

2012 NASCIO RECOGNITION AWARD NOMINATION



**WIC Information System Program
WISPr**

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IDAHO DEPARTMENT OF
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Executive Summary

Original Issue

Idaho's Women, Infants, and Children (WIC) management information system (IWCS) was originally created in 1994 and the system was showing its age. The WIC system had issues: clinic staff were spending too much time doing manual operations, participant information was still recorded and stored on paper records, reporting wasn't providing the agency with the information needed to make timely business decisions, customer service was too slow, operational efficiency was declining, and mistakes were being accidentally induced by the field staff due to a lack of standardization and automation. WIC needed a major overhaul to bring its operational processes into the 21st century.

In Idaho, the WIC program is delivered by seven Public Health Districts and two Native American Health Agencies delivering services from more than fifty-nine clinics. These organizations have traditionally delivered WIC services by the use of paper forms and a mainframe application which in turn were dependent on unique locally developed administrative processes. Unfortunately, these manual processes were tedious, error prone and tended to mutate slowly over time. In addition, the data entered into the mainframe system for reporting purposes was entered by hand based on information from the paperwork completed in the interview process.

Solution and Results

Idaho needed to make a fresh start with the WIC program. The citizens of Idaho deserved an operational solution that would be user-friendly, standardized, highly automated, adaptable to changing business and federal requirements, secure, and cost effective to operate. That is exactly what was delivered.

Using agile project development practices, a small cross-divisional team of IT technical staff and WIC business staff defined, designed, developed, qualified and delivered the WIC Information Systems Program (WISPr) in less than two years. This was accomplished a year faster and at a savings of more than \$1,000,000 less than had been originally planned using the waterfall development model.

WISPr is a web-based thin client application using the Microsoft .Net development framework, a high-end business rules engine, SQL databases, and several internally developed and off-the-shelf software components. This new system eliminated the use of the mainframe computer system to deliver WIC services across the state. WISPr provides for automated and standardized WIC service delivery operations between health districts, agencies, and clinics, the near elimination of paper forms and paper records, simplified client scheduling, and enables a high level of predictability in the selection of appropriate food packages for program participants based on federal requirements and their personal health needs.

Project Description

The Problem

Idaho's Women, Infants, and Children (WIC) management information system was originally created in 1994 and the system was becoming an impediment to the delivery of services. The WIC system had some serious operational issues that had to be addressed:

- Clinic staff members were spending too much time doing manual operations (income calculations, plotting participant growth on paper graphs, recording nutritional assessments). Participant information was still recorded and stored on paper records
- IWCS reporting wasn't providing the agency with the information needed to make timely business decisions
- Customer service was too slow
- Operational efficiency was declining. IWCS was process-driven and did not allow staff to streamline processes or accommodate participant needs in the way in which an appointment was conducted
- Mistakes were being accidentally induced by the field staff due to a lack of standardization and automation

The WIC program needed a system that would bring its operational processes into the 21st century and allow for Electronic Benefits Transfer (EBT) which is in planning. Federally, there is a mandate that states will have EBT by the year 2020.

In Idaho, the WIC program is delivered by seven Public Health Districts and two Native American Health Agencies working in partnership with the Idaho Department of Health and Welfare (DHW). The Health Districts and Agencies are responsible for delivering services from more than fifty-nine clinics located across the state. These organizations have traditionally delivered WIC services by the use of paper forms and a mainframe application which in turn were dependent on unique locally developed administrative processes. Unfortunately, these manual processes were tedious, error prone and tended to mutate slowly over time. In addition, the data being entered into the mainframe system for reporting purposes was entered by hand based on information from the paperwork completed earlier in the interview process. This need for using a dual entry process also had to be eliminated.

The Solution

Idaho needed to make a fresh start with the WIC program. The citizens of Idaho deserved an operational solution that would be user-friendly, standardized, highly automated, adaptable to changing business and federal requirements, secure, easily supported, and cost effective to operate. This is what was needed and this is what was delivered.

The original WIC management information system was created specifically for use on an IBM mainframe system using the Natural programming language coupled to an Adabas database. Clinic employees input user information into this system using data terminals or terminal emulation applications from their personal computer.

In addition to the business needs for a new WIC system, the mainframe based WIC program presented financial and technical problems that also needed to be addressed. Natural is an outdated programming language. Adabas is an inverted list database which is optimized for use with Natural first released in 1970. Finding experienced and talented programmers who know Natural and can work with Adabas databases is very difficult. The Department of Health and Welfare expects IT to reduce mainframe expenditures and dependencies as quickly as possible.

In the original project estimation for replacing the WIC program, development cost estimates were in the area of \$8,000,000. The anticipated timeline to deliver the WIC replacement project utilizing the waterfall development model and software copied from another state exceeded three years in duration. Even worse, the set of features and functions provided by the proposed application did not meet all of the requirements needed by the Idaho WIC program.

The WIC leadership team and IT management team held a series of planning meetings to find an alternative solution. From these meetings, a plan emerged to develop a full solution in-house using a joint team approach utilizing industry best practices. The objective was set to deliver a fully functioning system in two years and at half the cost of the previous plan.

Using agile software and project development practices, specifically the scrum model, a small cross-divisional team of IT technical staff and WIC business staff were assembled and trained in scrum methodologies. The team spent weeks working together to define epic user stories, building clear user story backlogs, and designing technical product roadmaps prior to the initiation of any code development. Once the planning phase was complete, the team began development sprints. The team ultimately delivered the WIC Information Systems Program (WISPr).

WISPr is a web-based thin client application written in C# using the industry standard Microsoft .Net development framework. WISPr utilizes a high-end business rules engine for fast and dependable rules interpretations, SQL databases for information storage, and several internally developed and off-the-shelf software components.

The WISPr application resides on a dual firewall protected pair of redundant Windows servers located in our local data center. The application and data are

further protected by being regularly copied to our local SAN data system. The system design will protect users from delays, downtime and lost data.

To protect participant data from being viewed or copied by unauthorized sources and to prevent malicious web attacks on the WISPr servers, IT has incorporated Barracuda Network's Web Application Firewalls between our production environment and the Internet. This provides enhanced protection in addition to our existing state and agency firewall systems.

The new application also utilizes industry standard PDF technology to capture, store and display growth/development chart information. Participant growth is automatically plotted online from the anthropometric data collected and entered from the participant. Growth charts are available for immediate retrieval and display when needed. Growth charts can also be printed locally, when necessary.

The architecture and design of WISPr provides another advantage. WISPr can be utilized by other states and agencies who need to update their WIC systems. Product costs are minimal, system security supports variable user roles and secures autonomy within specific service providers; state level policies are designed modularly or within a business rules engine for ease of customization.

Project Significance

WISPr is the result of real teamwork between DHW Information Technology staff and the WIC program staff. The joint project team had to redefine the relationship between IT and the WIC business team. The traditional model of software and system development had to be broken in order to deliver this product on time and at cost targets. This new system brings many benefits to both WIC participants and the staff who administer the WIC Program.

The old system that WISPr replaces was primarily designed for record keeping. Its primary purpose was to produce WIC food checks which participants could use to purchase healthy supplemental food from local grocery stores.

The rest of the work involved in administering the WIC program -- such as charting developmental growth of participants, interpreting their risk factors, and calculating participant's income -- was done manually and on paper, increasing the risk for human error. Regardless of the amount of training provided, human error was inevitable and difficult to discover or resolve. WISPr can do all of these functions electronically and without error.

In projects of this magnitude, other states typically assemble large teams to oversee each functional area within the WIC program during project development. Not only did the WIC team, along with DHW IT staff, achieve all of their project objectives

over the last two years, the WIC team did all of this while still maintaining all of the other required program duties, such as contractor monitoring, fiscal reporting, nutrition education and training, breastfeeding peer counseling activities and vendor monitoring.

The new system also provides a much more efficient process for assisting participants who come into the WIC clinic for assistance, incorporating the concept of Participant Centered Services where the system is not the focus of the interview; rather, interacting with the participant and identifying participant needs is the focus.

The old system drove the process and interaction with the applicant. You couldn't skip a step and needed to get information in a very ordered fashion. With the new system, service providers can enter information as it is provided by the participant; they can choose to skip around from screen to screen and have multiple windows open for several family members and move between participant screens making the process much more efficient.

The paper forms used to chart developmental growth of participants, perform risk factor analysis, determine income, and numerous other tasks are now automated. Accurate and timely information is available either as raw data or in standardized reports. Daily tracking is now available regarding participant demographics, participant usage rates, food package utilization, and anthropometric trends as well as many other data items.

Project Benefits

This new system eliminated the use of the mainframe computer system to deliver services across the state. This should reduce DHW mainframe costs by more than \$200,000 in SFY 2013.

WISPr provides for automated and standardized WIC service delivery operations between health districts, agencies, and clinics, the near elimination of paper forms and paper records, simplified client scheduling, and enabled a high level of predictability in the selection of appropriate food packages for program participants based on federal requirements, state policy, and the program participant's personal information.

Idaho's WISPr software application systematically guides clinical workers through a step by step process based on real time responses from the person seeking benefits. WISPr is loaded with all of the functionality needed to assess participant needs, education, nutrition assistance, plot growth and development, track case notes, and produce food vouchers. WISPr also includes features to oversee WIC program management including the price performance of retail vendors spread across nearly 83,000 square miles of our state.

This secure internet accessible web based system was custom developed in just two years and for less than \$4,000,000 by leveraging agile development methodology and a scrum driven business partnership. This was built and delivered in far less time and cost than other WIC systems available today.

With this new system, team members at the local clinics can enter information as it is provided to them by the program participant. Users have the option to navigate from screen to screen and/or have multiple windows open for several family members and move between participant screens making the process much more efficient. Unlike the legacy system, this flexibility allows staff to interact more naturally with participants and address participant questions/concerns as they arise. Key steps are not missed and data is recorded and processed in real time.

Another important benefit that comes with the new system is that it will allow the WIC program to explore Electronic Benefits Transfer (EBT) planning such as having monthly benefits put on an EBT card instead of issuing paper checks which is a federal mandate by 2020. Having benefits on a card also will help reduce the stigma that comes with using the existing paper checks.

WISPr has been successful in digitizing vendor cost tables, applicant eligibility information, nutrition assessment and risk identification, automated growth charts, food package filtering, administrative reports, and enhanced system security.

WISPr also includes more extensive business program management through access to all WIC related information for analysis and complete program management functionality including retail vendor management and a fully functional inventory system from supply order, receiving, and issuing.

WISPr has eliminated the obvious risks and shortcomings involved with paper document storage and retrieval, data management, caseload management, vendor management, enrollment processing, and system administration.

The final benefit provided by this system concerns supportability. WISPr was deliberately designed to last. Industry standard and affordable software components were incorporated into the design. Strict coding standards and practices were followed throughout the development life cycle. Extensive use of comments were used within the code, with the code modules, within the databases, and in the code libraries.

The servers and network components used for the delivery of WISPr are also standardized to fit smoothly into the network architecture employed by the Idaho Department of Health and Welfare's statewide system. Systems and data repositories are protected and redundant so user downtime is prevented.