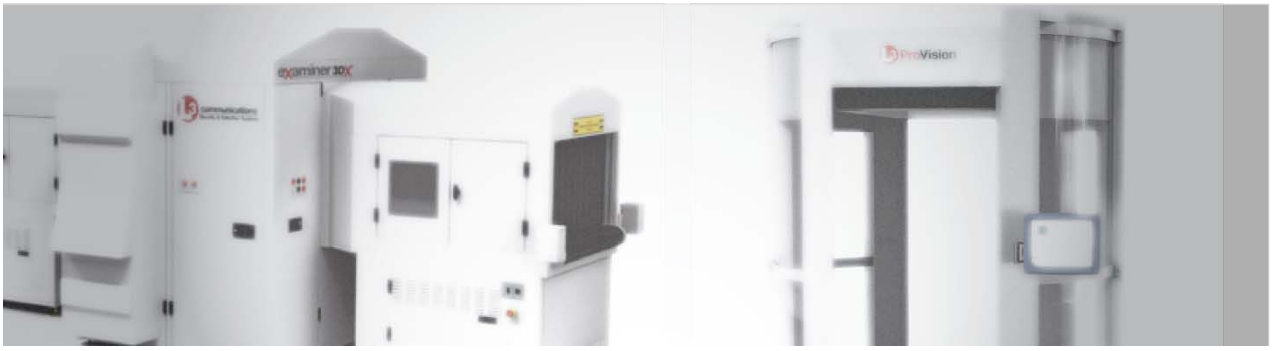

CHECKPOINT TECHNOLOGY CHANGES POSE CHALLENGES FOR AIRPORTS

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The Transportation Security Administration (TSA) continues to develop new screening technologies for passengers, carry-on articles, and checked baggage. These new technologies are sometimes transparent to airport operations, as when they are software upgrades to existing machines, but deployment of new equipment is more likely to be disruptive not only to current operations, but also to capital planning and budgets.

The continuing large scale deployment of AITs at checkpoints is an obvious example. Since their appearance starting in 2007, airports have had to wrestle with providing space and power at checkpoints that were built long before use of AITs was ever conceived. TSA is also investigating other wholly new checkpoint technologies – such as credentialing authentication and shoe scanners – that will have to be accommodated if and when deployed.

As painful as checkpoint modifications can be, they will pale in comparison to the coming recapitalization of aging EDS machines and optimization of existing checked baggage inspection systems (CBIS) for which TSA is currently planning.

Recapitalization is defined as replacement of the EDS machines themselves, with minimal modification to baggage handling conveyors and such changes to the controls program as are needed to meet integration standards. Optimization is a related but distinct effort. The intent of an optimization program is to correct known deficiencies through more extensive modifications to conveyors and system programming. When done in combination, a recapitalization and optimization project will seek to take advantage of the capabilities of new EDS machines and lessons learned since the advent of in-line screening using CT technology. Next generation CT machines, in all categories, are currently undergoing certification and operational testing.

TSA's planning and prioritization for instituting recapitalization and optimization programs is a complex undertaking based on a multitude of considerations, including but certainly not limited to machine age, reliability, maintainability, and operational availability; CBIS performance statistics; TSO staffing; and, new machine availability. Their effort is further complicated by budget uncertainties and the requirement for OMB approval of annual spending plans.

Under recapitalization it is conceivable that all project costs will be borne by TSA, presuming that sufficient funding authority is received.

Implementation of combined recapitalization and optimization projects will likely be similar to the current procedure for new in-line systems, where the airport is the project sponsor and receives some measure of reimbursement from TSA. One key difference may be that TSA could initiate the transaction based on priority and available funding, and notify the airport of their intent to proceed with the project and provide special guidance on project scope and schedule.

Regardless of whether a project is purely recapitalization, or recap and optimization, the importance of detailed and proper project phasing to obviate impacts to active screening operations cannot be overstated. This importance rises exponentially in larger systems where major modifications are required. But, irrespective of system size or project type, phasing is an essential criterion that must inform any design from the beginning and will clearly impact both the schedule and cost of the project. Apparent mundanities such as machine ingress/egress and travel path to the screening matrix cannot be overlooked.

Although a formal recapitalization and optimization program is new to TSA, there are case studies upon which to draw when modifying an existing, operational CBIS. Vic Thompson Company's work at Southwest Florida International Airport (RSW) is such an example.

The Airport first commissioned Vic Thompson Company (VTC) to provide an independent assessment of their existing seven-machine system. VTC identified mechanical and programming modifications to improve system performance, and was asked by the Airport to design and lead the implementation of the recommended changes. VTC's redesign, supported by sophisticated simulation modeling, called for the work to be done in seven phases so that the existing system could be modified at night while remaining operational during the day. Several phases overlapped with RSW's peak season, requiring additional coordination and detailed contingency planning to keep all areas of the airport operational during construction. With implementation of the redesign, which kept the original seven CT machines in use, certified throughput was increased by 60% and the error rate reduced by 85%.

Another unique challenge associated with modifications to an existing system is that TSA's *Planning Guidelines and Design Standards* (PGDS) do not specifically address those project types. Consideration and understanding of potential operational impacts outside of the TSA screening matrix, which will influence overall system performance, are essential to clearly defining the project goals, scope, and cost-sharing. Reaching agreement with TSA on any exceptions to PGDS requirements at the outset of the project is especially important so that new – and unfunded -- expectations aren't imposed during TSA design reviews and/or system testing after the work is completed.

As was the case with the first in-line CBIS, and despite years of lessons learned, there still exists a tendency in some quarters to not consider an in-line CBIS as a system-of-systems that operates very differently from age-old baggage handling systems. As a result, there are missed opportunities for efficiencies that would minimize the Airport's costs for construction, operation, and maintenance. There are also missed opportunities for airports to maximize allowable and available reimbursement under cost-sharing agreements with TSA.

Life-cycle costing is a significant requirement in the PGDS as it applies to new CBIS. Whether it will be required by TSA for system modifications is unknown; however, it could be a useful tool

to help inform an airport's decision process on the extent of modifications to be undertaken, separate from the issue of TSA reimbursement. For example, it may make sense to accelerate planned system changes to coincide with the TSA work, so that operational disruptions happen but once.

With so many CT machines nearing the end of their anticipated useful life in an era of limited federal funding, deployment of next generation CT machines will be a massive undertaking requiring TSA to balance many competing needs. Airports should start thinking about ways to not only mitigate the impact of recapitalization or recapitalization/optimization, but to actually make the best of the inevitability and look to achieve sustainable efficiencies.