



Overview

Country or Region: Australia
Industry: Health Classification

Customer Profile

NCCH is the Australian center for classification theory and developing clinical terminologies. Established in 1997, NCCH employs around 25 people in its two offices and has about 35 PCs and laptops.

Business Situation

NCCH needed to create an electronic version of ICD-10-AM, a five-volume book set used by clinicians and health information workers to identify and classify medical conditions and procedures.

Solution

Microsoft® partner Eurofield Information Solutions (EIS) created an electronic version based on its eComPress technology. The solution was built using Microsoft Visual Studio® version 6.0.

Benefits

- Small file size for easy, Web-based distribution.
- Data integrity preserved.
- Advanced functionality for use.
- Reduced print and distribution.
- WHO has licensed technology.

Electronic Publishing Solution

“The ICD-10-AM eBook has reduced our printing costs. Not only are we saving money, we’re also saving trees!”

Rodney Bernard, Publications Manager, National Centre for Classification in Health

Hospitals around the world record the symptoms of all patients. Clinical coders then translate the notes into universal codes, whose source is ICD-10, a publication managed by the World Health Organization (WHO). Australia’s National Centre for Classification in Health (NCCH) took the coding system a step further, creating ICD-10-AM, which includes treatments as well. Conscious of the healthcare sector’s increasing reliance on technology, NCCH began to look for a way to distribute ICD-10-AM electronically. Microsoft® partner Eurofield Information Solutions (EIS) had the answer. EIS’s eComPress technology, built using Microsoft Visual Studio® version 6.0, compressed the file for easy distribution over the Internet. The ICD-10-AM eBook has reduced NCCH’s printing and publishing costs and proved a hit with clinical coders and health information managers. When WHO needed to release an electronic version of ICD 10, it engaged NCCH and EIS.

"One of the most valuable features of the eBook is that users can add their own notes but they can't tamper with the information. This ensures the integrity of the publication."

Rodney Bernard, Publications Manager,
National Centre for Classification in Health

Situation

Australia's National Centre for Classification in Health (NCCH) was established on 1 January 1997. It has 17 staff in Sydney based at the University of Sydney and 8 employees in Brisbane based at the Queensland University of Technology.

NCCH creates health classifications, clinical terminologies and standards that uniformly describe diseases, injuries and other health conditions and their appropriate treatments.

One of NCCH's main functions is to maintain and update the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification (ICD-10-AM), the Australian Classification of Health Interventions (ACHI) and the Australian Coding Standards.

The ICD began in 1893 as the Bertillon Classification or International List of Causes of Death. Since 1948, the ICD has been coordinated by the World Health Organization (WHO). NCCH modified the three-volume tenth revision (ICD-10) for the Australian health industry, resulting in ICD-10-AM. As well as classifying diseases, the Australian Modification includes the associated interventions (or procedures) classification (ACHI) for treating these and coding standards for the application of the classification. This additional content means ICD-10-AM contains five volumes rather than three.

ICD-10 lists injuries as diverse as broken toes, gunshot wounds and being struck by lightning. Recent additions to the publication include emerging diseases such as avian influenza and severe acute respiratory syndrome (SARS).

Health experts across the globe use the codes contained in ICD-10 to track the spread of diseases and epidemics and to

identify common causes of death by geographic region.

Preparing and printing such a comprehensive publication with a small print run of about 3,000 copies meant NCCH's printing and distribution costs were high. In 1998, NCCH began looking at ways to prepare and distribute ICD-10-AM electronically.

"We were conscious of keeping up with the requirements of our users," says Rodney Bernard, Publications Manager at NCCH. "Most of us work with computers now, so moving from hard copy to an electronic version would recognize the emergence of technology as an important part of the healthcare industry."

The system needed to be secure and the integrity of the content had to be maintained at all costs.

NCCH services hospitals across Australia, including remote areas of the Northern Territory and Western Australia. It wanted to ensure that the electronic publication could be downloaded even by users with limited or unreliable Internet access. Updates—such as errata and amendments—also needed to be easy to deliver.

NCCH realized that to win over users who had worked with the hard copy version for their whole careers, the electronic version needed to fit their existing workflows, be simple to use and, above all, offer significant benefits over the printed book.

"Health information managers and clinical coders are busy people," says Bernard. "Technology needs to be intuitive and compatible with their work practices."

Solution

After investigating various browser-based publishing solutions, NCCH contacted

Microsoft® partner Eurofield Information Solutions (EIS) and asked it to develop an electronic version of the second edition of ICD-10-AM. EIS has 7 staff at its Sydney office and 14 PCs.

EIS embraced the challenge of turning the 2,000 page, five-volume publication into an electronic document. First, NCCH prepared the content for the electronic version in Microsoft® Office Word, which included creating more than 200,000 hypertext links. EIS then created the eBook in just six months.

Unique Electronic Publishing Solution

EIS's solution is based on the company's unique eComPress technology. Written in Microsoft Visual C++® and developed using Microsoft Visual Studio® version 6.0, this award-winning product permanently reduces the size of publications to less than 10 percent of their original size. This ensures electronic publications are fast and easy to use.

The compression technology allowed EIS to reduce the 140 megabyte (MB) file of ICD-10-AM to less than 5 MB.

"Microsoft Visual Studio is powerful and easy to use," says Alfred Papallo, Managing Director of Eurofield Information Solutions.

"To ensure the effective delivery of eComPress publications online, we use the product's space optimization features for our viewers and speed optimization features for our mastering systems."

Once in electronic form, the publication was uniquely encoded to ensure the content could not be changed.

Valuable New Features

The electronic publication also includes a raft of features not available in the hard copy version. For example, the entire content is

indexed exhaustively, giving users a comprehensive search capability to find all words, numbers and alpha-numerics.

The eComPress Notes feature allows users to make their own annotations to the publication. These notes can take the form of text, pictures, files and Web or email addresses.

"One of the most valuable features of the eBook is that users can add their own notes but they can't tamper with the information," says Bernard. "This ensures the integrity of the publication."

Benefits

Creating an electronic version of ICD-10-AM has made the jobs of clinical coders and health information managers across Australia easier. It has also reduced NCCH's print costs and lessened the labor-intensiveness of the editing process. Such was the success of the eBook that WHO decided to use EIS technology when it released an electronic version of ICD-10.

Electronic Version Easy to Download and Update

The unique eComPress compression technology means users, even those with unreliable Internet access, can download the eBook quickly and easily.

"It would cause complete chaos if users had to download a 160 MB file," says Bernard.

NCCH regularly issues updates such as errata, addenda and amendments. Previously, these were printed in Coding Matters, the organization's quarterly newsletter. Users had to cut out the amendments and manually insert them into the hard copy. Now, updates are distributed by email. Users enter their password to download the new information and their eBook is automatically updated.

“Receiving updates electronically instead of manually inserting them is great,” says Jennie Shephard, a health information services consultant. “It only takes two minutes to download the file.”

Advanced Annotation Facility

The notes that users attach to the electronic publication can be personal or published on a network for sharing among multiple users.

Shephard uses the Notes feature to hold relevant documents she needs to refer to often. This saves her having to carry around copies of different documents.

“I think the real value of the Notes function is in hospitals or offices where several people are using ICD-10-AM and all members of the team need to be aware of certain information,” she says.

When users update ICD-10-AM, their notes are automatically transferred in context to the new edition, eliminating the need for users to re-enter data.

Superior Indexing and Search Capabilities

The ICD-10-AM eBook’s comprehensive index contains all words, numbers and alpha- numerics. This allows users to conduct exhaustive searches and find results much faster than with the hard copy index.

“The electronic version allows me to find what I need quickly and easily,” says Shephard. “The eBook’s simple navigation design also makes it easy to see exactly where I am in the document and retrace my steps if necessary.”

Advanced index and navigation features have certainly made a difference to the amount of time coders take to do their job.

“A coding audit that would once have taken me 10 to 11 hours using the hard copy version now takes only eight to nine,” says Shephard.

Looks Like a Book, Feels Like a Book...

EIS and NCCH worked hard to ensure the electronic publication maintained the same look and feel as the hard copy book.

Simplicity of use was a critical factor when designing the eBook. “The eBook’s layout is a big advantage over other electronic options,” says Shephard.

Cost Reductions

For the last two editions, NCCH has reduced its hard copy print run due to the increasing number of customers purchasing the electronic publication. It now distributes approximately 600 electronic copies and 3,000 hard copies of each edition.

“The eBook is very cost effective in terms of publishing time,” says Bernard. “We use Microsoft Office Word to prepare the files, which makes the process simple—even with all the hyperlinks.

“The ICD-10-AM eBook has reduced our printing costs. Not only are we saving money, we’re also saving trees!”

WHO Follows Australia’s Lead

Such is the success of the Australian electronic publication of ICD-10-AM, that when WHO came under increasing pressure to release the second edition of ICD-10 in electronic form, it decided to use EIS technology.

The advantages of its easy-to-use structure and compatibility with all versions of Microsoft Windows® from Windows 95 onwards were deciding factors. Also important was that the EIS technology allows the document and subsequent updates to be

For More Information

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For more information about Eurofield Information Solutions products and services in the United States, call 888 234 9823 or visit the Web site at: www.eis-usa.com In Australia, call +612 9411 3711 or visit the Web site at: www.eis.com.au

For more information about National Centre for Classification in Health products and services, call +612 9351 9461 or visit the Web site at: www3.fhs.usyd.edu.au/ncch/index.htm

distributed over the Internet rather than on CD.

NCCH removed all the Australian modifications from its files to distill the content down to ICD-10. It then worked with EIS to create the electronic publication. Because much of the pre-development work had already been done, the ICD-10 eBook took only six weeks to prepare.

Impressed with the comprehensiveness of ICD-10-AM and the ease of use of the eBook, several countries have licensed its use. Ireland has purchased a license to use ICD-10-AM, as has New Zealand. Germany, Slovenia and Romania are also using it, with some modifications. Countries currently considering purchasing a license include Turkey, Bulgaria and Saudi Arabia.

“The number of countries that have licensed ICD-10-AM for use in the eBook format is testament to the quality of both the product and the delivery mechanism,” says Bernard.

Microsoft Visual Studio 2005

Microsoft Visual Studio 2005 is the world's most popular development environment for designing, developing, and testing next-generation Windows-based solutions and Web applications and services. By improving the development experience for Windows, the Web, mobile devices, and Microsoft Office, Visual Studio 2005 helps organizations deliver a variety of solutions more productively than ever before. Visual Studio Team System expands the product line with new software tools that enable greater communication and collaboration throughout the development life cycle. With Visual Studio 2005, businesses can deliver modern service-oriented solutions more efficiently.

For more information about Visual Studio 2005, go to: msdn.microsoft.com/vstudio

Software and Services

- Products
 - Microsoft Office Word 2003
 - Microsoft Visual Studio version 6.0

- Technologies
 - Microsoft Visual C++