

Keeping an eye on the Inauguration

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Colleen Beeson of VSee holds the hardware component of their virtual office system, a technology that helped law enforcement monitor a vast number of security cameras at the 2009 Inauguration of President Barack Obama. Credit: VSee

One of the toughest technological challenges for law enforcement is to simultaneously monitor live feeds from the wireless cameras scattered across their jurisdictions. A nearly impossible task under any circumstances, it was an even greater one for Barack Obama's Presidential Inauguration.

In planning to safeguard the millions of visitors and residents in the city for the Inauguration events, Washington, D.C. required a new surveillance approach.

In response, law enforcement adapted a "virtual office" system called

VSee to overcome the bandwidth obstacles that had prevented simultaneous access to all of the city's cameras.

Developed with National Science Foundation (NSF) support as part of the Small Business Innovation Research Program, VSee is a combination of hardware and software that allows users to securely receive and share large amounts of information, usually within a virtual office environment.

Though originally created as a telework platform, VSee was adapted to enable security officers to watch multiple remote cameras in real time from a single command center. Because the changes to the system shrank the cameras' data-streaming bandwidth to a fraction of its original size, even police cruisers were able to access the feeds via cellular networks.

The technology originally emerged as the Ph.D. work of Milton Chen, then at Stanford University, where he focused on videoconferencing and remote collaboration. "After I completed my Ph.D., my advisors and some of my colleagues who worked on the project decided to form VSee with me," says Chen.

Not satisfied with existing virtual office approaches, Chen wanted to find a way to capture the advantages of telework without the usual technical shortfalls and impact on office social dynamics--both burdens on productivity. Even today, with the support of funds from NSF and other sources, Chen and his team modify the software based on findings from research studies of the social dynamics of both the workplace and home work environments.

Existing collaboration tools limited the remote work experience in significant ways, with handicaps including difficulties sharing on-screen applications, limited webcam feeds and poor video, which can cloud the

critical social cues necessary for remote communication.

"From a technology standpoint, what resonated most with NSF was the clever bandwidth-management enabled by VSee's approach," says Errol Arkilic, the NSF program officer who oversees VSee's grants. It was the bandwidth management that made the Inauguration monitoring possible. "VSee engineered a solution that bypasses the constraints of various communications protocols, a breakthrough that has the potential to span across many platforms, including wireless."

Within the remote-work system that Chen and his collaborators developed, all users can clearly see each other at once, work together on an on-screen document or other object, and trust that their environment is secure from intruders. And unlike a virtual meeting, the VSee platform is on all day, with options for privacy, so it becomes a true virtual office environment.

For the Inauguration application, the interface was the same, with each camera taking the role of a "user". With VSee managing the bandwidth, for the first time, security officials could keep all cameras active and bring real-time situational awareness to law enforcement officers wherever they were in the city.

VSee also solved the key problem of inter-agency collaboration. During the Inauguration, VSee was used by half a dozen intelligence agencies to share information and collaborate in real-time.

While security applications are still new, the system's adoption for telework has expanded rapidly since its release in 2003, with several Fortune 500 companies and federal agencies adopting VSee for remote work or for traceless, secure collaborations.

The employees at VSee are continuing to refine their software,

modifying it as they use it for their internal use in offices around the world. Says Chen, "By focusing on the collaboration requirements of a team like ours, we aim to create a simple tool to achieve the productivity of a bullpen in a tech startup."

Source: National Science Foundation

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