An Innovative Approach to Large Scale Community Health Program Monitoring and Evaluation through the Internet: PROMS and PMDES

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Introduction

- In the last few decades, program evaluation has gained prominent position as a key component of public health research. Social programs have become increasingly complex with multiple intervention sites, multiple intervention levels, and multiple audiences
- In response, program evaluation theory, intervention designs, and methods have improved to reflect these changes.
- In contract with the New York State Department of Health, we developed two internet-based applications (PROMS and PMDES) that streamlined program monitoring, data collection, and report generation activities in sites across New York State.

Steps to a HealthierNY Program

- Steps to a HealthierUS is an initiative from the U.S. Department of Health and Human Services (HHS) to implement chronic disease prevention efforts with the goal of helping Americans live longer, better, and healthier lives.
- Through this 5-year program, states, cities, and native tribes receive funds to implement chronic disease prevention efforts.
- The focus areas are diabetes, overweight, obesity, and asthma and address three related risk factors—physical inactivity, poor nutrition, and tobacco use.
- In New York State four counties received funding. Program administrators are required by the U.S. Federal Government to monitor, evaluate, and report on the progress of projects.

NYS Healthy Heart Program

- NYS Healthy Heart Program has 19 objectives to promote healthier behaviors, further enhance the quality of care and reduce known disease risks. It promotes interventions in four sectors: communities, schools, worksites, and health care settings.
- Funds are provided to local communities to conduct physical activity and nutrition interventions in schools, worksites and the community, and to ensure people receive appropriate health care for risk factors for cardiovascular disease. Currently, 26 sites in 55 counties administer projects.
- Program administrators are required by New York State to monitor, evaluate, and report on the progress of projects.

Methods

- To ensure that the monitoring and data collection system could capture the breadth and depth of local intervention projects, all stakeholders provided feedback on content through program managers at the central office.
- Hardware and software decisions were made on the basis of recommendations from the computing services of Binghamton University and the expertise of the technical team, resulting in SQL server running on Microsoft Windows Server.
- For both systems, the initial prototype went through a number of transformations over a two year period. As the program managers and local project managers realized the possibilities with the systems, many components and additional functionalities were added.

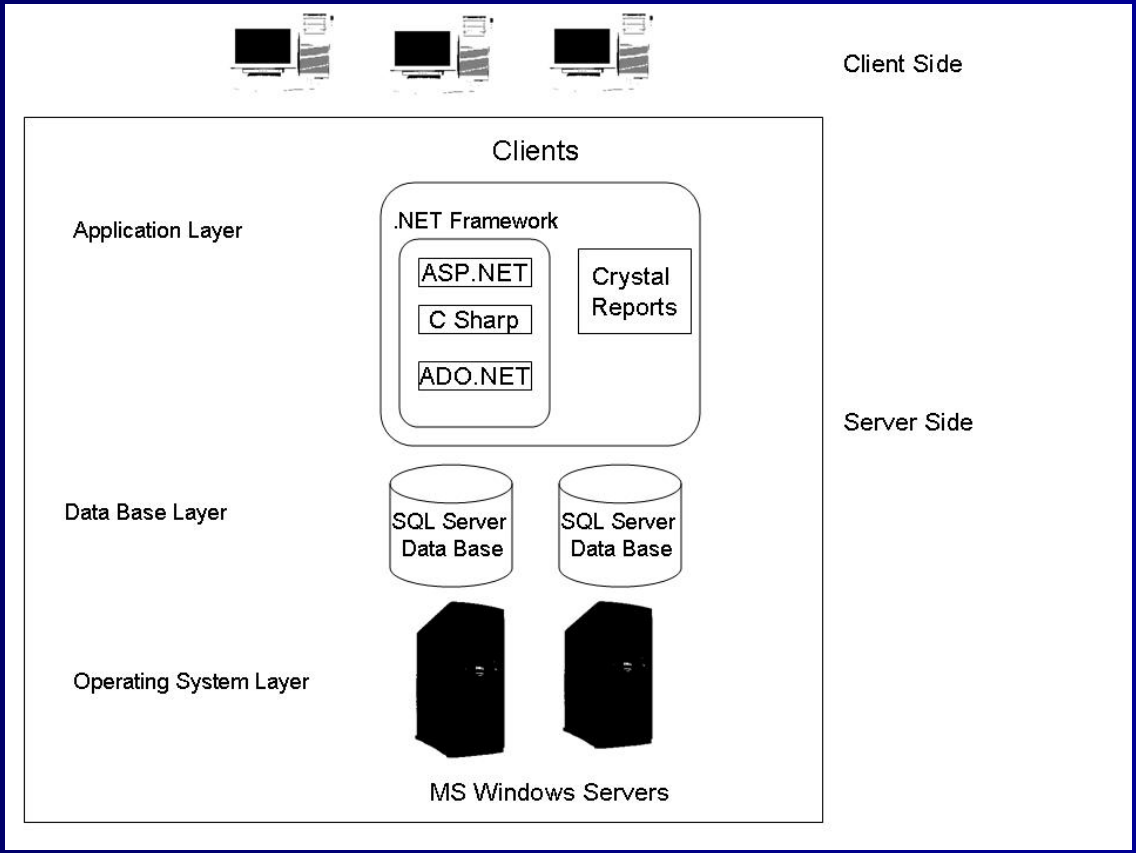
System Specifications

- The system consists of server and client sides.
- The first layer of the server side is the operating system. We used Microsoft Windows Server. We deployed a back-up Windows Server that has all functionalities of the main server. In case the server ever goes down, the back-up would immediately take the role of the main server.
- The second layer is the data base. For the data base we used Microsoft SQL Server and designed a relational data base which contains many tables and view. For example, the PMDES consists of 63 tables, 24 views and over 200 fields. The use of SQL Server provided us additional features such as an easy back-up process, replication, and export of data into other applications such as PDF, Access and Excel.

System Specifications

- The third layer of the server side is the application layer. This layer consists of .net framework and Crystal Reports. The .net framework includes web forms, xml, ADO.NET,and ASP.NET. ASP.Net provides the commands to show various text, labels, pictures, checkboxes, radio buttons, tables, and graphics in web forms. Behind all these components, we used C Sharp (C #) to connect all applications and to maintain system functionality.
- For the report functions of the system, we used C Sharp and xml to extract data. The data was then passed to Crystal Reports for the end user reports.
- Finally, the clients access the system through the internet.

Technical Specifications of the System



User Interface

- Users log-on to the secure web site with their pre-assigned user id's and passwords. All screens following the log-on process are customized for the specific user and project. Since there are different types of roles among the clients, the system is able to recognize the user and his/her role and provide the functions that are appropriate for the specific user.
- Users can insert new data into the system or update previously entered data. Alternatively, they can view previously entered data or generate reports for their particular projects.
- The complexity of the interventions is evident in the number of web forms created for the users. PMDES has over 100 web forms and PROMS has 175 web forms.

Conclusions

- The applications we developed enable users across New York State to collect and report standardized data, retrieve information, and generate a variety of reports.
- Program managers in the state capital Albany can monitor individual projects' progress on a regular basis and generate statewide or project specific reports.
- This initiative has already proven to be user friendly, cost effective, fast, and accurate and met the key requirements of program and project managers with minimum technical assistance.
- Regardless of the location of individual projects, with internet access, PROMS and PMDES are designed to handle many more clients and potentially go national.

Lessons Learned

- No system is able to meet all data collection, program monitoring and evaluation requirements for complex community health programs.
- It is not easy to find employees who have the technical expertise to develop a quality system.
- Modifications and additions to the system after initial development should be avoided. Written agreements with funders specifiying each field, web form, and reports are highly recommended.
- It is a mistake to assume that anybody can operate a computer and access the internet. We realized during our training sessions that a number of our clients required additional technical support.

Acknowledgements and Correspondence Information

- **Acknowledgements:**
  - PROMS is funded by Steps to a HealthierNY through the U.S. Department of Health and Human Services as part of Steps to a HealthierUS.
  - PMDES is funded by New York State Department of Health Healthy Heart Program through the U.S. Department of Health and Human Services.

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