

The ATM IDEAS Project: Second-Generation TMC Development (excerpts)
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Abstract - The acronym for MTA Bridges & Tunnels' Advanced Traffic Management Incident Detect/Evaluate/Act System, ATM IDEAS, is true for the deployment project as well. Awarded as a design-furnish-install-test-maintain contract to Transdyn Controls, Inc., with Dunn Engineering Associates, PC, providing administrative and quality assurance services, the \$12M project is using Internet-enhanced weekly teleconferences, status reporting and project management tools, and file sharing. In emulation of open-source code development, modular software development is contractually viewable by the sponsoring agency from the beginning, and paired with written documentation standards, continuous configuration management and complete off-site modular testing prior to deployment. Other project innovations include statistical task analyses based on two 24-hour observations of real TMC operations, a rapid-prototyping mock-up for user feedback and human factors analysis, the use of GIS field device configuration data, effective integration of varying audio and video sources, and the use of electronic white boarding techniques. Planned for simultaneous deployment in 2004 in the Authority's eleven existing TMCs and a new centralized coordinating virtual TMC, the ATM IDEAS project is an early example of second-generation TMC systems engineering and software development techniques.

Contract Mechanism - MTA believed that synergies would ensue from awarding the design and test project components to the software development contractor. And, acknowledging that it was entering into a long-term relationship with a software vendor, MTA added a significant five-year extended maintenance contract to the deployment contract as well.

Software Innovation - With confidentiality agreements in place, Transdyn is contractually obligated to perform all software development within a completely transparent and observable electronic environment. In what is certainly a first for the TMC industry, and perhaps for the larger software industry as a whole, in April 2002 Transdyn gave MTA and Dunn full access to their existing DYNAC software source code base.



GUI design. a) Lamppost numbering and incident indication. b) Alternative iconography.

Also, MTA budgeted \$1M of the contract towards the creation of a rapid prototyping environment, the “GUI Simulation Room,” deployed in November 2002. Important hardware and software decisions are made by representative Operations personnel on a console mock-up supplied with video clips, live interactive audio and test software. Four phases of test sessions will result in a SWRD that incorporates screen shots, sequences and timings, so that MTA will literally be able to “see what it gets” in advance of installation.

Technical Content - Incidents can involve not only officers at the scene, operators at their workstations, and supervisors in their offices, but also groups of personnel brainstorming solutions to complex situations. The ATM IDEAS project will also deploy 50” diagonal data screens with touch screen capabilities, known as electronic whiteboards. These large displays will also be viewable by the numerous officers, sergeants and lieutenants who are responsible for keeping MTA's facilities running and need up-to-date toll plaza, traffic and weather data.

Conclusion - After September 11, MTA's commitment to deploying advanced traffic management has been strengthened. MTA's new incident management system, ATM IDEAS, is using numerous state-of-the-art software development and project management techniques in the hopes of successfully deploying a new software and communications system on budget and on schedule. There may be no “silver bullet” in software development, but by using innovative contract mechanisms and requirements, agencies can have the verification and approval tools in place to ensure project success.