

Year 2000 at Rouen University Hospital

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The Year 2000 has already become a major problem for all healthcare information systems. At the Rouen University Hospital, this has been taken into account since 1992 when we designed, with the help of Arthur Andersen Consulting, our future Hospital Information System (HIS) for the 1994-1998 period. In fact, the Year 2000 problem is integrated in the more larger project of the new HIS implementation.

Software

In 1994, we made the strategic decision that all the new HIS applications will be in an open environment (Unix or, more recently on Windows NT). It will have a three level client/server architecture: 1. application server, 2. relational data base (in most of cases, Oracle) server, and 3. client. These client/server applications will be implemented to manage the year 2000 problem.

Two methods has been defined regarding the migration of the HIS applications: (1) to buy on the-shelf software which will respect open standards; (2) if we do not find the adequate software in the market, we will develop our own software using the following CASE (Computer-Aided System Engineering): Oracle Designer Developer 2000. In the first case, the desired application must deal with the year 2000 problem and this has been included in the specifications. This is evident because of the choice of Oracle as our "de facto" database standard. In the second case, since 1994, all the developed applications at the Rouen University Hospital have successfully managed the year 2000 problem.

Most of our HIS applications are or will be coming from CPage, which is a group of applications developed by the Dijon University Hospital in Burgundy. The Rouen and Dijon University Hospitals are partners in developing and maintaining a part of the CPage software package.

Let us look at our HIS applications in more detail:

- *Payroll and human resources management*: GRAPH 2 & SAGEPH applications. Both are national applications. In the maintenance contract, it is clearly stated that this application will manage the year 2000 problem on time.

Accounting & administrative data management: We chose the CPage package for these two applications (Oracle Designer Developer 2000 CASE). The client/server version will be operational in 1998/1999.

Electronic Patient Record (EPR): We also chose the CPage package for this application. For this new EPR application, a pilot site will be implemented in the Rouen University Hospital in the first semester of 1998 followed by a generalisation at the beginning of 1999. This EPR application will replace the old DIAMANT application, which has been operational throughout the hospital since 1992.

Logistics: phone list, laundry, meals management, material booking: Internal development.

Logistics: computer-aided production management, computer-aided maintenance management: buying on the-shelf software which manages the year 2000 problem.

Laboratory Information Systems which includes

- *Bacteriology, Virology*: buying the Mollis software, using Oracle
- *Pathology*: buying the APIX software; will manage the year 2000 problem at the

beginning of 1998.

- *Respiratory Laboratory*: internal development
- Biochemistry, Haematology, Immunology: buying the LAMX software (Unix); will manage the year 2000 problem at the end of 1997.

Microcomputer software: Pack Office 97 & Windows 95.

Internet Web site: internal development.

Digital Library on Intranet which includes:

- *Medline & 15 full-text electronic journals*: Ovid solution.
- *Agence de Presse Medicale dispatches*: internal development.
- *Electronic French drugs dictionary*: OVP-Editions du Vidal solution (1998)
- *Computer-aided protocols*: internal development in 1998.

Hardware

From a hardware point of view, the hospital currently uses a mainframe (IBM 3090 30J, OS MVS SP 313) to manage most of our HIS applications. One of the main conclusion of the HIS strategic design was to migrate from this proprietary environment to an open environment: Unix or, more recently on Windows NT, using the Oracle database.

The OS MVS SP 313 is not managing the year 2000. Therefore, we are changing it this year for the OS 390.

If we do not succeed to migrate before the year 2000 all of our HIS applications, and specially the administrative data management and the EPR which are two of the most strategic applications in a HIS, we designed a "reserve" scenario: to keep on the mainframe these two applications after the year 2000 using the new OS which manages the year 2000 problem. We have estimated that it will require a one man-month to update each application.

Conclusion

In less than 900 days, the future will tell us if the year 2000 project in our University Hospital is a success or not. And what about the Euro project? That is another story...

Acknowledgements

The authors thank M. Richard Medeiros for his help in editing this manuscript.