其他版本还支持片假名(JIS X 0201/ISO IR 13)、罗马字(JIS X 0201/ISO IR 14) 和日本汉字(JIS X 0208/ISO IR 87 和 JIS X 0212/ISO IR 159)。和 JIS X 0202 一样，这些版本也可以应用于 HL7 信息传递之中。

(c) In the case that a single country uses conflicting rules for representing multi-byte characters, it is up to the communicants to ensure that they are using the same set of rules.

(c) 为了避免个别国家在表示多字节字符时使用相互冲突的编码，信息传递者应该保证他们使用同一套编码规则。

The encoding rules distinguish between data fields that have the null value and those that are not present. The former are represented by two adjacent quotation marks, the latter by no data at all (i.e., two consecutive separator characters.) The distinction between null values and those that are not present is important when a record is being updated. In the former case the field in the database should be set to null; in the latter case it should retain its prior value. The encoding rules specify that if a receiving application cannot deal with a data field not being present, it should treat the data field as present but null.

对于有无效值和无值的数据字段，其编码规则是有区别的。前者是用两个相邻的引号来表示，后者是完全没有数据(即两个连续的分隔字符)。当记录更新时，无效值和无值之间的差别是十分重要的。在前一种情况下，数据库中的字段应该设置成无效值，后一种情况则应该是保持原来的值。编码规则特别说明：如果接受信息的应用软件不能够处理无值的数据字段，则应该把它当作存在的但是无效的数据字段。

The encoding rules specify that a receiving application should ignore fields that are present in the message but were not expected rather than treat such a circumstance as an error. For more information on fields and encoding rules, see Section 2.6, “Fields,” and 2.10, “Message Construction Rules.”

编码规则特别说明：对于信息中存在的一些无法处理的字段，接受信息的应用软件应该忽略它，而不是将它视为一种错误。关于字段和编码规则的更多信息，见第 2.6 节“字段”和第 2.10 节“信息结构编码”。

1.7.2 Local variations

1.7.2 局部的变化

The HL7 Standard is intended to standardize data interchanges, not the underlying applications systems. This means that there will be a wide variety in the manner in which the Standard is applied in different institutions.

HL7 标准的目标是使数据交换标准化，而不是基本应用软件系统的标准化。这意味着标准在不同机构中应用的方式多种多样。

The requirement to support diversity within the Standard is addressed in these ways:

通过以下方式来满足支持标准内部多样性的要求：

a) The only data fields that are required in the abstract messages are those necessary to support the logic of the relationships among the messages or their basic purpose. Many other fields are specified but made optional.

a) 在抽象信息中要求的唯一数据字段，是那些支持信息关联的逻辑性或者满足它们基本目的的数据字段。其他许多字段被作了特别规定，但是可以任意选择。

b) There are provisions within the specifications to add messages or portions of messages that are local to an institution. The conventions used for this are intended to prevent conflict with future versions of the specification.

b) 在技术规范中，有条款规定如何增加信息或者一个机构中的信息片段。这些使用协议是为了防止与将来的技术规范版本发生冲突。

1.7.3 Evolutionary changes to the standards

1.7.3 标准的发展

All standards must evolve as the applications they support change and as a result of experience using them. In recognition of this, the Standard includes a protocol version ID in all messages.

所有标准都必须随着其所支持的应用软件的变化以及应用经验的积累而发展。所以，一个标准具有版本号。

New transactions or data elements will be added to operational HL7 environments as a result of changes in the Standard or due to changes in the local implementation as permitted within the Standard. It is important that these changes be implementable at a site without requiring all communicating applications to upgrade simultaneously. The special provisions in the Encoding Rules for dealing with fields that are not present or unexpected are very important here. Because of them, new fields can be added first to the sending or source system; the receiving system will ignore the new fields until it has been updated to use them. Often, these rules also facilitate changing the receiving system first. Until the sending system is changed, the receiving system will find the new data field 'not present' and deal with this according to its rules for data not present.

在 HL7 实际操作的环境中将增加新的处理程序或数据成分，这是标准变化的结果，或者是由于标准中允许局部执行的变化的结果。重要的是在某个地址上的变化，不要求所有通讯软件都即刻升级。在编码规则中，需要一些特殊条款规定对不存在的或没有预料到的字段的处理。由于这些特殊条款的存在，新字段会首先被加入到发送系统或源系统中，接受系统将忽略新字段，直到系统被更新。通常，这些规则首先也促进了接受系统的改变。发送系统改变之前，接受系统会认为新数据字段“无值”，并且根据无值数据的规则来处理。

Similarly, the HL7 Encoding Rules support changes in data field sizes. Fields are found within the message by examining separators, rather than by an offset. Changing the size of a field does not change the procedure used to detect subsequent fields.

相类似地，HL7 编码规则支持数据字段长度的变化。在信息中通过检查分隔符，而不是通过填入的值来识别字段。改变字段的长度不会影响检测后续字段的过程。

1.7.4 Applicability to file transfers (batch processing)

1.7.4 文件传输的适用性(批处理)

Although the HL7 Standard is defined in terms of the client-server (remote operation) model, its standards are equally applicable to file transfers. One or more messages may be encoded according to the Encoding Rules, grouped in a file and transferred using external media, FTAM, FTP, Kermit, or any other file transfer protocol. Responses may be grouped in a file and similarly transmitted. Chapter 2 provides the general mechanisms for the batch transmittal of HL7 messages.

尽管 HL7 标准是根据用户—服务器(远距离操作)模式来定义的，但它同样适用于文件的传输。根据编码规则可以对一个或更多信息进行编码，这些信息组成文件，采用外部的媒介、FTAM、FTP、Kermit 或者其他传输协议来传输。信息的应答也组成一个文件，以类似的方式传输。第二章将介绍批处理传输 HL7 信息的一般机制。

1.7.5 Relationship to other protocols

1.7.5 与其他协议的关系

A great deal of consideration has been given to the relationship between the HL7 Standard protocol and other protocols. There are three questions:

在 HL7 标准协议与其他协议之间的关系上已经作了许多的考虑。主要存在以下三方面问题：

a) what is the relationship between the HL7 protocol and "lower layer," service protocols? In strict accordance with the ISO OSI model, HL7 should not replicate features of these protocols. This can even be construed to require HL7 to avoid replicating certain ISO layer 7 functionality contained in the Service Elements.

   However, it is the goal of the HL7 group to support healthcare communications in a wide variety of communications environments, including many that are not as complete as ISO will be one day.

a) HL7 标准协议与"较低层"服务协议之间存在什么关系？为了与 ISO OSI 模式严格一致，HL7 不应该重复这些"较低层"服务协议的特征。这甚至可以用来解释，为什么要求 HL7 避免重复某些包含于服务要素中的 ISO 第 7 等级功能。

然而，HL7 小组的目的是支持在广泛多样的通讯环境中进行卫生服务信息通讯，包括许多不如将来的 ISO 那样完善的通讯环境。

b) what is the relationship between the HL7 Standard protocol and other applications protocols? Protocols of interest include the ASC X12 Standards for Electronic Document Interchange, the ASTM 1238-88 Standards for laboratory data reporting, the ACR/NEMA DICOM Standards for imaging and other aspects of Radiology Information Systems, and the IEEE P1157 Standards for Medical Data Interchange (MEDIX).

b) HL7 标准协议和其他应用软件协议存在什么关系？关注的协议包括用于电子文件互换的 ASC X12 标准，用于实验室数据报告的 ASTM 1238-88 标准，用于影像和其他放射性检查信息系统的 ACR/NEMA DICOM 标准，以及用于医学数据互换(MEDIX)的 IEEE P1157 标准。

c) what is the relationship between the HL7 Standard and various proprietary healthcare protocols in use today?

c） HL7 标准协议与目前正在使用的各种专门卫生服务信息协议之间存在什么关系？

1.7.5.1 Lower layer protocols

1.7.5.1 较低层的协议

The HL7 Encoding Rules are substantially different from the ASN.1 Basic Encoding Rules (BER) documented in CCITT X.409 and X.209 and ISO 8825 or those employed in LU6.2 or RPC. This is because:

HL7 编码规则与 CCITT X.409、X.209 以及 ISO 8825 规定的或者应用在 LU6.2 或 RPC 中的 ASN.1 基本编码规则(BER)有着显著的不同。这是因为：

a) by definition, the HL7 encoding rules will be applied where the environment does not include software to do encoding. Without such software, the burden on applications programmers to develop messaging software that conforms to those encoding rules is onerous.

a) 从定义上来看，HL7 编码规则能够应用于不包括编码软件的环境中。没有这种软件，要编制符合编码规则的软件，对程序员来说是一项费劲的工作。

b) the encoding rules of these protocols depend on the assumption that lower level protocols provide transparency (i.e., all character codes can be transmitted without being changed by and of the lower levels). This assumption is often not met in the communications environments that must serve HL7 for the interim. The techniques that might be used to implement transparency in the Lower Level Protocol are difficult to implement in some present- day applications environments.

b) 这些协议的编码规则是基于较低协议具有一定的透明度的假设(也就是说，所有字符代码不需要被转换成较低水平的编码就能够被传输)。这种假定在必须把 HL7 作为临时协议的通讯环境中通常不能成立。用于执行较低水平协议透明度的技术在当前某些软件环境中执行时存在困难。

The notation chosen to document the message formats in the HL7 Standard is not the Abstract Syntax Notation1 (ASN.1) Basic Encoding Rules (BER) defined by ISO.

在 HL7 标准中，用来说明信息格式的符号没有采用 ISO 所定义的抽象语法符号 1 (ASN.1)的基本编码规则 (BER)。

Contrary to other high level communications environments, there is no notion of association separate from the sending of the message from client to server and the response. This seems appropriate to the client- server model.

与其他高水平通讯环境不同的是，它没有联合的概念，而把从用户向服务器发送与从服务器向客户发送分离开来。这似乎适合用户—服务器模式。

Whenever HL7 is applied in a networking environment, addressing will be an issue. This is equally true when it is applied on ISO Standards networks or proprietary networks. Although the Standard does not specify how this addressing will occur, it does provide certain data fields that will be of value in determining addresses. The fields *MSH-5-receiving application*, *MSH-6-receiving facility*, and *MSH-11-processing ID*, are located in the header of all HL7 messages. *MSH-6-receiving facility* is intended for environments where multiple occurrences of the same application are being run on the same computer system or on the same network on behalf of different institutions or other organizational entities. *MSH-11-processing ID* is used where various versions of essentially the same application may reside on the same computer for different purposes. See *HL7 table 0103 - Processing ID* for recommended values.

只要 HL7 应用于网络环境，地址将是一个问题。当 HL7 应用于 ISO 标准网络或专门网络时，同样存在这个问题。尽管标准没有详细说明这个地址以什么方式出现，但它提供了能帮助确定地址的某些数据字段。MSH—5—接收系统软件、MSH—6—接收系统设备和 MSH—11—处理号都位于 HL7

信息头。MSH-6 -接收统设备是为这种环境而设计的，即在同一计算机系统或同一网络中运行着代表不同机构或组织的多个事件。在一台计算机中，为了不同目的可能安装了一些在本质上相同而版本号不同的应用软件，这时就需要 MSH—11—处理号。有关推荐值见 HL7 表 0103-处理号。

HL7 does not standardize all values for *MSH-5- receiving application* and *MSH-6-receiving facility* at this time because there are so many variations in place in existing systems and because different kinds of environments (e.g., different countries) may have different required code sets. However, we strongly encourage the use of the HL7 suggested code sets where they are defined and we recognize that movement toward more standardized codes is essential for seamless communications.

由于现有系统中位置的多变性和不同环境(比如不同的国家)有不同必需的代码设置，目前 HL7 没有对 MSH—5—接受系统应用软件和 MSH—6 —接受系统设备的所有数值进行标准化。然而，我们十分鼓励使用 HL7 所建议的明确规定的代码设置，同时我们已经认识到对无间隙通讯进行更多标准化代码工作是有必要的。

1.7.5.2 Other application protocols

1.7.5.2 其他应用软件协议

The Working Group has given considerable attention to the relationship of the HL7 protocol and other protocols. A considerable liaison effort is underway. This is described below:

工作小组对 HL7 协议和其他协议的关系给予了相当多的关注。有相当多的联络和协调工作正在进行之中。叙述如下：

a) ACR/NEMA DICOM. The HL7 Working Group maintains an on- going liaison with the ACR/NEMA DICOM working group. HL7 and ACR/NEMA DICOM are both members of ANSI's HISB.

a) ACR/NEMA DICOM　HL7 工作小组和 ACR/NEMA DICOM 工作小组一直保持联络。HL7 和 ACR/NEMA DICOM 都是 ANSI 的 HISB 成员。

b) ASC X12 Standards for Electronic Document Interchange. ASC X12 is a family of standards that provides both general and specific descriptions for data interchange within a number of industries. The HL7 Encoding Rules are modeled on the X12 standards, although there are differences. The HL7 Standard needs to accommodate online exchange of individual transactions on LANs. This difference, and certain applications issues, is responsible for the variance from X12. X12 has recently decided to follow the UN/EDIFACT encoding rules for all X12 standards produced in 1995 or later. X12N transactions that facilitate the transfer of healthcare claims and remittance information as well as benefit coordination, enrollment and verification are enjoying dramatically increased use. HL7 has elected to assume that all new business transactions between institutions regarding the interchange of claims, benefits, or other financial information are the responsibility of ASC X12N, the insurance subcommittee of X12.

   In February of 1994, HL7 and X12 signed an agreement to "improve coordination efforts and have identified that technical issues must be harmonized. Both groups agree to migrate to the appropriate level of resolution of potentially overlapping work by utilizing user and standards communities' and anticipated healthcare reform requirements."

b) 电子文件互换的 ASC X12 标准　ASC X12 是一组能够为许多行业的数据互换提供一般和特殊说明的标准。尽管存在着差异，HL7 编码规则是以 X12 标准为模式的。HL7 标准需要提供在局域网中个别交易的在线交换。这一差异和某些应用软件的问题是由于 X12 的变化性造成的。最近，X12 已经决定 1995 年及之后提出的所有 X12 标准都要遵循 UN/EDIFACT 的编码规则。X12N 处理得到了越来越广泛地应用，它能够用于卫生服务帐单和汇款信息的传输，以及利息

调节、注册和确证等。HL7 决定，不同机构之间所有涉及帐单，利息和其他财务信息互换的新事务处理都是由一个 X12 的分保险委员会即 ASC X12N 来负责。

1994 年 2 月，HL7 和 X12 共同签署了一个协定，该协定是为了“改善协调工作，并且认识到技术问题上也必须协调一致。双方小组一致同意通过用户、使用标准的团体的要求和将来的卫生服务改革的要求，在适当的水平解决可能的重复的工作”。

c) ASTM 1238.94 Laboratory Data Reporting. An active liaison effort between the ASTM committee and the Working group has resulted in minor changes in the ASTM specification to enhance compatibility, changes in the HL7 control specifications to enhance compatibility, and the development of the entire Ancillary Data Reporting chapter, developed jointly by the committees and built on the ASTM Standards. This liaison has extended to the point where both groups now have the permission to freely use the contents of each others standards efforts “in whole” within their own published standards.

   Some distinctions are more in the terminology chosen than the actual message content. For example, the ASTM “sub- field delimiter” is generally used to separate repetitions of homogenous values. It is called a “repetition separator” in HL7. HL7 and ASTM are both members of ANSI’s HISB.

c) ASTM 1238.94 实验室数据报告 在 ASTM 委员会和工作小组之间进行的一项积极的联络工作导致了一些变化，这些变化包括在 ASTM 技术规范中增强兼容性、在 HL7 控制的技术规范中增强兼容性、以及编写全部辅助数据报告的章节，这些章节内容由委员会共同来完成，并且建立在 ASTM 标准之上。这一协调工作已经取得了很大的成就，目前已允许双方小组任意地使用已出版的标准的全部内容中对方的成果。

与实际的信息内容相比，所选的术语之间存在的某些差别更显著。例如，在 ASTM 中，用来分隔相同数值的重复的符号，通常被称为“子字段分隔符”，而在 HL7 中它被成为“重复分隔符”。HL7 和 ASTM 都是 ANSI 的 HISB 成员。

d) IEEE P1157 (“MEDIX”). The MEDIX committee has defined an application-level protocol similar in scope to HL7 but built strictly on the ISO protocol stack, up to and including the Remote Operation Service Element (ROSE). HL7 varies from this approach by the decision not to depend on ROSE nor use the ASN.1 BER syntax notation. Despite the difference in approaches, the HL7 Working Group has regular liaison with the MEDIX committee. The Working Group has devised a format for the HL7 Standard that is relatively independent of the encoding rules chosen and easily translated into the ASN.1 notation. The transactions defined in this manner should be directly transferable to the MEDIX effort, and transaction messages encoded using the HL7 scheme should be translatable to transactions encoded using the BER. This should facilitate the creation of gateways between the HL7 and future environments.

d) IEEE P1157 (“MEDIX”) MEDIX 委员会已经定义了一个在范围上类似于 HL7 的应用软件水平的协议，但这个协议严格地建立在 ISO 协议栈之上，达到并包括远距离操作服务成分(ROSE)。HL7 由于作决定时既不依靠 ROSE，也不使用 ASN.1BER 语法符号而不同于这种方法。尽管在方法上存在差异，HL7 工作小组已经和 MEDIX 委员会建立经常的联络协调关系。工作小组已经为 HL7 标准设计出一种格式，它能够相对地独立于所选择的编码规则，并易于被转译为 ASN.1 符号。以这种方式定义的处理应该直接转换成 MEDIX 的格式，采用 HL7 系统编码的处理信息也应该可以译为由 BER 编码的信息处理。这将有助于开拓 HL7 和未来环境之间的联系。

In addition, HL7 and MEDIX have agreed on a course for convergence. This will occur within the HL7 abstract message definitions. MEDIX has further agreed to use the HL7 abstract message definitions as defined in Version 2.1 as a starting point for the MEDIX message definitions.

另外，HL7 和 MEDIX 已经同意了合作方案。这将在 HL7 抽象信息定义中体现。MEDIX 已经进一步同意使用 HL7 标准 2.1 版中的抽象信息定义作为 MEDIX 信息定义的出发点。

HL7, IEEE, and X12 are ANSI approved standards developers.

HL7， IEEE，和 X12 都是 ANSI 认证的标准的开发者。

1.8 THE SCOPE OF HL7

1.8 HL7 标准使用的范围

It is useful to understand both what HL7 is and what it is not. This chapter, up to this point, represents some effort to give the reader an overall understanding of HL7 by looking at purpose, history, and some of its overall features and architecture. It is also of value to understand the "edges" or limitation of HL7. While HL7 can, and routinely does, provide a considerable service in everyday use today, there are certainly many areas of healthcare system integration that HL7 does not address or addresses with what may prove to be an inadequate or incomplete solution.

了解 HL7 标准是什么、不是什么是非常有益的。至此，本章通过介绍 HL7 的目的、发展历史以及部分的特征和体系结构，使读者对 HL7 有了一个比较全面的了解。同时，了解 HL7 标准使用的"边界"或者局限性也是非常有用。虽然目前 HL7 能够并常规地提供相当多的日常应用的服务，然而仍然存在许多卫生服务系统一体化的领域中的问题，HL7 没有考虑到，或者仅仅考虑到，但还没有充分的或完全的解决方案。

Many of these topic areas are being worked on today by HL7 and will, hopefully, appear in latter versions of this balloted Standard. Some others of these topics may never be addressed by HL7 because they are being addressed by some other standards body. Still other areas may never be addressed by HL7 due to a lack of interest, or at least available energy by its members.

现在 HL7 正在致力于这些主题领域的工作，也希望能在通过表决认可的标准的最新版本中反映出这些工作成果。HL7 也许不会致力于这些主题中某些部分的工作，因为其他标准机构正在为之努力。也许还有一些领域不会被涉及到，是由于对之缺乏兴趣或者工作组成员的精力有限。

In any case, it is certainly useful for the analyst to understand what these boundaries are and to then either choose to solve them in some other way or to merely ignore them if they are deemed not sufficiently important. The following features listed in this section may well be best served by the participating applications themselves. However, it is possible to conceive of an architecture that expects these features to be present in the messaging standard itself. These potential deficiencies are included to give the reader a complete view.

无论如何，了解这些局限性，然后采用其他方式来解决，或者如果认为它们不重要就忽略它们，对分析者来说是非常有用的。本节下面列举的特征也许能最好地反映应用软件本身。尽管如此，设计出一个体系结构，在信息标准本身反映这些特征是有可能的。同时，也包括这些特征可能存在的不足，以便使读者有一个全面的了解。

1.8.1 A complete solution

1.8.1 一种彻底的解决方案

HL7 is not, in itself, a complete systems integration solution. The issue directly addresses the so-called goal for "plug-and-play." There are several barriers in today's healthcare delivery environment that make it difficult, it not impossible, for HL7 to create a complete "plug-and-play" solution. Two of these barriers include: a) the lack or process conformity within healthcare delivery environments and b) the resulting requirement for "negotiation" between users and vendors.

就其本身而言，HL7 不能完全解决系统的一体化问题。这个问题直接触及所谓的“即插即用”的目标。目前卫生服务环境中存在的一些障碍，使 HL7 在完全解决“即插即用”问题时存在一定困难，但不是不可能解决。其中两个障碍是：a)卫生服务环境内部缺乏程序的一致性； b)由此要求 HL7 用户与厂商之间“协议”。

There is little, if any, process conformity within healthcare delivery environments. As a consequence, healthcare information solutions vendors are required to create very flexible systems with a very wide range of data and process flow options. HL7 attempts to address the superset of all known process (i.e., trigger) and data (i.e., segment and field) requirements. In doing this, it has attempted to be “all things to systems and users.”

卫生服务环境内部几乎没有程序上的一致性。因此，解决卫生服务信息问题的厂商需要开发适应性非常强的系统，在数据和程序流程上有很大的选择范围。HL7 试图完成所有已知程序(即触发器)和数据(即信息段和字段)要求的超级集合。通过这些努力，超级集合已试图成为“系统和用户的一切”。

In fact, there is no one user nor any system that users would elect to use that would use all that HL7 attempts to offer. This “excess” of features typically requires some level of “negotiation” to take place between a user and his/her vendors to come up with the set of triggers and data items necessary to affect the solution for the user. In effect, this creates a unique use of the Standard at that site. The current version of HL7 has no intrinsic way to tailor a pre-determinable view of the Standard for each possible use. Future versions of HL7 will likely address this shortcoming.

事实上，没有一个用户或者用户选择的系统会用到 HL7 所提供的所有内容。这一“过多”的特征通常需要在 HL7 用户和厂商之间达成一些“协议”，从而产生一套触发器和数据项目，它们对于帮助用户解决问题是有必要的。结果，这产生了在那个地址上使用标准的独特方式。HL7 目前的版本还不能以内在的方式修改标准预先设定的目标，来适应每一种可能的用途。未来的 HL7 版本很有可能会解决这个不足。

A true integrated healthcare information systems solution addresses an integrated database, or at least what appears to be a virtual integrated database. In fact, however, as a practical matter, information solutions still need to be installed and operated in environments where no other, or only a subset of other, systems are available. In any case, all systems today are designed and implemented to process using their own local copies of data.

一个真正综合的卫生服务信息系统的解决方案会触及到一个综合的数据库，或者至少看起来像一个实际存在的综合的数据库。然而，事实上，作为一个应用工具，信息的解决方案仍然需要被安装和运行于没有其他系统或仅有其他子系统的环境中。在任何情况下，目前所有的系统均采用它们自己局部的数据的复制副本来设计和执行处理过程。

HL7, to this date, has not attempted to prescribe the architecture, functionality, data elements or data organization of healthcare applications. Rather, HL7 has attempted to accommodate all application requirements that have been brought to its attention by volunteers willing and able to address them.

至今，HL7 还没有试图描述卫生服务应用软件的架构、功能、数据成分或数据组织。然而，HL7 已经试图提供所有应用软件的要求，这些要求已经引起志愿者的较大关注并且为之努力。

Future versions of HL7 may choose to alter HL7’s historic approach to these issues. Recent efforts by HL7 and other ANSI Standards Developers to produce Data Meta Models have created a framework that both standards and applications developers can use as a common basis for defining and using both data and data organizations. Widespread acceptance of these concepts may allow HL7 and other Standards Groups to be more prescriptive in their approach with a smaller set of choices that must be made when interfaces are implemented.

今后的 HL7 版本也许会选择不同于以往的途径来解决这些问题。最近，HL7 和其他 ANSI 标准开发者在开发数据网络资源模型中的合作，已经产生了一个构架，标准和应用软件开发者双方都能够用这个构架作为定义和使用数据与数据组织的共用基础。广泛接受这些概念也许将使 HL7 和其他标准小组进行一些较小范围的选择时更加明确，在执行界面过程中，必须作出这些选择。

For now, however, users should be aware that HL7 provides a common framework for implementing interfaces between disparate vendors. In all cases, if an existing application interface is not available, HL7 reduces (but does not eliminate) the time and cost required to implement an application interface between two or more healthcare information systems. If a user chooses to implement a set of homogeneous solutions from a single vendor, HL7 is typically not necessary nor even applicable.

然而，现在的用户应该意识到 HL7 在不同厂商的界面之间提供了共同的构架。在任何情况下，如果现有的应用软件界面不能得到，HL7 会减少(但不会全部取消)在两个或多个卫生服务系统之间提供一种应用界面所需要花费的时间和费用。如果用户采用来自同一个厂商的一套相同的解决办法，HL7 通常就不必要，甚至不适用了。

1.8.2 Protection of healthcare information

1.8.2 卫生服务信息的保护

HL7 Version 2.4 is largely silent about the issues of privacy authentication and confidentiality of data that pass through HL7 messages. HL7 makes no assumption about the ultimate use of data but rather assumes that both source and destination applications provide for these requirements. In addition, HL7 does not, at this time, specifically specify what, if any, encryption method should be used when transporting HL7 - based messages between two or more systems. At this time, HL7 users should familiarize themselves with legal and professional requirements for these topics.

HL7 标准 2.4 版基本上没有对通过 HL7 信息系统的数据的保密性鉴别和保密性问题作出叙述。HL7 没有对数据最终的应用作出假定，而是假定发送资料和接收资料的应用软件可以提供这些要求。另外，此刻 HL7 也没有特别地详细说明当在两个或多个系统之间传输以 HL7 为基础的信息，应该采用什么样的加密方法。目前，HL7 用户应该熟悉有关这个问题的法律上和专业上的要求。

1.8.3 Department of Defense (DOD) requirements for systems security and robustness

1.8.3 国防部(DOD)对系统安全和健全的要求

HL7 Version 2.4 does not attempt to support DOD Security Divisions (A, B, C, D) and Classes (1, 2, 3). If a user requires these features, they will have to define their own structures to support these classifications and insure a uniform implementation across multiple systems in an enterprise.

HL7 的 2.4 版不打算支持国防部的安全等级(A，B，C，D)和机密等级(1，2，3)。如果用户需要这些功能，可以定义自己的结构来支持这些保密级别，并保证在企业中存在一个可以沟通多种系统的统一的执行动作。

1.8.4 Enforcement of organizational security and access control policies

1.8.4 组织安全和访问控制的政策的实施

HL7 Version 2.4, itself, does not provide for the enforcement of a provider organization's security and access control policies. There are no messages specifically defined, at this time, that affect the movement of data based on an organization's security and access control policies in conjunction with message content information that identifies the users of the message data and the organization's policies for that user's authorization to access that data. Systems implementors may want to reference relevant ASTM standards and IOM recommendations on this topic.

HL7 标准 2.4 版本身没有提供实施信息提供方的安全性和访问控制策略。此刻，也没有根据组织安全性和访问控制策略，联系识别数据的用户以及组织授权用户访问数据的政策，专门定义的信息来影响数据的运转。系统的用户也许还想参考相关的 ASTM 标准和 IOM 关于这个问题的推荐标准。

1.8.5 Security classifications (markings) and users authentication and identification

1.8.5 安全级别(标识)、用户授权和鉴别

HL7 Version 2.4 does not, at this time, attempt to address DOD requirement for marking or access control labels that are associated with data objects. This particular method might be one way of supporting both IOM and JCAHO recommendations for providing different levels of data confidentiality and authentication of both producers and consumers of confidential data.

HL7 标准 2.4 版目前没有试图提及国防部对与数据对象有关的标识或者访问控制标志的要求。这种特殊的方法也许成为一种支持 IOM 和 JCAHO 推荐标准的方式之一，为机密数据的所有者和使用者提供不同保密级别的数据的保密和授权。

1.8.6 Roles and relationships

1.8.6 作用和关系

HL7 Version 2.4 does not, in itself, attempt to define or even support the implicit and explicit relationships between persons such as patients, physicians, providers, etc. It is possible that current data modeling efforts by HL7 and other standards developers will, in the future, result in HL7 assuming this responsibility.

HL7 标准 2.4 版本身没有试图定义或者甚至支持人与人之间比如病人、医生、卫生服务提供者等之间内在的和明确的关系。有可能将来会由 HL7 来承担，目前由 HL7 和其他标准开发者共同承担的开发数据模式的职责。

1.8.7 Accountability, audit trails and assigned responsibility

1.8.7 追查责任，稽查帐目和指定的职责

HL7 Version 2.4 does not attempt to define typical transaction processing features such as audit trails. A feature such as an audit trail may well be needed to successfully implement both a robust and security auditable environment. This feature could also support verifying that a given action is performed by individuals who are also responsible. A user may decide that these features are necessary in their integrated environment.

HL7 标准 2.4 版没有试图定义典型事务处理的特征，比如稽查帐目。像这种稽查帐目的功能也许对于成功地营造一个健全和安全的可追查的环境是很有必要的。这一功能同时也能核实一个特定的活

动是否被负责的个体所执行。用户也许可以确定在他们的一体化的环境中这些功能是非常有必要的。

1.8.8 Central, unified hardware, software controls for security and trusted continuous protection

1.8.8 为安全和可靠的连续保护配置的集中统一的硬件和软件设备

HL7 Version 2.4 does not attempt to support hardware and software security controls, nor does it provide means to insure continuous protection of data from unauthorized changes. Such a feature may be useful in limiting access to certain types of data to devices and/or users, based on device type or location. Certain DOD requirements and IOM recommendations may required users to implement these on their own and/or rely on specific applications vendors to support this requirement.

HL7 标准 2.4 版没有试图支持硬件和软件的安全设备，也不试图提供任何手段，保证数据的连续性保护以防发生未经授权的修改。这种功能也许有助于根据设备类型或地址，限制设备和/或用户访问某种类型的数据。某些国防部的要求和 IOM 推荐的标准需要用户和/或者依靠特定的应用软件供应商来支持这种要求。

1.8.9 Uniform data definition and data architecture

1.8.9 统一的数据定义和数据体系结构

HL7 Version 2.4 does not include an explicit data model or composite data dictionary. However, extensive work has taken place within the HL7 Working Group to produce a data model for Versions 2.2 and 2.3. While these models have not been formally balloted, they are available on the HL7 web server. Future versions of HL7 may also include a balloted data model and composite data dictionary.

HL7 标准 2.4 版没有一个明确的数据模式或者综合的数据字典。然而，HL7 工作小组曾经为研制 2.2 版和 2.3 版的数据模式做了大量的工作。当这些模式还没有正式被表决通过时，它们只能 在 HL7 网络服务器中得到。未来的 HL7 版本也许会包括经过表决通过的数据模式和综合的数据字典。

1.8.10 Controlled disclosure, notification of disclosed information as protected and tracking exceptions of protected health information

1.8.10 有控制的解密，对解密信息的通告以及跟踪被保护的卫生信息的异常情况

HL7 Version 2.4 is silent on supporting the controlled disclosure of protected health information where HL7 is the vehicle of the disclosure across multiple systems in a healthcare delivery system. It is also silent on messages that notify a user that requested information is protected and messages to track allowed exceptions that may take place at the discretion of potentially, but not certified, authorized users (e.g., a physician in the emergency room).

HL7 标准 2.4 版没有叙述如何支持受保护的卫生信息有控制的解密。在卫生服务提供系统中，HL7 是沟通多个系统的解密工具。它也没有叙述如何通知用户他要查询的信息是受保护的，没有叙述对允许发生的异常情况的跟踪，这些异常可能在识别潜在的，而不是经认可的或被授权的用户（比如急诊室的医生）的时候发生。

1.8.11 Tracking of corrections, amendments or refusals to correct or amend protected health information

1.8.11 对纠错，修正或拒绝纠错或修正受保护卫生信息的跟踪

HL7 Version 2.4 does not provide messages to support the tracking of corrections, amendments or refusals to correct or amend protected health information. These messages would support the process to verify, challenge and ultimately correct inaccuracies discovered in protected health information. Users needing such messages may need to define custom messages to support this requirement.

HL7 标准 2.4 版没有提供对纠错、修正、拒绝修改受保护卫生服务信息跟踪的支持的信息。这些信息支持核实、质询、最终纠正受保护的信息中的错误等处理过程。需要这种信息的用户需要定义顾客信息来支持这种要求。

1.8.12 Disclosure of disidentified health information

1.8.12 未被识别的卫生信息的解密

HL7 Version 2.4 does not have specific messages to disclose “disidentified” health information. Disidentified data is data that does not reveal the identity of the person or care provider(s) (either organizations or individual licensed practitioners or both). While it may be possible to support this need with existing HL7 messages, it would create an unexpected message with missing required patient identification.

HL7 标准 2.4 版没有对“未被识别”的卫生信息的解密作出明确的说明。未被识别的数据是指没有表明个人或卫生服务提供者(要么是组织机构，要么是个体有执照的开业者，或者两者都有)身份的数据。尽管现有的 HL7 信息也许可以支持这种需要，但这也会产生一种意外的信息，缺少必需的病人身份的识别。

1.8.13 Ensuring and tracking data source authentication and non-alterability

1.8.13 确保和跟踪数据源的真实性和不可改变性

While HL7 Version 2.4 does support an electronic signature for chart completion transactions, it does not, in general, support an electronic signature that is also tied to relevant applications to insure the authentication of the source or arbitrary health data and a prohibition against the alteration of data that has been electronically signed.

HL7 标准 2.4 版支持经图形处理后的电子签名，一般而言，它不支持电子签名，电子签名也是依靠有关的应用软件来保证数据源或任意卫生数据真实性的鉴别，并且禁止对经电子签名的数据进行更改。

1.8.14 Tracking input validation

1.8.14 跟踪输入的有效性

HL7 Version 2.4 does not provide messages for tracking the validation (or lack of validation) of data from its source (human or machine).

HL7 标准 2.4 版没有提供跟踪来自数据源（人或者机器）的数据有效性(或者缺乏有效性)的信息。

1.8.15 The longitudinal health record

1.8.15 纵向健康记录

HL7 Version 2.4, itself, is silent on the actual logical and physical construction of the patient longitudinal health record. While it is certainly possible to build the currently-identified major components of such a record using existing HL7 messages, there is no formal attempt on the part of HL7 to define just what the exact message sequence and content should be to describe this record. Other organizations such as ASTM, CPRI and the IOM have published on this subject. It is not the intent of HL7, at this time, to formally define message sequences and structures to directly create the longitudinal health record across multiple information systems within (or outside of) a healthcare delivery system.

HL7 标准 2.4 版本身没有叙述病人纵向健康记录的实际逻辑结构和物理结构。虽然采用现有的 HL7 标准，能够构造出这种健康记录的普遍认可的主要成分，但是 HL7 尚未试图定义如何用确切的信息序列和内容描述这种记录。其他组织比如 ASTM，CPRI 和 IOM 已经公布了有关这个问题的内容。目前，HL7 并不打算正式定义信息序列和结构，通过卫生服务提供系统内部(或者之外)的多个系统，直接生成纵向健康记录。

1.8.16 Integration of the health record

1.8.16 健康记录的综合

HL7 Version 2.4 is silent on messages to support the integration of a patient's health record across multiple delivery entities (or outside of) a healthcare delivery system. This would also include messages to insure central control and integrity of information that was "merged" between multiple delivery entities.

HL7 标准 2.4 版没有叙述通过多个卫生服务提供机构（或者在卫生服务体系之外）支持病人健康记录的综合。这也将包括确保多个卫生服务提供机构之间信息“融合”的集中控制和完整性。

1.8.17 Data, clock synchrony

1.8.17 数据、时钟的同步性

While HL7 Version 2.4 makes significant use of time and date stamped data, it does not support a set of transactions to insure that synchronization of the electronic clocks with the various computer systems of the enterprise's heterogeneous computing environment.

尽管 HL7 标准 2.4 版大量利用了时间和日期标识的数据，但它不支持一套处理程序，确保一个企业的不同计算机环境中的不同计算机系统电子时钟的同步性。

1.8.18 Intersystem database record locking and transaction processing

1.8.18 系统内部数据库记录的锁定和处理

HL7 Version 2.4 makes no attempt to provide messages that could support the coordination of database activities across multiple information systems in a heterogeneous computing environment. Users who want to operate their multiple systems as a distributed database environment must provide their own message support or rely on a database vendor's facilities (e.g., Oracle, Sybase, etc.).

HL7 标准 2.4 版并不支持在不同计算机环境中多个信息系统间之间数据库活动的协调。用户如想要把多个系统当作一个分布式数据库环境来执行，必须提供他们自己的信息支持或者依靠数据库厂商提供的软件(比如 Oracle，Sybase 等数据库产品)。

1.8.19 Operations, process and other “local” support

1.8.19 操作、程序及其他“局部”支持

As stated in Section 1.8.2, “Protection of healthcare information,” above, process and operations variations are a primary barrier to HL7 providing a complete solution. Serious attempts are being made to give HL7 the ability to support operations and process variability in a future revision. At this time, however, (Version 2.4), operations and process variability is a major reason why HL7 is implemented in a slightly different form at each and every site. This includes issues such as business and clinical practice rules, clinical and operation processes, staging and continuity of process steps, protocols, resource/utilization requirements, quality assurance requirements, cost management, comprehensive master file and code tables, etc.

正如上面 1.8.2 节“卫生服务信息的保护”中所叙述的，处理方法和程序的多变性是 HL7 提供一个彻底的解决方案的主要障碍。研究人员正在从事艰苦的工作，让未来的 HL7 版本能够支持操作和方法的多变性。在不同地址执行当前版本（2.4 版）的 HL7 时会出现稍微不同的形式，操作和程序的多变性是其主要原因。这涉及到多方面问题，包括商业规则和临床实践规则、临床和操作程序、处理步骤的中断和连续、资源/利用的要求、质量保证的要求、费用管理、全面的主文件和编码表等。

1.8.20 Interface engines

1.8.20 接口编译程序

The so-called Interface Engine has grown into a popular implementation and operation tool for HL7 and other message-based interfaces over the last several years. Interface engines, per se, however, are not an a priori consideration in the design of HL7. HL7 makes no assumption about the existence of an Interface Engine at a particular HL7 site. Hence, there also are no defined HL7 messages to directly communicate with and control the operations of Interface Engines. This might be of particular use when the Interface Engine assumes an applications architecture role as a dynamic filter and arbitrator of information based on dynamic rules defined by delivery systems.

在最近的几年中，接口编译程序已经成为颇受 HL7 和其他以信息为基础的界面欢迎的执行和操作工具。接口编译程序本身在 HL7 设计中上并不是一个需要优先考虑的问题。HL7 也没有试图要在特定的 HL7 地址上设置接口编译程序。因此，也没有专门的 HL7 信息直接与接口编译程序进行通信交流和控制其操作。如果接口编译程序假定应用软件构架的作用是基于提供系统定义的动态规则的动态过滤器和仲裁者，那么它就可能变得很有用。

1.8.21 Rules engines

1.8.21 规则编译程序

As a close practical application of an Interface Engine in the topology of healthcare interfaces, rules engines are becoming increasingly popular. HL7 does not have, at this time, specific messages to define and control the rules that might be dynamically associated with an Interface Engine. This might include, but is not limited to: Create and modify patient therapeutic or diagnostic protocols; Activate clinical or

operational processes (e.g., conditional orders, critical paths, etc.); Cancel or hold active clinical processes; Notify appropriate users of a state or condition.

作为一种在卫生服务界面的拓扑结构中一种接口编译程序的应用程序，规则编译程序已变得越来越受欢迎。目前，HL7 没有专门定义或控制与接口编译程序动态相关的规则。这包括（但仅仅是）如下情况：编制和修正病人治疗或诊断协议；激活临床或手术处理过程(比如，有条件的医嘱，关键的处理等)；解除或保持积极的临床处理；向有关用户通告面临的状况或条件。

1.8.22 Infrastructure based applications

1.8.22 基于基础结构的应用软件

A number of applications and information delivery methods exist within the healthcare delivery environment that can be closely identified with the “infrastructure” that ties together disparate systems. These applications include, but are not limited to:

在卫生服务提供环境中，有许多应用软件和信息传输方法与“基础结构”相似，把迥然不同的系统连接起来。这些功能包括（但仅仅是）以下方面：

Robust and Integrated Scheduling

健全的和综合的时间安排

Point of Service Support

服务支持的要点

Prompts Alerts and Reminders

即时的报警和提示

Concurrent Data Surveillance, Metrics and Analysis

同步的数据监测，测量和分析

Concurrent Decision Support

同步的决策支持

Outcome Tracking

结果的跟踪

Tracking of Patient (i.e., customer) Expectation and Satisfaction

病人(即消费者)期望和满意程度的追踪

Problem Lists

问题清单

These, and probably others, could be well served by the use of healthcare data during and very close to the action of transferring information between healthcare information systems. HL7, at this time, has very little or no message functionality that directly supports these uses of healthcare data.

这些应用软件，可能还有其他应用软件，可能很好地应用于卫生服务信息系统之间的信息交换和相似的情况中。目前，HL7 只有很少（或者没有）能够直接支持卫生服务数据利用的信息功能。

1.8.23 Support for secondary clinical records

1.8.23 第二手临床资料的支持

HL7 Version 2.4 does not provide specific messages to support partial replication (i.e., extraction and subsequent merger) of a patient's demographic and clinical records. This process has been identified by the IOM, JCAHO and others as an emerging requirement for the maintenance and practical use of an electronic health record system. HL7 may provide more explicit support for this concept in the future as organizations such as ASTM and CPRI develop specific definitions and requirements for this functional activity and healthcare vendors start to include this type of functionality within their individual clinical record solutions offerings.

HL7 标准 2.4 版本没有提供专门的信息，支持病人人口学统计和临床记录中的局部拷贝(也就是信息剪切和随后的合并)。IOM，JCAHO 和其他组织认为这个过程是在电子健康记录系统的维护和应用中正在出现的要求。随着 ASTM 和 CPRI 等组织对这一功能提出专门的定义和要求，以及供应商开始在它们的个体临床记录解决办法的提议中包括这种功能，今后 HL7 也许会对这个概念提供更加明确的支持。

1.9 REFERENCE DOCUMENTS

1.9 参考文献

1.9.1 ANSI standards[1]

1.9.1 ANSI 标准 [1]

ANSI X3.30	1985 Representation for calendar date and ordinal date
ANSI	1985 年 日历日期和顺序日期的表示法

[1] Available from American National Standards Institute, 11 West 42nd Street, New York, NY 10036

1 来自美国国家标准局, 11 West 42nd Street, 纽约, NY 10036

X3.30

ANSI X3.4	1986 Coded character sets - American National Standard code for information interchange (7-bit ASCII)
ANSI X3.4	1986 年经编码的字符集—美国国家标准信息互换代码(7-比特 ASCII)
ANSI X3.43	1986 Information systems representation of local time of day for information interchange
ANSI X3.43	1986 年用于信息互换的当地时间的信息系统表示法
ANSI X3.50	1986 Representations for U.S. customary, SI, and other units to be used in systems with limited character sets
ANSI X3.50	1986 年 美国习惯表示法，国际单位制和用在有限字符集系统中的其他单位
ANSI X3.51	1986 Representations of universal time, local time differentials, and United States time zone references for information interchange
ANSI X3.51	1986 年用于信息互换的世界时，当地时差和美国时区对照的表示法

1.9.2 ISO standards[2]

1.9.2 ISO 标准 [2]

ISO 5218	1977 Information Interchange- Representation of Human Sexes
ISO 5218	信息互换—人类性别的表示法，1977
ISO 1000	1981 SI Units and Recommendations for the use of their multiples and of certain other units
ISO 1000	应用于多重单位或其它单的国际单位和推荐单位，1981
ISO 2955	1983 Information processing-Representation of SI and other units in systems with limited character sets
ISO 2955	信息处理—国际单位和其他单位在系统中用有限的字符集的表示法，1983

[2] Available from ISO 1 Rue de Varembe, Case Postale 56, CH 1211, Geneva, Switzerland

2 来自 ISO 1 Rue de Varembe, Case Postale 56, CH 1211, 日内瓦,瑞士

ISO 8072	1986 Network Standards
ISO 8072	网络标准，1986 年
ISO 8601	1988 Data elements and interchange formats - information interchange (representation of dates and times)
ISO 8601	数据成分和互换格式—信息互换 (日期和时间的表示法)，1988
ISO 8859	1988 Information Processing- 8-bit single-byte coded graphic character sets
ISO 8859	信息处理- 8-比特单字节编码的图形字符集，1988
ISO 8859/1	1988 Information Processing-Latin Alphabet No. 1
ISO 8859/1	信息处理—拉丁字母表 1，1988
ISO 8859/2	1988 Information Processing-Latin Alphabet No. 2
ISO 8859/2	信息处理—拉丁字母表 2，1988
ISO 8859/3	1988 Information Processing-Latin Alphabet No. 3
ISO 8859/3	信息处理—拉丁字母表 3，1988
ISO 8859/4	1988 Information Processing-Latin Alphabet No. 4
ISO 8859/4	信息处理—拉丁字母表 4，1988
ISO 8859/5	1988 Information Processing-Latin/Cyrillic Alphabet
ISO 8859/5	信息处理—拉丁/西里尔字母表，1988
ISO 8859/6	1988 Information Processing-Latin/Arabic Alphabet
ISO 8859/6	信息处理—拉丁/阿拉伯字母表，1988
ISO 8859/7	1988 Information Processing-Latin/Greek Alphabet
ISO 8859/7	信息处理—拉丁/希腊字母表，1988
ISO 8859/8	1988 Information Processing-Latin/Hebrew Alphabet
ISO 8859/8	信息处理—拉丁/希伯来字母表，1988
ISO 8859/9	1988 Information Processing-Latin Alphabet No. 5

ISO 8859/9	信息处理—拉丁字母表 5，1988
JAS2020	A subset of ISO2020 used for most Kanji transmissions
JAS2020	日本汉字传输的常用 ISO2020 子集
JIS X 0202	ISO 2022 with escape sequences for Kanji
JIS X 0202	ISO 2022 日本汉字的换码顺序

1.9.3 Codes and terminology sources

1.9.3 代码和术语的来源

ACR	Index for Radiological Diagnosis, Revised 3rd Edition
ACR	放射线诊断索引，修订第 3 版
CPT4	Current Procedural Terminology[3]
CPT4	通用程序术语 [3]
CAS	USAN 1990 and the USP dictionary of drug names[4]
CAS	USAN 1990 和药品名专用词典 [4]
EUCLIDES	European standard for clinical laboratory data exchange[5]
EUCLIDES	欧洲临床实验数据互换标准 [5]
Home Health	Home Healthcare Classification System (Virginia Saba, EdD, RN, Georgetown U.

[3] Available from American Medical Association, P O Box 10946, Chicago, IL 60610

3 来自美国医学协会 P O Box 10946, 芝加哥, IL 60610

[4] William M. Heller, Ph.D., Executive Editor. Available from United States Pharmacopeial Convention, Inc., 12601 Twinbrook Parkway, Rockville, MD 20852.

4 William M. Heller, Ph.D., 执行编辑. 来自美国药典公约有限公司., 12601 Twinbrook Parkway, Rockville, MD 20852.

[5] Available from G. De Moor, M.D., Dept. of Medical Informatics 5K3, State University Hospital Gent, De Pintelaan 185, B 9000 GENT, BELGIUM

5 来自 G. De Moor, M.D., 医学信息系 5K3, Gent 州立大学医院, De Pintelaan 185, B 9000 GENT, 比利时

	School of Nursing, Washington DC)
Home Health	家庭卫生服务分类系统(Virginia Saba, EdD, RN, Georgetown 大学. 护理学院，华盛顿)
HIBCC	Standard for electronic business data interchange
HIBCC	电子商务数据互换标准
ICCS	Commission on Professional and Hospital Activities
ICCS	专业和医院行为委员会
ICD-9	International Classification of Diseases, 9th Revision
ICD-9	国际疾病分类，第 9 版
ICD9-CM	International Classification of Diseases, Clinical Modification Manual of Clinical Microbiology[6]
ICD9-CM	国际疾病分类，临床微生物修正手册 [6]
NANDA	North American Nursing Diagnosis Association, Philadelphia PA
NANDA	北美护理诊断协会，宾州，费城
NDC	National drug codes[7]
NDC	国家药品代码 [7]
NIC	Nursing Interventions Classification, Iowa Intervention Project. U. of Iowa
NIC	护理干预分类，爱荷华大学 干预项目
NLM	Unified Medical Language[8]

[6] Available from American Society for Microbiology, 1913 Eye St., NW, Washington, D.C. 20006.

6 来自美国微生物协会, 1913 Eye St., NW, 华盛顿 20006.

[7] Available from the National Drug Code Directory, FDA, Rockville, MD, and other sources

7 来自国家药品代码字典, FDA, Rockville, MD, and 其他来源

[8] Available from National Library of Medicine, 8600 Rockville Pike, Bethesda, MD 20894

8 来自国家医学图书馆, 8600 Rockville Pike, Bethesda, MD 20894

NLM	统一的医学语言 [8]
Omaha System	Omaha Visiting Nurse Association, Omaha NE
Omaha System	奥马哈家庭病房护士协会，内华达州，奥马哈
Read	Clinical Classification of Medicine[9]
Read	药物临床分类 [9]
SNOMED III	Systemized Nomenclature of Medicine[10]
SNOMED III	药物系统术语 [10]
WHO	Drug Codes[11]
WHO	药品编码 [11]
UMDNS	Universal Medical Device Nomenclature System[12]
UMDNS	通用医疗设备术语系统 [12]
FDA K10	Device Codes Device and analyte process codes[13]

[9] Available from James D. Read, MB, ChB, DRCOG, MRCGP, General Medical Practitioner, Park View Surgery, 26-28 Leicester Rd., Loughborough, Leicestershire LE11 2AG.

9 来自 James D. Read, MB, ChB, DRCOG, MRCGP,General Medical Practitioner, Park View Surgery, 26-28 Leicester Rd., Loughborough, Leicestershire LE11 2AG.

[10] Available from American College of Pathology, Skokie, IL

10 来自美国病理学院, Skokie, IL

[11] Available from INTDIS, P O Box 26, S-751 03 Uppsele, Sweden

11 来自 INTDIS, P O Box 26, S-751 03 Uppsele, 瑞典

[12] Available from ECRI, 5200 Butler Pike, Plymouth Meeting, PA 19462

12 来自 ECRI, 5200 Butler Pike, Plymouth 会议, PA 19462

[13] Available from Dept. of Health & Human Services, FDA, Rockville, MD 20857

FDA K10	设备代码和分析程序代码 [13]
LOINC	Laboratory Object Identifier and Numerical Code
LOINC	实验室器械标识符和数字代码

1.9.4 Other applicable documents

1.1.4 其他可参考的文献

ASTM E31.12 Draft Dec 1990 - A Standard Specification for Representing Clinical Laboratory Test and Analyte Names *Draft*[14]

ASTM E31.12 草案 1990 年 12 月—临床实验室检查和分析物名称标准说明书(草案)[14]

ASTM E1467-91 Standard Specification for Transferring Digital Neurophysiological Data Between Independent Computer Systems[15]

ASTM E1467-91 在独立计算机系统之间传输神经生理数据标准说明书 [15]

ASTM E1394 A Standard Specification for Transferring Information Between Clinical Instruments and Computer Systems[16]

ASTM E1394 临床器械和计算机系统之间信息传输标准的说明书 [16]

ASTM E1381 Standard Specification for the Low-level Protocol to Transfer Messages between Clinical Instruments and Computer Systems[17]

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13 来自健康人类服务系, FDA, Rockville, MD 20857

[14] Available from Arden Forrey, Ph.D., 4916 Purdue Ave., NE, Seattle, WA 98105

14 来自 Arden Forrey, Ph.D., 4916 Purdue Ave., NE, Seattle, WA 98105

[15] Available from American Society for Testing and Materials (ASTM) 1916 Race St., Philadelphia, PA 19103-1187.

15 来自美国实验材料协会(ASTM) 1916 Race St., Philadelphia, PA 19103-1187.

[16] Available from American Society for Testing and Materials (ASTM) 1916 Race St., Philadelphia, PA 19103-1187

16 来自美国实验材料协会(ASTM) 1916 Race St., Philadelphia, PA 19103-1187.

[17] Available from American Society for Testing and Materials (ASTM) 1916 Race St., Philadelphia, PA 19103-1187

ASTM E1381 临床器械和计算机系统之间传输信息的低层协议标准的说明书 [17]

McDonald CJ, Hammond WE: Standard formats for electronic transfer of clinical data. Annals of Internal Medicine 1989; 110(5):333-335.

McDonald CJ, Hammond WE:临床数据电子传输的标准格式。内科年鉴 1989; 110(5):333-335.

International Union of Pure and Applied Chemistry/International Federation of Clinical Chemistry. The Silver Book: Compendium of terminology and nomenclature of properties in clinical laboratory sciences. Oxford: Blackwell Scientific Publishers, 1995.

国际纯化学和应用化学联盟/国际临床化学联盟. 银皮书：临床实验学中仪器术语和命名法概略。牛津大学: Blackwell 科学出版社, 1995.

LOINC Committee. Logical Observation Identifier Names and Codes. Indianapolis: Regenstrief Institute and LOINC Committee, 1995. c/o Kathy Hutchins, 1001 West 10th Street RG-5, Indianapolis, IN 46202. 317-630-7433. Available via FTP/Gopher (dumccss.mc.duke.edu/standards/HL7/termcode/loinclab) and the World Wide Web (http://dumccss.mc.duke.edu/standards HL7/termcode/loinclab/)

LOINC 委员会。逻辑观察符号名称和代码。印第安纳波利斯： Regenstrief 研究所和 LOINC 委员会 1995 。联系方式： Kathy Hutchins, 1001 West 10th Street RG-5, Indianapolis, IN 46202. 317-630-7433。 FTP/Gopher (dumccss.mc.duke.edu/standards/HL7/termcode/loinclab) 和 网址 (http://dumccss.mc.duke.edu/standards HL7/termcode/loinclab/)可以获得。

Forrey AF, McDonald CJ, DeMoor G, Huff SM, Leavelle D, Leleand D et al. Logical Observation Identifier Names and Codes (LOINC) database, A public use set of codes and names for electronic reporting of clinical laboratory test results. Clin Chem 1996; 42:81-90.

Forrey AF, McDonald CJ, DeMoor G, Huff SM, Leavelle D, Leleand D 等.逻辑观察符号名称和代码(LOINC)数据库，一套公用的临床实验室检查结果电子报告的代码和名称。 Clin Chem 1996; 42:81-90.

UB-92 National Uniform Billing Data Element Specifications as developed by the National Uniform Billing Committee, November 5, 1997. National Uniform Billing Data Element Specifications as adopted by the Florida State Health Claims Review Committee, 2nd Revision, December 19, 1993.

UB-92 国家统一清单委员会编写的国家统一清单数据成分说明书，1997 年 11 月 5 日。佛罗里达州健康要求评论委员会采用的国家统一清单数据成分说明书，第二版， 1993 年 12 月 19 日。

UB-82 Recommended Billing Instructions.

UB-82 清单用法指导建议。

1 Available from American National Standards Institute, 11 West 42nd Street, New York, NY 10036

17 来自美国实验材料协会(ASTM) 1916 Race St., Philadelphia, PA 19103-1187.

1 来自美国国家标准局, 11 West 42nd Street, 纽约, NY 10036

2 Available from ISO 1 Rue de Varembe, Case Postale 56, CH 1211, Geneva, Switzerland

2 来自 ISO 1 Rue de Varembe, Case Postale 56, CH 1211, 日内瓦,瑞士

3 Available from American Medical Association, P O Box 10946, Chicago, IL 60610

3 来自美国医学协会 P O Box 10946, 芝加哥, IL 60610

4 William M. Heller, Ph.D., Executive Editor. Available from United States Pharmacopeial Convention, Inc., 12601 Twinbrook Parkway, Rockville, MD 20852.

4 William M. Heller, Ph.D., 执行编辑. 来自美国药典公约有限公司., 12601 Twinbrook Parkway, Rockville, MD 20852.

5 Available from G. De Moor, M.D., Dept. of Medical Informatics 5K3, State University Hospital Gent, De Pintelaan 185, B 9000 GENT, BELGIUM

5 来自 G. De Moor, M.D., 医学信息系 5K3, Gent 州立大学医院, De Pintelaan 185, B 9000 GENT, 比利时

6 Available from American Society for Microbiology, 1913 Eye St., NW, Washington, D.C. 20006.

6 来自美国微生物协会, 1913 Eye St., NW, 华盛顿 20006.

7 Available from the National Drug Code Directory, FDA, Rockville, MD, and other sources

7 来自国家药品代码字典, FDA, Rockville, MD, and 其他来源

8 Available from National Library of Medicine, 8600 Rockville Pike, Bethesda, MD 20894

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9 Available from James D. Read, MB, ChB, DRCOG, MRCGP, General Medical Practitioner, Park View Surgery, 26-28 Leicester Rd., Loughborough, Leicestershire LE11 2AG.

9 来自 James D. Read, MB, ChB, DRCOG, MRCGP,General Medical Practitioner, Park View Surgery, 26-28 Leicester Rd., Loughborough, Leicestershire LE11 2AG.

10 Available from American College of Pathology, Skokie, IL

10 来自美国病理学院, Skokie, IL

11 Available from INTDIS, P O Box 26, S-751 03 Uppsele, Sweden

11 来自 INTDIS, P O Box 26, S-751 03 Uppsele, 瑞典

12 Available from ECRI, 5200 Butler Pike, Plymouth Meeting, PA 19462

12 来自 ECRI, 5200 Butler Pike, Plymouth 会议, PA 19462

13 Available from Dept. of Health & Human Services, FDA, Rockville, MD 20857

13 来自健康人类服务系, FDA, Rockville, MD 20857

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15 Available from American Society for Testing and Materials (ASTM) 1916 Race St., Philadelphia, PA 19103-1187.

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17 来自美国实验材料协会(ASTM) 1916 Race St., Philadelphia, PA 19103-1187.

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1.3 SUGGESTIONS AND COMMENTS

1.11 建议和评论

The HL7 Working Group welcomes comments and suggestions for improving the Standard. The Working Group is also open to new membership. Both feedback on the Standard and interest in membership should be sent to:

HL7 工作小组欢迎任何有利于标准改进的建议和评论。工作小组也欢迎新成员的加入。如果对标准有什么反映或对成员资格有兴趣可以和以下成员取得联系。

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