



RESEARCH SERVICES

OFFICE OF POLICY ANALYSIS,
RESEARCH & INNOVATION

TECHNICAL SUMMARY

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PROJECT COST:

\$19,000



Heathrow Airport will initially have three stations and 18 podcars connecting parking and one terminal over 2.4 miles of elevated and at-grade tracks.

The Potential Viability of Automated Rapid Transit at the MSP Airport

What Was the Need?

One of MnDOT's key strategic directions for research is to provide a sound multimodal infrastructure. In December 2009 MnDOT began investigating innovative multimodal options including [automated rapid transit](#). Like a rail system, ART involves a dedicated network of tracks. However, the infrastructure associated with ART is typically much smaller than rail infrastructure. ART vehicles are also much smaller than traditional rail vehicles, typically holding no more than six passengers. This smaller scale infrastructure may make ART easier for cities and states to implement due to shorter track lengths required for stopping vehicles and less overall energy use. Additionally, like taxis, ART vehicles function on demand, taking passengers directly to their destinations. Any car can be deployed to any point on the network at any time.

A study of existing automated rapid transit systems informed MnDOT about the viability of ART for the Minneapolis-St. Paul International Airport and on potential right of way issues that may arise during a future implementation.

In August 2010, MnDOT hosted an [ART workshop](#) that focused on potential uses of ART in Minnesota. The workshop included an initial review of the ART pilot system in London's Heathrow Airport. This review led MnDOT to explore the viability of an ART system at the Minneapolis-St. Paul International Airport. MnDOT was particularly interested in potential interactions between a future ART system and the highway system, specifically in regards to MnDOT right of way. If a future ART system were to leave airport property to serve nearby parking facilities and hotels, it would likely run within or cross a state or Interstate highway and impact MnDOT right of way.

What Was Our Goal?

The original goal for this project was to determine the feasibility of an ART system at the MSP Airport. However, initial research determined that existing ART implementations such as the one at Heathrow Airport were too preliminary for investigators to determine how reliable and cost-effective a system at the MSP Airport would be. The objective was changed to include a survey of the current state of ART applications in airport environments. By reviewing literature in this area and contacting those involved with current projects, investigators could characterize ART system options and identify points of potential application to the MSP Airport.

What Did We Do?

Investigators performed a literature review on current ART applications, focusing especially on two systems: Heathrow Airport, which was in the piloting stage, and [Mineta International Airport in San Jose, California](#), which was in the planning/discussion stage. Following the review, investigators conducted face-to-face and telephone interviews with staff working on these two systems to gather details about their design, rationale, level-of-service, potential risks, cost and revenue estimates, funding arrangements and sources, and integration with the existing environment.

In addition, investigators described existing MSP Airport automated people mover systems (the MSP C-Concourse Tram and Hub Tram) to provide a basis for evaluating a potential ART implementation.

“If an airport ART system touches the highway system, then from a right of way perspective, we would need to know the impact on MnDOT.”

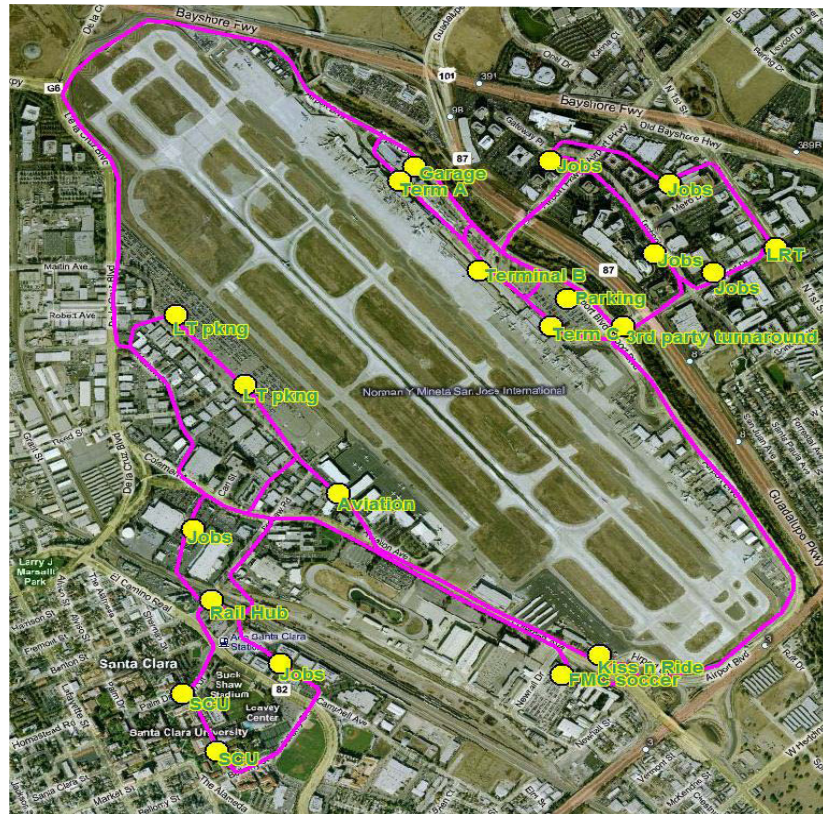
—Mukhtar Thakur,
Director, MnDOT Office of
Multimodal Innovation

“ART systems tend to serve niche applications in areas not well-served by traditional transit modes, addressing the types of congestion and transit challenges faced by busy airports and activity centers. ART could provide highly available systems with low energy use.”

—Ferrol Robinson,
Research Fellow, State
and Local Policy Program,
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The planned system for the San Jose airport (shown above) would exceed the Heathrow system in both scope and level of services, providing connections to transit facilities, parking, hotels and employers within two miles of the airport.

What Did We Learn?

The report provides a thorough introduction to the ART concept, describing its intended purposes and major design options. Typically, ART use in airport environments includes travel between parking facilities and terminals; inter-concourse travel; and connections to nearby transit stations, hotels and/or activities. A set of standards for ART system specifications does not yet exist. To MnDOT’s point of interest—how to handle potential right of way issues resulting from ART implementation—the report described the legal issues involved.

The existing MSP automated people mover systems examined were found to be very reliable. Also, plans are already in place that consider another automated system for Concourse G. However, passenger volumes are expected to grow from the current 32.5 million per year to 56 million by 2030. This will require significant improvements in the airport’s internal and external transportation systems. While an ART system is a potential solution, issues including security, capital and operating costs, emergency requirements and passenger loading would have to be resolved. Additionally, performance criteria for evaluating future technology options like ART would need to be developed.

What’s Next?

Future analysis may focus on the viability of a specific selected ART site. Analysis may include needs identification, positive and negative impacts, technology issues, business plan development, outreach and education, and permitting and approvals.

MnDOT has also evaluated ART for other purposes through a recent report (2011-17), which includes the potential benefits and challenges for implementing ART as a transit option in the Twin Cities.

This Technical Summary pertains to Report 2011-14, “Potential Viability of Automated Rapid Transit at the Minneapolis-St. Paul Airport,” published May 2011. The full report can be accessed at <http://www.lrrb.org/PDF/201114.pdf>.