State of Wisconsin/Department of Transportation/Midwest Regional University Transportation Center
RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: September 30, 2004

Project Title: Providing a Real-Time Evaluation of the Columbus Metropolitan Freeway Management System	**Project ID:** 04-02
Administrative Contact: Jason Bittner	**Sponsor:** MRUTC
WisDOT Technical Contact: Nina McLawhorn	**Approved Starting Date:** October 1, 2003
Approved by COR/Steering Committee:	**Approved Ending Date:** May 1, 2005
Project Investigator (agency & contact): Ohio State University, Benjamin Coifman	

Description: The work covered in this project will extend the evaluation for ODOT by providing a continuous, real time system to present various performance measures of the Columbus Metropolitan Freeway Management System (CMFMS). Such an extension should help optimize transportation investment by reducing peak demands on the system while educating the wide range of users.
Task 1: develop the necessary data fusion tools to merge these diverse data sources in real time, exploit the specific strengths of a given source, and address any discrepancies between conflicting data sources.
Task 2: produce and provide meaningful information for travelers.
Task 3: produce tools to automatically extract data useful to practitioners, employing the same philosophy behind the Freeway Performance Measurement System (PeMS).
Task 4: develop a tool to provide the archived loop detector data to researchers.

Total study budget	Expenditures for current quarter	Total Expenditures to date
$98,467	**$29,076**	**$52,104**

Percent Complete: 53%

Progress This Quarter:

This quarter we produced a web page to display real time flow, occupancy and velocity from the Columbus Metropolitan Freeway Management System (CMFMS) as a proof of concept. As noted in the previous quarterly report, this task was non-trivial given the fact that the CMFMS collects individual vehicle actuations at each loop rather than aggregate data. The page is now down as we refine the display and presentation of current conditions, and incorporate links to ODOT and Columbus traffic cameras.

Other work this quarter has focused on extracting meaningful information from the historical data. We have produced a complete set of summary plots showing velocity over time and space for every day spanning from the start of operations at the end of 2001 and September 2004. We are also in the process of loading this historical data into our database to allow generation of other summary plots such as historical travel time between two locations (which required additional algorithm development to clean up velocity data and estimate travel time in an accurate means from average velocity at each station) and ADT by station (which required developing a means to clean the noise while retaining the trends, we settled on taking the median of the ADT for each week, further work is necessary to track systemic errors due to inoperable detectors). Given travel time, it is then possible to track delay (difference between the estimated travel time and travel time at the posted speed limit), which we now present using weekly median. As is evident, particular care is being given to making the presentation meaningful and easy to understand.

Work Next Quarter:

The main focus for the coming quarter will be developing the interactive tools to view the data and further refinements to the data processing algorithms. Work will also continue on generating a more aesthetically pleasing GUI. We have yet to begin logging the data locally, though it is our intent to do so in the coming quarter.

Circumstances affecting progress/budget:

The research is progressing roughly proportionally with the budget but slower than the time allotted. Given this fact in combination with the delayed start date, we have requested and received a no cost extension.

Please attach Gantt chart

Month	1	2	3	4	5	6	7	8	9	10	11	12
task 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX		
task 2						XX	XX	XX	XX	XX	XX	XX
task 3	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
task 4						XX	XX	XX	XX	XX	XX	XX