New York City Excellence in Technology Awards Program (ETAP) 2006

Category:	Most Innovative Use of Technology
Title of Entry/Nominee Name:	Computerized Heating Automated System (CHAS)
Date Launched:	Phase I launched in June 2006
URL if available:	
Provide a project overview:	The New York City Housing Authority (NYCHA) provides decent and affordable housing in a safe and secure living environment for low- and moderate-income residents throughout the five boroughs. NYCHA is the largest public housing authority in North America. Its Conventional Public Housing Program has 181,581 apartments in 2,694 residential buildings comprising 345 developments throughout the City in. NYCHA's Public Housing represents 8.6% of the City's rental apartments and is home to 5.2% of the City's population. The Computerized Heating Automated System (CHAS) application is a management tool that facilitates remote monitoring and management of NYCHA's 178 major central heating plants. Under CHAS, automated boiler and building heating zone valve control panels from multiple leading industry manufactures are accessible through a common, custom, web-based software tool.CHAS is part of a larger NYCHA automated building control strategy that ALSO includes The Housing Authority Remote Monitoring System (HARMS) application- a management tool that facilitates remote monitoring and management of the operastional status NYCHA's 3,318 elevators(which is hereby cross-referenced as a DUAL ETAP submission in this catagory, given that it leverages NYCHA's investment in tha same IT Infrastructure and network backbone, including the wireless components) as well as other major equipment crucial to continuous improvement of resident service and property management.

1. Provide the name, title, agency, complete addresss, phone number and email address of the person you are nominating.

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2. Provide the name, title, phone number and email address of the nominee's supervisor.

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3. What business problem were you trying to solve by implementing this project/application? (200 words or less)

CHAS was developed to address three primary business problems:
- The first and most important is a need to reduce energy consumption and contain NYCHA's rapidly-rising utility costs. In 2005, NYCHA expended $430MM, or 27 percent of its operating budget, on utilities. This represents an operating cost increase of 68 percent over a four-year period. For heating and hot-water alone, NYCHA is consuming 177MM therms per year. With rising and unpredictable utility rates and declining federal subsidy, NYCHA has a mandate to reduce consumption.

- The second business need was to create a management tool that will support efforts to better utilize a streamlined and specialized workforce oriented to contemporary, micro-processor based heating controls and equipment.

- Finally, there was a need for NYCHA to have a reliable means by which to be automatically notified of emergency conditions at its 178 primary heating plants. With immediate notification of potentially catastrophic conditions such as loss of electrical power, precipitous loss of steam pressure for space heating and domestic hot water generation and flooding of heating plant, NYCHA can respond expeditiously with appropriate corrective measures.

4. What were the project's start and end dates?

Total project development and deployment time was 18 months (January 2005-June 2006) for Phase I, which led to the deployment of 48 heating plants across the city in time for the upcoming heating season. Project resources are in place to complete the necessary heating equipment upgrades and network infrastructure to phase in the balance of NYCHA's 178 major heating facilities into the CHAS application by the 2007-2008 heating season.

5. How many people worked on the project - staff and consultants?

Ten NYCHA staff with varying levels of diverse technical and managerial skills worked in conjunction with consultants from Siemens Building Technologies, Intech21 Application Developers and EIA cabeling and IT infrastructure resurces in developing, installing, commissioning, training and delivery of the application to NYCHA Borough Management.

6. List other agencies that were involved in the project.

NONE

7. What was the total project cost?

The estimated cost of the full CHAS deployment (which is about 30% completed) is $15MM. The budget covers contract costs for software development, training, expansion of NYCHA's wide area network to each of the boiler rooms (including the use of rooftop wireless technology), replacement of outdated boiler and building controls and related wiring, and installation of communication / local server infrastructure.

8. Describe the features, functionality, and benefits of the project/application. (200 words or less)

The Computerized Heating Automated System (CHAS) application is a management tool that facilitates remote monitoring and management of NYCHA's 178 major central heating plants. Under CHAS, automated boiler and building heating zone valve control panels from multiple leading industry manufactures are accessible through a common, custom, web-based software tool. The project scope also includes boiler room emergency alarm notifications that will be transmitted through email to heating and emergency services supervisors on a 24 hour basis when emergency condition sensors (flood, abnormally low steam pressure, low supply water temperature and electrical power loss) are triggered. The application will also allow managers and heating supervisors to identify malfunctioning equipment immediately and

consequently allowing them to exercise cost saving corrective measures.

While building management systems are gaining popularity in the private and public sectors, CHAS is truly unprecedented in terms of the number of facilities involved and to the extent that so many types of end-devices and product manufacturers are included. In addition, CHAS is part of a larger NYCHA automated building control strategy that is soon to include elevators and other major equipment crucial to continuous improvement of resident service and property management.

9. Describe the technology used to create the application. (200 words or less)

The CHAS is a web-based custom software application which resides on a dedicated central server linked to NYCHA's wide area network. Data acquired from boiler and building zone valve heating controls panels is routed to a data converter and then to CHAS local servers installed in each boiler plant. The data on the CHAS local servers is then transmitted to the CHAS central server via NYCHA's wide area network. Heating staff using a browser-based tool are capable of viewing and making appropriate adjustments to the heating controls. Many of the application end-user window views include active graphic images of the manufacturer heating control panels. Through the application, users can "click" on the panel devices and utilize the equipment functionality as if they are in front of the panels themselves.

Heating plant alarm conditions (flood, temperature pressure loss, power loss) are also transmitted to designated NYCHA heating administrators through electronic mail, and Blackberry devices.

10. Did the project/application extend or replace an existing system? If yes, provide a description of what was accomplished. (200 words or less)

No. The pre-existing system relies heavily on heating plant technitians at every NYCHA heating plan location, hence the project's benefit and ROI.

11. How has the business process been improved as a result of the project/application? Provide data that demonstrates this improvement. (200 words or less)

The implementation of CHAS has led to a business transformation of the way in which NYCHA supports its heating plants, responds to service calls and performs preventative maintenance. NYCHA's staffing model is now centralized at the Borough Management Office level and is comprised of skilled "roving crews" assigned to monitor "clusters" of heating plants in a region of the City. Previously, all heating staff had been assigned to single physical locations. The new technology will permit managers to more effectively and efficiently deploy staff resources where warranted, promote more reliable heat and hot water service and improve response time when heating plant emergencies arise.

12. What has been the economic benefit of the project/application (cost savings, cost avoidance, etc.?) (200 words or less)

NYCHA conservatively estimates to save 15MM therms in heating fuel annually within 2 years following the full deployment of 178 locations. Projected utility savings associated with these consumption reductions will be dependent on rates, but will be at least $20MM per year.

Also, in anticipation of the implementation of CHAS, NYCHA has reduced its corps of heating personnel by 60 technicians at a savings of approximately $650,000 annually.

13. Who benefits from this use of the project/application? (200 words or less)

- NYCHA residents will benefit from improved heating and domestic hot water service, sustained comfortable indoor temperatures and reduced heating system downtimes. Reduced utility expenditures will enable

NYCHA to reprogram operating funds to meet other pressing resident and property management needs as well.
- NYCHA heating staff will benefit from the added convenience of having access to a technology tool that more efficiently enable them to monitor multiple buildings from a single location and prioritize maintenance activities.
- NYCHA managers will have a supervisory and staff deployment tool, historical trending data and access to aggregated exception reports to more effectively manage fuel consumption

14. What is the current usage of the project/application and what is the population that is eligible to use it? (200 words or less)

There are 150 current users of the application and it is anticipates that at least 400 NYCHA employees will utilize the application daily upon full deployment. In addition, because of the way the application was developed, any NYCHA employee with access to a work station has primary -- view-access of each heating plant on the application.

15. How has the project/application been marketed to end-users? (200 words or less)

More than 1,000 managers, facility superintendents, heating staff and engineering personnel were briefed on the underlying aims and features of the CHAS utilizing PowerPoint presentations and software demonstrations outlining its capabilities, benefits and risks. These presentations and regular stakeholder meetings involving representation from every major department and property management area in the Authority are part and parcel of NYCHA's IT-PMO process and ensure that all necessary parties are engaged in this critical business transformation.

Training has played a major role as a marketing vehicle as well. Dozens of site-level training classes on the new heating equipment has taken place. Users of the application were trained at NYCHA's Sheepshead Bay training facility, which now contains a dedicated CHAS environment with PCs and all the heating panel end devices utilized in NYCHA facilities. This allows users to experience the application's impact on the heating equipment in real time.

16. Provide a link to the project/ application if available for external viewing.

Given the process control nature of the application it is not available for external viewing.