SHRP2 C10: Metropolitan Transportation Commission

Quarterly Report for April 2016 – June 2016 (prepared 20-Jun-2016)

SUMMARY

The three-agency group implementing Fast-Trips has continued making technical progress on network development, demand preparation, route choice estimation, and software development. Highlights of the past quarter include significant staff participation in the SHRP2 group discussions during the Innovations in Travel Modeling Conference in Denver in May; good progress on formal documentation for several tasks; and preliminary steps to implement our revised approach to route choice.

IMPLEMENTATION

Work accomplished for the period:

Task	Activities
Task 1 - Project Mgmt / Tech Oversight	● Processed funding agreement & task order allowing for direct billing by technical PM ● Continued to meet on a bi-weekly basis on management-level updates and issues
Task 2 - Network Supply	● Developed methods to convert GTFS and ABM outputs to Fast-Trips inputs, including Cube updates for SFCTA ● Refined dwell time models based on additional testing ● Prepared bulk of draft deliverable, currently under internal review
Task 3 - Transit Demand	● Conducted full scale demand translation and validation ● Documented transit demand standard, available data, and results of translation and validation in technical memo, currently under internal review
Task 4 - Transit Rider Behavior	● Confirmed revised approach to route choice estimation, and updated task tracking tools accordingly; formal documentation to follow ● Began research into proposed route choice parameters
Task 5 - Transit System Performance	
Task 6 - Software Implementation	● Continued testing and de-bugging of Fast-Trips using full-scale networks ● Incorporated preliminary dwell time parameters into Fast-Trips

	● Implemented structural features needed for iteration
Task 7 - Test Case Development	
Task 8 - Agency Implementation & Testing	
Task 9 - Communications and Outreach	● Conducted dissemination activities at ITM: 　○ Submitted one paper accepted for presentation 　○ Prepared and delivered 3 lightning talks 　○ Participated in 2 peer exchange sessions 　○ Contributed to workshop ● Participated in C10 coordination call

Schedule status:

Multiple tasks have made up ground since our last quarterly update. Some tasks remain several months behind our original schedule.

Expenditures and budget status:

MTC has contributed an additional $100,000 to the project from our agency's budget and are in the process of encumbering these funds with Resource Systems Group.

Resource	FHWA/ In-kind	Encumbered / Committed	Invoiced to Date / Expended
SFCTA	FHWA	$310,000	$50,300
SFCTA	In-kind	$80,000	$9,900
PSRC	FHWA	$65,000	$10,000
PSRC	In-kind	$65,000	$10,000
MTC	FHWA	$83,000	$22,300
MTC	In-kind, outside	$198,000	$62,200
Univ. of Texas, Austin	FHWA	$38,500	$2,600
Mark Hickman (Univ. of Queensland)	In-kind	$10,500	$0
Hood Consulting	FHWA	$60,000	$7,700
UrbanLabs, LLC	FHWA	$100,000	$0
To be determined	FHWA	$43,500	$0
Total	*FHWA*	*$700,000*	*$92,900*

Total	In-kind	$353,500	$82,100
Total	All	$1,053,500	$175,000

Summary of the quarter ahead:

In the quarter ahead, we will continue to advance the technical tasks building towards an initial viable implementation. We expect to make major progress on our route choice estimation model, and to complete our documentation of the estimation research tasks that are being parallelized for separate implementation. With our new route choice approach in hand, we should be able to finalize the remainder of our validation plan. For software development, we will be working on implementation and initial calibration of the route choice estimation parameters, as well as representations of fares and working through convergence logic related to the refined dwell time features and crowding issues. The networks team and demand team will continue to monitor developments on the rest of the project, and update their contributions and documentation as necessary. We are also developing and refining one or more papers that we hope to submit for the TRB Annual Meeting.

Risks/Challenges/Obstacles:

The main risk at this point is schedule adherence. Individual tasks are reaching their desired milestones, but the delays we experienced earlier in the year related to route choice estimation mean that our overall schedule still remains behind the original plan. We continue to monitor the technical tasks, flagging priority elements that are needed on the critical path and deferring those items that can be added as later iterations after we have the basic features up and running.

MEASURES

Our performance measures tracking tool shows current values for all metrics, including the developments in the past quarter specifically noted below.

Implementation and Deployment:

Multiple team members participated in the Peer Exchange at the Innovations in Travel Modeling conference in Denver as well as the quarterly C10 coordination call. We will be submitting the deliverable for Task 3 around the end of the quarter.

Capacity and Partnership:

A total of 23 people are now using our collaboration tools: the Asana project management system, our code repositories on GitHub, and cloud storage on Google Drive and Box. In terms of capacity-building, the Management Team noted the following items from the past quarter:

- During the development of the dwell time models, staff at PSRC gained significant proficiency in Python programming and linear regression techniques. The multi-agency nature of this project has provided an especially rich environment for development of context-sensitive skills, because multiple analytical techniques had to be employed to address different local anomalies in data and results.
- As part of building network inputs for SFCTA, it was discovered that some transit routes in the agency's core ABM needed to be updated to conform to a recent route restructuring by a transit agency outside of San Francisco. The tools and partnerships developed for this SHRP2-C10 project led to development of a new update methodology that will be used in the future for regular maintenance the SFCTA's Cube network.

Dissemination:

In May, nine different team members engaged with colleagues at the Innovations in Travel Modeling conference. The team participated in two peer exchange sessions and staff members presented on multiple topics including: challenges associated with technology transfer; our approach to software development; the Fast-Trips network data standard; the tools and processes our team uses for cross-agency collaboration; and the theoretical issues we have encountered on transit route choice estimation. Our presentation materials and paper are being made available on the project website. Also at ITM, we were approached by agency staff from York, Ontario who expressed a strong interest in following our lead on dynamic transit assignment. Other website updates this past quarter include a blog post on the concept of hyperpaths as well as one debriefing from the peer exchange and ITM conference.

CATEGORY	DEFINITIONS			TOTAL	Jan-Mar 2015	Apr-Jun 2015	Jul-Sep 2015	Oct-Dec 2015	Jan-Mar 2016	Apr-Jun 2016	Jul-Sep 2016	Oct-Dec 2016
Tool Implementation and Deployment	**OUTPUT MEASURE**	**METRIC 1**	**TARGET 1**									
	Agency and project partners participate in all required calls/meetings.	Number of calls/meetings attended	Minimum: Participation in group kick-off, project kick-off, and 2 additional scheduled calls per year	**8**	2	1	1	1	1	2		
	Project deliverables are submitted to Volpe/FHWA on time and on schedule.	Quarterly progress reports submitted by specified due date	Quarterly progress reports submitted by specified due date.	**6**	1	1	1	1	1	1		
		Final deliverables submitted by due date	Final deliverables submitted by due date.	**4**	1	0	2	0	0	1		
	Agency identifies desireable refinements (i.e., suggestions for future research) for tools created from the C10 project.	Documentation of desireable refinements within existing project deliverables	Information about desireable refinements included within final report.	**0**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
	Agency supplies lessons learned from participating as a C10 grantee.	Documentation of lessons learned	Information about grantee experience included within final report.	**0**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
	OUTCOME MEASURE	**METRIC 2**	**TARGET 2**									
	Travel demand model contains new sensititivities suitable for policy analysis.	Number of progress reports that document new variables / modeling options available	At least one	**0**	0	0	0	0	0	0		
	Methodologies, work processes, key decisions, problems encountered, & lessons learned are sufficiently well documented that peers can follow the work and repeat the results.	Number of issues and lessons documented in on-line tools	At least one	**0**	0	0	0	0	0	0		
Capacity Building and Partnerships	**OUTPUT MEASURE**	**METRIC 1**	**TARGET 1**									
	Agency practitioners (staff, contractors, consultants) and assigned partner staff are engaged with project and familiar with results.	Number of users of online collaboration tools	Staff from each partner agency makes contributions to archive of project knowledge.	**23**	15	17	18	18	22	23		
	OUTCOME MEASURE	**METRIC 2**	**TARGET 2**									
	Agency and partner staff acquire additional skills and expertise.	Number of progress reports that document new skills / expertise acquired	At least one	**1**	0	0	0	0	0	1		
	Improved work processes, data, analysis tools, and decision information are in use by our agencies.	Number of progress reports that document uptake of new processes, data, tools, methods	At least one	**1**	0	0	0	0	0	1		
Technology Transfer / Research Dissemination	**OUTPUT MEASURE**	**METRIC 1**	**TARGET 1**									
	Project data and information is shared with the academic and practitioner communities.	Number of presentations delivered (conferences, technical meetings, TRB)	1 TRB paper or poster, or participation in a panel/workshop that recounts the information	**3**	0	1	0	0	1	1		
		Number of papers/memos/articles written about the project experience	1 Presentation prior to project closeout to FHWA or other interested communities	**6**	0	0	0	0	0	6		
	OUTCOME MEASURE	**METRIC 2**	**TARGET 2**									
	Peer agencies in the state/region expresss interest in or begin to deploy C10 tools.	Number of agencies that contact C10 team about the project and/or express plans to pursue implementation	At least one	**2**	0	1	0	0	0	1		