Information System for the Evaluation and Monitoring Services Mammography of the State of Minas Gerais

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1 – INTRODUTION

Breast cancer is the second most common type of cancer worldwide and the most common among women.

In 2012, we expect, for Brazil, 52,680 new cases of breast cancer, with an estimated risk of 52 cases per 100 000 women.

The mortality rates for breast cancer remains high in Brazil (60% of median survival after five years) and therefore it has been object of attention of the responsible government agencies.

The Ministry of Health, in addition to stimulating the mammographic screening in the country, recommended the establishment of measures for monitoring the quality of mammography services that serve the National Unified Health System (SUS).

2 – OBJECTIVES

Considering the alarming projections of occurrence of breast cancer and the recommendations of the Ministry, the Sanitary Vigilance of the State of Minas Gerais (VISA-MG) and the Development Center of Nuclear Technology (CDTN) developed a software **Atalanta** whose goals are:

- to improve the management of information from tests and performance results of mammography services;

- to provide data for:
  - ✓ scientific research;
  - ✓ evaluations to be performed by the SUS.

3 – METHODS

The development of software Atalanta was performed according to PRAXIS process, version 2.0, chosen to be sized for small teams and projects of small to medium complexity. The PRAXIS is based on concepts, methods and sub processes considered established by the software industry, for example, Unified Modeling Language (UML) and Rational Unified Process (RUP). It was created at the Federal University of Minas Gerais (UFMG), Brazil.

We used a CASE (Computer-Aided Software Engineering) tool - Enterprise Architect 7.0.

The Atalanta was implemented in language PHP 5, object-oriented, easy to learn and maintain. We use the PostgreSQL 8 database, which provides security and performance required.

To become more productive and fast development and future maintenance of the system, we used the Zend framework, containing the source code ready to certain features, and the MVC (Model-View-Controller), which defines the organization of the system into distinct layers, but integrated.

These technologies allow the software is available on Linux or Windows server machines.

4 – RESULTS

The system, in operation since 2009, allow the registration of institutions providing mammography service (laboratories, hospitals, clinics and others), and the record of their equipments, personnel, training carried out, quality assurance tests yearly and monthly, installation and operating conditions, control of pendencies and storage of test images, among other features.

The database system can provide subsidies for SUS analysis.

Annual inspections were performed in 75% of mammography services in the State of Minas Gerais. The monthly control image quality is performed in about 25% of institutions.

The current size of the software is 1,204 function points, according to the International Function Point Users Group (IFPUG).

The system is available and can be accessed by Internet address <http://atalanta.cdtn.br/>.

Figure 1 presents the menu with the most important functions of the software. Also shown is an example of the screen image management.
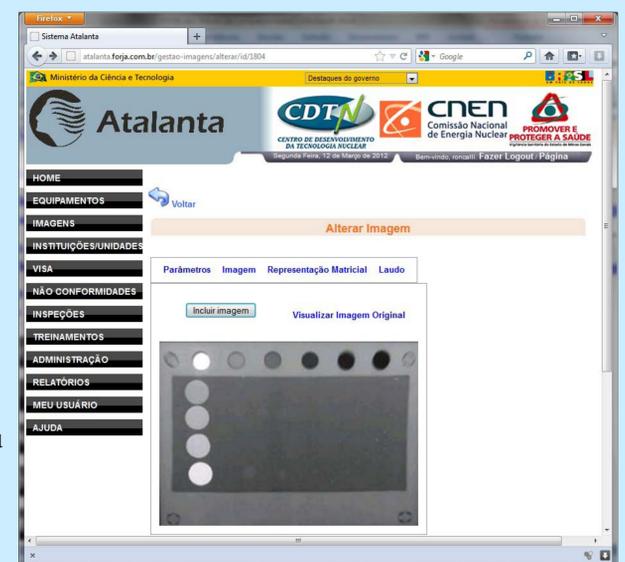
Fig. 1 – Main menu and screen image management.

5 – CONCLUSIONS

The Atalanta is hosted and maintained by CDTN in cooperation with the VISA-MG, which uses it in its surveillance tasks.

The database system was prepared to be widely used by SUS analysis of the relationship between the amount expended on the payment of examinations, the quality of tests performed and their reflections in public health improvement.

From the standpoint of scientific research, exploration of the data accumulated in the information system will allow for a wide range of statistical analysis on the evolution of variables related to the characteristics of the facilities and the quality of mammography services, essential for epidemiological studies breast cancer.

This information system is considered efficient and effective in meeting its goals and has become an essential tool for the systematic control of the quality of mammography services in Minas Gerais.

The Atalanta is based on free software, which enables its use in other states of Braziland even other countries.

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