Component / Service Function Sub-Function Requirement		Source
Transit Vehicle		
AM		
MUSA		
MSU		
4.2.2.004	Service usage data shall be collected for Ride Matching and Reservations Service.	Derived
4.2.2.006	Service usage data shall be collected for Public Transit Usage.	USR 2.1.1.1
4.2.2.012	Service usage data collected for Ride Matching and Reservation shall include ride completetion data, including date and time of each service usage and service options used.	Derived
4.2.2.013	Service usage data collected for Ride Matching and Reservation shall include a passenger list.	Derived
4.2.2.016	Service usage data collected for the Public Transit Service shall include number of passengers getting on and off a vehicle at each stop.	USR 2.1.1.1,2.3.3.1,3.1
4.2.2.017	Service usage data collected for the Public Transit Service shall include vehicle percent full.	USR 3.1.2.7
4.2.2.018	Service usage data collected for the Public Transit Service shall include passenger trip origin, destination, and associated times.	Sbus 56-2
4.2.2.019	Service usage data collected for the Public Transit Service shall include fares collected by fare category.	USR 2.1.1.1 ,Sbus 56-2
4.2.2.020	Service usage data collected for the Public Transit Service shall include fares calculated based on distance traveled.	Sbus 59-2
SBP		
4.2.3.015	Service payments shall include payment for Ride Matching and Reservations Service.	SR 3.1.4.4, GGO 13.5.2,
4.2.3.017	Service payments shall include payment for Public Transit usage.	SR 3.1.4.4, GGO 13.5.2,
4.2.3.020	Service payments shall be accepted via electronic pre-payment methods (eg. Debit cards).	USR 2.4.3.1,3.1.0,3.1.1
4.2.3.021	Service payments shall be accepted via credit card transactions.	USR 2.4.3.1,3.1.0,3.1.1
4.2.3.022	Service payments shall be accepted via SMART card transactions.	USR 2.4.3.1,3.1.0,3.1.1

Component				Source
Service	Function	Sub-Function	Requirement	
		4.2.3.023	Service payments shall be accepted via PROXIMITY card transactions.	USR 2.4.3.1,3.1.0,3.1.1
		4.2.3.025	A single payment media shall be supported for all transportation services.	USR 3.1.2.1
		4.2.3.026	A single payment media shall be supported for transportation services and other uses, such as retail purchases, utility bills, etc.	USR 3.1.2.6
		4.2.3.027	A payment confirmation shall be sent to each user.	USR 3.1.1.3
		4.2.3.028	Voided or invalid payment media shall be detected.	USR 3.1.2.3
		4.2.3.029	Service payments that are insufficient or past due shall be detected.	Derived
IM				
	MIRP			
		CRI		
		6.2.3.001	Incidents shall be classified based on incident data.	GGO 20.10.1
		6.2.3.002	Incidents shall be classified according to standard catagories. (Rational: Requirements specify a wide range of classifications which are covered by this standard e.g., HAZMAT chemical spills, breakdown/disable vehicle, accidents within injuries, major events).	USR 5.1.2.2.3,5.1.1.1,4
		DAI		
		6.2.1.002	Incidents shall be detected and incident data collected for unplanned incidents.	USR 1.7.1, 1.7.1.2,4.5.1
		6.2.1.018	Incident data shall include type of incident classification.	USR 1.7.1.1.2, 1.7.1.2.2,
		6.2.1.019	Incident data shall include location.	USR 1.7.1.1.2, 1.7.1.2.2,
		6.2.1.023	Upon receipt of incident data, an incident acknowledgement message shall be sent to the reporting source of the incident.	USR 5.1.1.3
		6.2.1.024	An incident acknowledgement message shall contain verification that the incident data has been received.	MnE 5.2, 5.2.1,5.2.2
		IRPPR		
		6.2.4.001	Response plans and response procedures shall be selected and implemented based on the most current incident data.	USR 1.7.3, 1.7.3.1,4.5.2

Component / Service / Function / Sub-Function	Requirement	Source
	6.2.4.002 Response plans and response procedures shall provide for coordination of all responding agency activities at the incident scene pertaining to patient care.	MnA 3.2.1
	6.2.4.005 Resource requests shall be sent to the appropriate agencies based on the response plans and response procedures that have been selected to resolve the incident.	Derived
	6.2.4.006 A resource request shall contain, the most current incident data.	Derived
	6.2.4.015 A resource cancellation shall be issued for any incident response resource that is no longer needed to respond to an incident.	Derived
MIL		
	6.2.6.002 Incident log reports shall be generated based on user defined criteria for one or more incidents to support key stakeholder agencies.	MnA 3.4.1,3.2.2,3.3
	6.2.6.012 Incident conditions shall identify type of incident.	Derived
	6.2.6.013 Incident conditions shall identify location.	USR 4.5.1.2
	6.2.6.014 Incident conditions shall identify severity (e.g. number of lanes blocked or other factors that would require traffic rerouting).	Derived
	6.2.6.015 Incident conditions shall identify time of occurrence.	USR 4.5.1.2
	6.2.6.0 16 Incident conditions shall identify estimated time until incident cleared.	Derived
TRP		
	6.2.5.001 Incident response status shall include estimated time of arrival of responding resources.	MnE 5.2, 5.2.2
	6.2.5.002 Incident response status shall include current step in the response procedure.	Derived
	6.2.5.003 Incident response status shall include estimated time to removal and clearing of incident.	USR 1.7.1.2.2
MIRS		
MIRA		
	6.3.1.038 Vehicle condition shall include accumulated mileage.	Derived
	6.3.1.039 Vehicle condition shall include driver reported problems.	Derived

Component / Service Function Sub-Function	Requirement	Source
6.3.1.040	When equipment status indicates that a piece of equipment is inoperable, the failed equipment will be assigned to maintenance.	Derived
6.3.1.041	When equipment status indicates that a piece of equipment is inoperable, appropriate maintenance equipment and personnel shall be assigned to the failed equipment's location (if necessary).	Derived
6.3.1.042	When equipment status indicates that a piece of equipment is inoperable, available replacement equipment shall be assigned to replace the disabled equipment if the original equipment had been assigned to an incident.	Derived
6.3.1.043	When a maintenance completion notice is received on repaired equipment, the equipment status shall indicate operable.	Derived
6.3.1.044	Equipment condition shall include accumulated hours of usage.	Derived
6.3.1.045	Equipment condition shall include operator reported problems.	Derived
6.3.1.046	When a maintenance completion notice is received, the equipment assignment shall be made available for operational assignment.	Derived
TIRS		
6.3.2.001	Resource location shall be determined.	MnA 3.5,3.5.1, USR 1.7
6.3.2.003	Resource location shall be determined to an accuracy of +/- (TBD) meters.	Derived
6.3.2.004	Resource location shall be continuously monitored and reported.	MnE 5.2, GGO 21.5.1
6.3.2.004.a	Resource location reporting shall be tailorable to the needs of resource managers (e.g. resource owners, dispatch personnel, and on-scene coordinators).	MnE 5.2, GGO 21.5.1
6.3.2.005	The resource managers (e.g. on scene incident coordinator, the dispatching agency, and the resource owner) shall be alerted when any vehicle condition or equipment condition information indicates a problem.	Derived
6.3.2.006	Resource status shall include vehicle status.	Derived
6.3.2.007	Resource status shall include equipment status.	Derived

Component				Source
Service	Function	Sub-Function	Requirement	
		6.3.2.008	Resource location shall include vehicle location.	Derived
		6.3.2.009	Resource location shall include personnel location.	Derived
		6.3.2.010	Resource location shall include equipment location.	Derived
RMR				
	DRO			
		DRS		
		8.3.2.001	Real-time demand responsive dispatch shall be provided to allow paratransit and other passengers to schedule requests for same-day trips.	GGO 11.5.1, MnA 6.1.2,
		8.3.2.002	Upon receipt of a DEMAND RESPONSIVE REQUEST, the vehicle driver shall be contacted in real-time to determine if the driver will accept the request.	USR 1.4.1.4,2.3.2.9,2.3
		8.3.2.003	If the vehicle driver does not respond to the DEMAND RESPONSIVE REQUEST within (TBD) minutes, the DEMAND RESPONSIVE RESPONSE shall indicate "denied".	USR 1.4.1.4,2.3.2.9,2.3
		8.3.2.004	If the vehicle driver responds to the DEMAND RESPONSIVE REQUEST within (TBD) minutes, the DEMAND RESPONSIVE RESPONSE shall indicate the driver's response.	USR 1.4.1.4,2.3.2.9,2.3
		8.3.2.005	If the demand responsive response is "confirmed", the modified vehicle manifest shall be sent to the vehicle driver.	USR 1.4.1.4,2.3.2.9,2.3
		RSA		
		8.3.3.001	Rideshare vehicle location shall be determined automatically.	USR 2.3.3.1 .a
		R-3.3.002	Rideshare vehicle location shall be determined to an accuracy of =/- (TBD) meters.	USR 2.3.3.2
		8.3.3.003	VEHICLE PARAMETERS including rideshare vehicle location shall be reported to the rideshare fleet management facility.	USR 2.3.3.2
		8.3.3.008	Corrective instruction vehicle commands shall be automatically issued to the vehicle drivers.	USR 2.1.1.2.1.4,2.3.3.2
		8.3.3.009	Corrective instruction vehicle commands shall include a) changes in stops and b) route corrections including rerouting around incidents and congestion.	USR 2.1.1.2.1.4
		8.3.3.010	Fleet vehicles shall arrive/depart within (TBD) minutes of the published schedule.	USR 2.3.3.2

Component				Source
Service	Function	Sub-Function	Requirement	
		8.3.3.011	A capability to delay connecting vehicle departures shall be provided when travelers with connecting rides are late.	Derived
		8.3.3.012	Travelers shall be notified if they missed a travel connection.	Derived
		RSU		
		8.3.1.001	RIDESHARE COMPLETIONS data including passenger trip origin and pick-up time shall be collected and stored as service usage data.	USR 1.4.3.5, 1.4.3.6,2.3
		8.3.1.002	RIDESHARE COMPLETIONS data including passenger trip destination and drop-off time shall be collected and stored as service usage data.	USR 1.4.3.5, 1.4.3.6,2.3
	RSO			
		DTSPE		
		8.1.5.002	Rideshare provider information vehicle manifests shall be generated daily for each rideshare vehicle.	Derived
		MRP		
		8.1.2.023	When an incident RESOURCE REQUEST is received, available VEHICLE and PERSONNEL ASSIGNMENTS shall be allocated to the incident in support of law enforcement and/or emergency response agencies.	USR 2.4.4.3,2.4.4.4,2.4
TC				
	MSNEO			
		CSM		
		5.2.1.003	Signals shall be capable of operating in pre-emption or priority mode.	Derived
		5.2.1.006	Signal priority shall be available on-demand for transit vehicles and other authorized vehicles at traffic signal intersections along transit routes to facilitate adherence to transit schedules by providing preference over others.	GGO 6.5.3, USR 1.6. I .2.
		5.2.1.007	Signal pre-emption and signal priority timing shall be determined automatically when signal pre-emption requests and/or signal priority requests are received from authorized emergency, transit, or railroad vehicles.	UST 5.2.3.2
	MTC			
		DITC		

Component / Service Function / Sub-Function	Requirement		Source
	5.4.3.002	Traffic conditions information shall be distributed to requesting agencies and other ITS services to support in-vehicle navigation.	USR 1.6.4
	5.4.3.004	Traffic conditions information shall be distributed to requesting agencies and other ITS services to support routing and guidance.	USR 1.6.4
TFM			
MAIN			
MAIN			
	7.3.1.002	Computer assisted control of transit vehicle/facilities operations shall be implemented such that processing can be centralized and/or distributed.	USR 2.1.1,2.3.4.1
	7.3.1.003	Two-way data communication shall be provided to link the fleet vehicle with the fleet management facility and shall include communications with supervisors.	USR 2.1.4.2,2.3.5.2,2.3
	7.3.l.006	Two-way voice communication shall be provided to link vehicle drivers with the fleet management facility.	USR 2.1.4.1, 2.3.5.2
	7.3.1.008	Transit vehicle components shall be compliant with the associated open communication standard TBD1 component -- TBD1 standard.	USR 2.1.4.5
	7.3.l.009	Transit vehicle components shall be compliant with the associated open communication standard TBD2 component -- TBD3 standard.	USR 2.1.4.5
	7.3.1.010	Transit vehicle components shall be compliant with the associated open communication standard TBD3 component -- TBD3 standard.	USR 2.1.4.5
	7.3.1.011	Smart bus technology shall be provided on selected statewide transit systems.	GGO 9.5.1
MFO			
MPT			
	7.2.6.001	A capability to delay connecting vehicle departures shall be provided when travelers with connecting rides are late.	SB 59-4.6
	7.2.6.002	Travelers shall be notified if they missed a travel connection.	MCTO 4/24/96 - 20
MPU			

Component			Source
Service	Function	Sub-Function Requirement	
		7.2.3.001 Transit service usage data including passenger trip origin and time, passenger trip destination and time, shall be maintained and reported to the account management service. (Rationale: needed for fare payment computation and route planning). Collected service usage data shall also include vehicle percent full, number of passengers getting on/off vehicle, method of payment, time spent at stop, wheel chair lift use, and type of fare paid.	SB 56-2, MCTO 4/24/96
		7.2.3.003 Transit service usage data including the number of passengers getting on and off the vehicle shall be automatically counted at each transit stop, and saved for future analysis. (Rationale: needed to develop pricing strategies that favor certain modes or routes.)	USR 2.1.1.1,2.3.3.1,3.1
		7.2.3.004 Transit service usage data, including vehicle percent full, shall be collected for each route segment and saved for future analysis.	USR 2.1.1.1,2.2.3.l.l.b,
		7.2.3.005 Passenger counts shall be accurate +/- (TBD) passengers.	USR 3.1.2.7
		7.2.3.006 Passenger count sensing shall detect passengers without interference to passenger movement.	SB 59-4.8
		7.2.3.007 Transit service usage data, including method of payment for each rider shall be maintained.	MCTO 4/24/96 - 23
		7.2.3.007.a Transit service usage data including type of fare paid at each transit stop shall be maintained for future analysis.	MCTO 4/24/96-23
		7.2.3.007.b Transit service usage data including time spent at each transit stop shall be maintained for future analysis.	MCTO 4/24/96-23
		7.2.3.007.c Transit service usage data including wheel chair lift use at each transit stop shall be maintained for future analysis.	MCTO 4 / 2 4 / 9 6
MRC			
		7.2.5.006 A detour request shall be issued to determine how to re-route a transit vehicle around incidents and congestion.	MnA 6.3.3, MCTO 4/24/
		7.2.5.007 Upon receipt of a detour route, the modified route shall be passed along to the vehicle driver.	MnA 6.3.3
		7.2.5.008 Upon receipt of a ride request from an optional transit stop along a flexible route, if diverting the bus to pick up the passenger at the optional stop does not affect the scheduled departure time at the next mandatory transit stop, the bus shall be commanded to pick up the passenger.	Sbus 43-4
		7.2.5.008.d Fixed route buses detoured for flexibly routed operations shall be controlled.	USR 2.3.2.3

Component Service Function	Sub-Function	Reauirement	Source
MSA			
	7.2.4.001	Vehicle schedule deviation shall be automatically determined and displayed to both the dispatcher and vehicle driver.	USR 2.1.1.2.1.1,2.1.1.2.
	7.2.4.001.a	Vehicle schedule deviation data shall be stored on the vehicle.	Derived
	7.2.4.002	Vehicle schedule adherance information shall be reported to fleet management on an exception basis when the vehicle is more than (TBD) minutes behind schedule.	USR 2.1.1.2.1.2, SB 59-
	7.2.4.002.a	Vehicle schedule adherance information shall be reported to fleet management on demand.	George Serumgard corn
	7.2.4.005	Corrective instruction vehicle commands shall be automatically issued to the vehicle drivers.	USR 2.1.1.2.1.4,2.3.3.2
	7.2.4.006	Corrective instruction vehicle commands shall include a) changes in stops and b) route corrections including rerouting around incidents and congestion,	USR 2.1.1.2.1.4
	7.2.4.007	Vehicle commands shall be determined on the vehicle or at a remote site.	USR 2.1.1.2.4
	7.2.4.008	A signal priority request shall be generated when a transit vehicle is running late by more the (tbd) minutes.	USR 2.1.1.2.3, MnA 5.3.
	7.2.4.008.b	A signal priority request shall be generated when a transit vehicle is running late.	George Serumgard corn
	7.2.4.009	A signal priority request shall enable a transit vehicle to pre-empt both intersection traffic signals and ramp meter signals.	MnA 5.3.2
	7.2.4.010	Fleet vehicles shall arrive/depart within (TBD) minutes of the published schedule.	USR 2.1.1.2.1
	7.2.4.011	Schedule adherance information (incl. vehicle running time between time points, dwell time, schedule deviation, scheduled and actual arrival and departure times) shall be maintained for each scheduled transit stop. (Rationale: needed for off-line schedule performance analysis)	USR 2.1.1.1, SB 56-2, M
	7.2.4.015	Signal priority shall be coupled with dwell time to maintain schedule adherance.	MCTO 4/24/96 - 7, 5/2/
	7.2.4.032	The cause of a schedule deviation shall be determined to select which FLEET OPERATING PROCEDURES should be used to resolve the schedule deviation.	Derived
TRS			

Component Service Function Sub-Function Requirement		Source
7.2.2.001	Transit vehicle location shall be determined automatically.	USR 2.3.3.1, SB 59.4.1
7.2.2.002	Transit vehicle location shall be determined to an accuracy of +I- (TBD) meters.	USR 2.1.1.1, SB 59.4.1
7.2.2.003	Transit vehicle location shall be reported to the transit fleet management facility.	USR 2.3.2.10, SB 59-4.1
7.2.2.004	Transit vehicle condition including accumulated vehicle mileage shall be automatically tracked.	USR 2.1.1.1,2.1.3.1.1
7.2.2.005	Transit vehicle condition including engine temperature shall be automatically tracked .	SB 56-2, 59-4.9
7.2.2.006	Transit vehicle condition including tramnission temperature shall be automatically tracked.	SB 56-2, 59-4.9
7.2.2.007	Transit vehicle condition including oil pressure shall be automatically tracked.	SB 59-4.9
7.2.2.008	Transit vehicle condition including drive-line operating condition shall be automatically tracked.	USR 2.1.1.1
7.2.2.008.a	Transit vehicle conditions including brake pneumatic pressure shall be automatically tracked.	PWT 3/12/96
7.2.2.008.b	Transit vehicle conditions including vehicle electrical draw shall be automatically tracked.	PWT 3/12/96
7.2.2.009	The driver shall be alerted when any vehicle condition information indicates a potential problem.	SB 59-4.9
7.2.2.010	The number of hours worked by each driver shall be tracked.	USR 2.1.3.2.4
7.2.2.010.b	The transit center shall be capable of remotely testing transit vehicles.	MCTO 5/2/96 - 1
7.2.2.011	Transit conditions including actual road data shall be maintained.	USR 2.1.1.1,2.2.2.1,2.2
7.2.2.012	Transit conditions including traffic data shall be maintained.	USR 2.1.1.1,2.2.2.1,2.2
7.2.2.015	Transit conditions including schedule adherance information shall be maintained,	USR 2.1.1.1,2.2.2.1,2.2
7.2.2.015.a	Transit conditions including route deviation information shall be maintained.	MCTO 5/2/96
7.2.2.015.b	Transit conditions including area, corridor, route, and hub performance sampling shall be maintained .	MCTO 5/2/96-2,4/24/96

Component				Source
Service	Function	Sub-Function	Requirement	
		7.2.2.015.c	Transit conditions including weather conditions shall be maintained.	MCTO 5/2/96-2
		7.2.2.018	Daily vehicle condition pre-trip defect inspection data shall be captured and reported to maintenance.	MCTO 4/24/96 - 4
		7.2.2.018.a	All transit vehicle condition information shall be monitored and captured for analysis.	MCTO 4/24/96 - 21
		7.2.2.019	Vehicle condition problems shall be conveyed to both the control center and garage in real time on an exception only basis.	MCTO 4/24/96 - 21, US
		7.2.2.020.d	Transit vehicle conditions including wheel chair lift conditions shall be maintained.	MCTO 5/2/96-2
TPD				
	MTTP			
		DTPD		
		2.2.3.057	Detour routes shall be made available via an in-vehicle device (e.g., communiucations radio, Mobile Data Terminal, etc.)	Derived