# *Market Package Descriptions*

| *Market Package* | | *Description* |
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| AD1 | ITS Data Mart | This market package provides a focused archive that houses data collected and owned l a single agency, district, private sector provider, research institution, or other organizatio This focused archive typically includes data covering a single transportation mode and o jurisdiction that is collected from an operational data store and archived for future use. It provides the basic data quality, data privacy, and meta data management common to all ITS archives and provides general query and report access to archive data users. |
| AD3 | ITS Virtual Data Warehouse | This market package provides the same broad access to multimodal, multidimensional data from varied data sources as in the ITS Data Warehouse Market Package, but provides this access using enhanced interoperability between physically distributed ITS archives that are each locally managed. Requests for data that are satisfied by access t a single repository in the ITS Data Warehouse Market Package are parsed by the local archive and dynamically translated to requests to remote archives which relay the data necessary to satisfy the request. |
| APTS01 | Transit Vehicle Tracking | This market package monitors current transit vehicle location using an Automated Vehicl Location System. The location data may be used to determine real time schedule adherence and update the transit system's schedule in real-time. Vehicle position may b determined either by the vehicle (e.g., through GPS) and relayed to the infrastructure or may be determined directly by the communications infrastructure. A two-way wireless communication link with the Transit Management Subsystem is used for relaying vehicle position and control measures. Fixed route transit systems may also employ beacons along the route to enable position determination and facilitate communications with each vehicle at fixed intervals. The Transit Management Subsystem processes this information, updates the transit schedule and makes real-time schedule information available to the Information Service Provider. |
| APTS02 | Transit Fixed-Route Operations | This market package performs automated dispatch and system monitoring for fixed-route and flexible-route transit services. This service performs scheduling activities including the creation of schedules, blocks and runs, as well as operator assignment. This service determines the transit vehicle trip performance against the schedule using AVL data and provides information displays at the Transit Management Subsystem. Static and real tim transit data is exchanged with Information Service Providers where it is integrated with th from other transportation modes (e.g. rail, ferry, air) to provide the public with integrated and personalized dynamic schedules. |
| APTS03 | Demand Response Transit Operations | This market package performs automated dispatch and system monitoring for demand responsive transit services. This service performs scheduling activities as well as operat assignment. In addition, this market package performs similar functions to support dynamic features of flexible-route transit services. This package monitors the current status of the transit fleet and supports allocation of these fleet resources to service incoming requests for transit service while also considering traffic conditions. The Transi Management Subsystem provides the necessary data processing and information displa to assist the transit operator in making optimal use of the transit fleet. This service includes the capability for a traveler request for personalized transit services to be made through the Information Service Provider (ISP) Subsystem. The ISP may either be operated by a transit management center or be independently owned and operated by a separate service provider. In the first scenario, the traveler makes a direct request to a specific paratransit service. In the second scenario, a third party service provider determines that the paratransit service is a viable means of satisfying a traveler request and makes a reservation for the traveler. |
| APTS04 | Transit Fare Collection Management | This market package manages transit fare collection on-board transit vehicles and at transit stops using electronic means. It allows transit users to use a traveler card or othe electronic payment device. Readers located either in the infrastructure or on-board the transit vehicle allow electronic fare payment. Data is processed, stored, and displayed o the transit vehicle and communicated as needed to the Transit Management Subsystem Two other market packages, ATMS10: Electronic Toll Collection and ATMS16: Parking Facility Management also provide electronic payment services. These three market packages in combination provide an integrated electronic payment system for transportation services. |

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| APTS05 | Transit Security | This market package provides for the physical security of transit passengers and transit vehicle operators. On-board equipment is deployed to perform surveillance and sensor monitoring in order to warn of potentially hazardous situations. The surveillance equipment includes video (e.g., CCTV cameras), audio systems and/or event recorder systems. The sensor equipment includes threat sensors (e.g., chemical agent, toxic industrial chemical, biological, explosives, and radiological sensors) and object detection sensors (e.g., metal detectors). Transit user or transit vehicle operator activated alarms are provided on-board. Public areas (e.g., transit stops, park and ride lots, stations) are also monitored with similar surveillance and sensor equipment and provided with transit user activated alarms. In addition this market package provides surveillance and sensor monitoring of non-public areas of transit facilities (e.g., transit yards) and transit infrastructure such as bridges, tunnels, and transit railways or bus rapid transit (BRT) guideways. The surveillance equipment includes video and/or audio systems. The sens equipment includes threat sensors and object detection sensors as described above as well as, intrusion or motion detection sensors and infrastructure integrity monitoring (e.g. rail track continuity checking or bridge structural integrity monitoring).<br><br>The surveillance and sensor information is transmitted to the Emergency Management Subsystem, as are transit user activated alarms in public secure areas. On-board alarm activated by transit users or transit vehicle operators are transmitted to both the Emergency Management Subsystem and the Transit Management Subsystem, indicatin two possible approaches to implementing this market package.<br><br>In addition the market package supports remote transit vehicle disabling by the Transit Management Subsystem and transit vehicle operator authentication. |
| APTS06 | Transit Fleet Management | This market package supports automatic transit maintenance scheduling and monitoring On-board condition sensors monitor system status and transmit critical status informatio to the Transit Management Subsystem. Hardware and software in the Transit Management Subsystem processes this data and schedules preventative and corrective maintenance. The market package also supports the day to day management of the transit fleet inventory, including the assignment of specific transit vehicles to blocks. |
| APTS07 | Multi-modal Coordination | This market package establishes two way communications between multiple transit and traffic agencies to improve service coordination. Multimodal coordination between transi agencies can increase traveler convenience at transit transfer points and clusters (a collection of stops, stations, or terminals where transfers can be made conveniently) and also improve operating efficiency. Transit transfer information is shared between Multimodal Transportation Service Providers and Transit Agencies. |
| APTS08 | Transit Traveler Information | This market package provides transit users at transit stops and on-board transit vehicles with ready access to transit information. The information services include transit stop annunciation, imminent arrival signs, and real-time transit schedule displays that are of general interest to transit users. Systems that provide custom transit trip itineraries and other tailored transit information services are also represented by this market package. |
| APTS09 | Transit Signal Priority | This market package determines the need for transit priority on routes and at certain intersections and requests transit vehicle priority at these locations. The signal priority may result from limited local coordination between the transit vehicle and the individual intersection for signal priority or may result from coordination between transit manageme and traffic management centers. Coordination between traffic and transit management i intended to improve on-time performance of the transit system to the extent that this can be accommodated without degrading overall performance of the traffic network. |
| APTS10 | Transit Passenger Counting | This market package counts the number of passengers entering and exiting a transit vehicle using sensors mounted on the vehicle and communicates the collected passeng data back to the management center. The collected data can be used to calculate reliab ridership figures and measure passenger load information at particular stops. |

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| ATIS02 | Interactive Traveler Information | This market package provides tailored information in response to a traveler request. Bot real-time interactive request/response systems and information systems that "push" a tailored stream of information to the traveler based on a submitted profile are supported. The traveler can obtain current information regarding traffic conditions, roadway maintenance and construction, transit services, ride share/ride match, parking management, detours and pricing information. Although the Internet is the predominate network used for traveler information dissemination, a range of two-way wide-area wirele and fixed-point to fixed-point communications systems may be used to support the required data communications between the traveler and Information Service Provider. A variety of interactive devices may be used by the traveler to access information prior to a trip or en route including phone via a 511-like portal and web pages via kiosk, personal digital assistant, personal computer, and a variety of in-vehicle devices. This market package also allows value-added resellers to collect transportation information that can b aggregated and be available to their personal devices or remote traveler systems to bett inform their customers of transportation conditions. Successful deployment of this marke package relies on availability of real-time transportation data from roadway instrumentati transit, probe vehicles or other means. A traveler may also input personal preferences a identification information via a “traveler card” that can convey information to the system about the traveler as well as receive updates from the system so the card can be update over time. |
| ATIS05 | ISP Based Trip Planning and Route Guidance | This market package offers the user trip planning and en-route guidance services. It generates a trip plan, including a multimodal route and associated service information (e.g., parking information), based on traveler preferences and constraints. Routes may b based on static information or reflect real time network conditions. Unlike ATIS3 and ATIS4, where the user equipment determines the route, the route determination function are performed in the Information Service Provider Subsystem in this market package. Th trip plan may be confirmed by the traveler and advanced payment and reservations for transit and alternate mode (e.g., airline, rail, and ferry) trip segments, and ancillary services (e.g., parking reservations) are accepted and processed. The confirmed trip plan may include specific routing information that can be supplied to the traveler as general directions or as turn-by-turn route guidance depending on the level of user equipment. |
| ATIS08 | Dynamic Ridesharing | This market package provides dynamic ridesharing/ride matching services to travelers. This service could allow near real time ridesharing reservations to be made through the same basic user equipment used for Interactive Traveler Information. This ridesharing/ride matching capability also includes arranging connections to transit or oth multimodal services. |
| ATMS01 | Network Surveillance | This market package includes traffic detectors, other surveillance equipment, the supporting field equipment, and fixed-point to fixed-point communications to transmit the collected data back to the Traffic Management Subsystem. The derived data can be use locally such as when traffic detectors are connected directly to a signal control system or remotely (e.g., when a CCTV system sends data back to the Traffic Management Subsystem). The data generated by this market package enables traffic managers to monitor traffic and road conditions, identify and verify incidents, detect faults in indicator operations, and collect census data for traffic strategy development and long range planning. The collected data can also be analyzed and made available to users and the Information Service Provider Subsystem. |
| ATMS02 | Traffic Probe Surveillance | This market package provides an alternative approach for surveillance of the roadway network. Two general implementation paths are supported by this market package: 1) wide-area wireless communications between the vehicle and center is used to communicate vehicle operational information and status directly to the center, and 2) dedicated short range communications between passing vehicles and the roadside is us to provide equivalent information to the center. The first approach leverages wide area communications equipment that may already be in the vehicle to support personal safety and advanced traveler information services. The second approach utilizes vehicle equipment that supports toll collection, in-vehicle signing, and other short range communications applications identified within the architecture. The market package enables transportation operators and traveler information providers to monitor road conditions, identify incidents, analyze and reduce the collected data, and make it availab to users and private information providers. It requires one of the communications option identified above, on-board equipment, data reduction software, and fixed-point to fixed-point links between centers to share the collected information. Both “Opt out” and “Opt i strategies are available to ensure the user has the ability to turn off the probe functions t ensure individual privacy. Due to the large volume of data collected by probes, data reduction techniques are required, such as the ability to identify and filter out-of-bounds extreme data reports. |

| *Market Package* | | *Description* |
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| ATMS03 | Surface Street Control | This market package provides the central control and monitoring equipment, communication links, and the signal control equipment that support local surface street control and/or arterial traffic management. A range of traffic signal control systems are represented by this market package ranging from fixed-schedule control systems to fully traffic responsive systems that dynamically adjust control plans and strategies based on current traffic conditions and priority requests. This market package is generally an intra jurisdictional package that does not rely on real-time communications between separate control systems to achieve area-wide traffic signal coordination. Systems that achieve coordination across jurisdictions by using a common time base or other strategies that d not require real time coordination would be represented by this package. This market package is consistent with typical urban traffic signal control systems. |
| ATMS06 | Traffic Information Dissemination | This market package provides driver information using roadway equipment such as dynamic message signs or highway advisory radio. A wide range of information can be disseminated including traffic and road conditions, closure and detour information, incide information, and emergency alerts and driver advisories. This package provides information to drivers at specific equipped locations on the road network. Careful placement of the roadway equipment provides the information at points in the network where the drivers have recourse and can tailor their routes to account for the new information. This package also covers the equipment and interfaces that provide traffic information from a traffic management center to the media (for instance via a direct tie-in between a traffic management center and radio or television station computer systems), Transit Management, Emergency Management, and Information Service Providers. A li to the Maintenance and Construction Management subsystem allows real time informati on road/bridge closures due to maintenance and construction activities to be disseminat |
| ATMS07 | Regional Traffic Management | This market package provides for the sharing of traffic information and control among traffic management centers to support regional traffic management strategies. Regional traffic management strategies that are supported include coordinated signal control in a metropolitan area and coordination between freeway operations and arterial signal contr within a corridor. This market package advances the Surface Street Control and Freewa Control Market Packages by adding the communications links and integrated control strategies that enable integrated interjurisdictional traffic management. The nature of optimization and extent of information and control sharing is determined through working arrangements between jurisdictions. This package relies principally on roadside instrumentation supported by the Surface Street Control and Freeway Control Market Packages and adds hardware, software, and fixed-point to fixed-point communications capabilities to implement traffic management strategies that are coordinated between all traffic management centers. Several levels of coordination are supported from sharing c information through sharing of control between traffic management centers. |
| ATMS08 | Traffic Incident Management System | This market package manages both unexpected incidents and planned events so that th impact to the transportation network and traveler safety is minimized. The market packa includes incident detection capabilities through roadside surveillance devices (e.g. CCTV and through regional coordination with other traffic management, maintenance and construction management and emergency management centers as well as rail operation and event promoters. Information from these diverse sources is collected and correlatec by this market package to detect and verify incidents and implement an appropriate response. This market package supports traffic operations personnel in developing an appropriate response in coordination with emergency management, maintenance and construction management, and other incident response personnel to confirmed incidents The response may include traffic control strategy modifications or resource coordination between center subsystems. Incident response also includes presentation of informatior to affected travelers using the Traffic Information Dissemination market package and dissemination of incident information to travelers through the Broadcast Traveler Information or Interactive Traveler Information market packages. The roadside equipme used to detect and verify incidents also allows the operator to monitor incident status as the response unfolds. The coordination with emergency management might be through CAD system or through other communication with emergency field personnel. The coordination can also extend to tow trucks and other allied response agencies and field service personnel. |

| Market Package | | Description |
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| ATMS13 | Standard Railroad Grade Crossing | This market package manages highway traffic at highway-rail intersections (HRIs) where operational requirements do not dictate more advanced features (e.g., where rail operational speeds are less than 80 miles per hour). Both passive (e.g., the crossbuck sign) and active warning systems (e.g., flashing lights and gates) are supported. (Note that passive systems exercise only the single interface between the roadway subsystem and the driver in the architecture definition.) These traditional HRI warning systems may also be augmented with other standard traffic management devices. The warning syster are activated on notification by interfaced wayside equipment of an approaching train. T equipment at the HRI may also be interconnected with adjacent signalized intersections that local control can be adapted to highway-rail intersection activities. Health monitorin of the HRI equipment and interfaces is performed; detected abnormalities are reported t both highway and railroad officials through wayside interfaces and interfaces to the traffi management subsystem. |
| ATMS15 | Railroad Operations Coordination | This market package provides an additional level of strategic coordination between freigl rail operations and traffic management centers. Rail operations provides train schedules maintenance schedules, and any other forecast events that will result in highway-rail intersection (HRI) closures. This information is used to develop forecast HRI closure times and durations that may be used in advanced traffic control strategies or to enhanc the quality of traveler information. |
| ATMS16 | Parking Facility Management | This market package provides enhanced monitoring and management of parking facilitie It assists in the management of parking operations, coordinates with transportation authorities, and supports electronic collection of parking fees. This market package collects current parking status, shares this data with Information Service Providers and Traffic Management, and collects parking fees using the same in-vehicle equipment utilized for electronic toll collection or contact or proximity traveler cards used for electron payment. Two other market packages, APTS04: Transit Fare Collection Management a ATMS10: Electronic Toll Collection also provide electronic payment services. These thr market packages in combination provide an integrated electronic payment system for transportation services. |
| ATMS17 | Regional Parking Management | This market package supports communication and coordination between equipped parki facilities and also supports regional coordination between parking facilities and traffic an transit management systems. This market package also shares information with transit management systems and information service providers to support multimodal travel planning, including parking reservation capabilities. Information including current parking availability, system status, and operating strategies are shared to enable local parking facility management that supports regional transportation strategies. |
| ATMS20 | Drawbridge Management | This market package supports systems that manage drawbridges at rivers and canals ar other multimodal crossings (other than railroad grade crossings which are specifically covered by other market packages). The equipment managed by this market package includes control devices (e.g., gates, warning lights, dynamic message signs) at the drawbridge as well as the information systems that are used to keep travelers appraised current and forecasted drawbridge status. |
| ATMS21 | Roadway Closure Management | This market package closes roadways to vehicular traffic when driving conditions are unsafe, maintenance must be performed, and other scenarios where access to the roadway must be prohibited. The market package includes automatic or remotely controlled gates or barriers that control access to roadway segments including ramps an traffic lanes. Remote control systems allow the gates to be controlled from a central location or from a vehicle at the gate/barrier location, improving system efficiency and reducing personnel exposure to unsafe conditions during severe weather and other situations where roads must be closed. Surveillance systems allow operating personnel visually verify the safe activation of the closure system and driver information systems (e.g., DMS) provide closure information to motorists in the vicinity of the closure. The equipment managed by this market package includes the control and monitoring system the field devices (e.g., gates, warning lights, DMS, CCTV cameras) at the closure location(s), and the information systems that notify other systems of a closure. This market package covers general road closure applications; specific closure systems that are used at railroad grade crossings, drawbridges, reversible lanes, etc. are covered by other ATMS market packages. |

| *Market Package* | | *Description* |
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| CVO04 | CV Administrative Processes | This market package provides for electronic application, processing, fee collection, issuance, and distribution of CVO credential and tax filing. Through this process, carrier drivers, and vehicles may be enrolled in the electronic clearance program provided by a separate market package which allows commercial vehicles to be screened at mainline speeds at roadside check facilities. Through this enrollment process, current profile databases are maintained in the Commercial Vehicle Administration subsystem and snapshots of this database are made available to the roadside check facilities at the roadside to support the electronic clearance process.<br><br>Commercial Vehicle Administration subsystems can share credential information with other Commercial Vehicle Administration subsystems, so that it is possible for any Commercial Vehicle Administration subsystem to have access to all credentials, credent fees, credentials status and safety status information. In addition, it is possible for one Commercial Vehicle Administration subsystem to collect HAZMAT route restrictions information from other Commercial Vehicle Administration subsystems and then act as a clearinghouse for this route restrictions information for Information Service Providers, Ma Update Providers, and Fleet and Freight Management subsystems. |
| CVO06 | Weigh-In-Motion | This market package provides for high speed weigh-in-motion with or without Automated Vehicle Identification (AVI) capabilities. This market package provides the roadside equipment that could be used as a stand-alone system or to augment the Electronic Clearance (CVO03) market package. |
| CVO07 | Roadside CVO Safety | This market package provides for automated roadside safety monitoring and reporting. I automates commercial vehicle safety inspections at the roadside check locations. The capabilities for performing the safety inspection are shared between this market package and the On-board CVO and Freight Safety & Security (CVO08) Market Package which enables a variety of implementation options. The basic option, directly supported by this market package, facilitates safety inspection of vehicles that have been pulled off the highway, perhaps as a result of the automated screening process provided by the Electronic Clearance (CVO03) Market Package. In this scenario, only basic identificatio data and status information is read from the electronic tag on the commercial vehicle. Tl identification data from the tag enables access to additional safety data maintained in the infrastructure which is used to support the safety inspection, and may also inform the pul in decision if system timing requirements can be met. More advanced implementations, supported by the On-board CVO and Freight Safety & Security (CVO08) market package utilize additional on-board vehicle safety monitoring and reporting capabilities in the commercial vehicle to augment the roadside safety check. |
| CVO13 | Freight Assignment Tracking | This market package provides for the planning and tracking of three aspects of commercial vehicle shipments. For each shipment, the commercial vehicle, the freight equipment, and the commercial vehicle driver are monitored for consistency with the planned assignment. Any unauthorized changes are determined by the Fleet and Freigh Management subsystem and then the appropriate people and subsystems are notified. Data collected by the On-board CV and Freight Safety & Security and the On-board Driv Authentication equipment packages used in other market packages are also used to monitor the three aspects of assignment for this market package. In addition to this mark package, Fleet and Freight Managers may also monitor routes and itineraries and this capability is included in Fleet Administration. |
| EM01 | Emergency Call-Taking and Dispatch | This market package provides basic public safety call-taking and dispatch services. It includes emergency vehicle equipment, equipment used to receive and route emergency calls, and wireless communications that enable safe and rapid deployment of appropriate resources to an emergency. Coordination between Emergency Management Subsysten supports emergency notification between agencies. Wide area wireless communications between the Emergency Management Subsystem and an Emergency Vehicle supports dispatch and provision of information to responding personnel. |
| EM02 | Emergency Routing | This market package supports automated vehicle location and dynamic routing of emergency vehicles. Traffic information, road conditions, and suggested routing information are provided to enhance emergency vehicle routing. Special priority or other specific emergency traffic control strategies can be coordinated to improve the safety an time-efficiency of responding vehicle travel on the selected route(s). The Emergency Management Subsystem provides the routing for the emergency fleet based on real-time conditions and has the option of requesting a route from the Traffic Management subsystem. The Emergency Vehicle may also be equipped with dedicated short range communications for local signal preemption and the transmission of alerts to surrounding vehicles. The service provides for information exchange between care facilities and both the Emergency Management Subsystem and emergency vehicles. |

| Market Package | | Description |
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| EM03 | Mayday and Alarms Support | This market package allows the user (driver or non-driver) to initiate a request for emergency assistance and enables the Emergency Management Subsystem to locate th user, gather information about the incident, and determine the appropriate response. Th request for assistance may be manually initiated or automated and linked to vehicle sensors. This market package also includes general surveillance capabilities that enable the Emergency Management Subsystem to remotely monitor public areas (e.g., rest stop parking lots) to improve security in these areas. The Emergency Management Subsyste may be operated by the public sector or by a private sector telematics service provider. |
| EM04 | Roadway Service Patrols | This market package supports roadway service patrol vehicles that monitor roads that ai motorists, offering rapid response to minor incidents (flat tire, accidents, out of gas) to minimize disruption to the traffic stream. If problems are detected, the roadway service patrol vehicles will provide assistance to the motorist (e.g., push a vehicle to the shoulde or median). The market package monitors service patrol vehicle locations and supports vehicle dispatch to identified incident locations. Incident information collected by the service patrol is shared with traffic, maintenance and construction, and traveler informati systems. |
| EM05 | Transportation Infrastructure Protection | This market package includes the monitoring of transportation infrastructure (e.g., bridge tunnels and management centers) for potential threats using sensors and surveillance equipment and barrier and safeguard systems to control access, preclude an incident, ai mitigate the impact of an incident if it occurs. Threats can result from acts of nature (e.g hurricanes, earthquakes), terrorist attacks or other incidents causing damage to the infrastructure (e.g., stray barge hitting a bridge support). Infrastructure may be monitored with acoustic, environmental threat (such as nuclear, biological, chemical, and explosive infrastructure condition and integrity, motion and object sensors and video and audio surveillance equipment. Data from such sensors and surveillance equipment may be processed in the field or sent to a center for processing. The data enables operators at the center to detect and verify threats. When a threat is detected, agencies are notified. Detected threats or advisories received from other agencies result in an increased level system preparedness. In response to threats, barrier and safeguard systems may be activated by Traffic Management Subsystems to deter an incident, control access to an area or mitigate the impact of an incident. Barrier systems include gates, barriers and other automated and remotely controlled systems that manage entry to transportation infrastructure. Safeguard systems include blast shields, exhaust systems and other automated and remotely controlled systems that mitigate impact of an incident. |

| *Market Package* | | *Description* |
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| EM08 | Disaster Response and Recovery | This market package enhances the ability of the surface transportation system to respon to and recover from disasters. It addresses the most severe incidents that require an extraordinary response from outside the local community. All types of disasters are addressed including natural disasters (hurricanes, earthquakes, floods, winter storms, tsunamis, etc.) and technological and man-made disasters (hazardous materials inciden nuclear power plant accidents, and national security emergencies such as nuclear, chemical, biological, and radiological weapons attacks).<br><br>The market package supports coordination of emergency response plans, including general plans developed before a disaster as well as specific tactical plans with short tim horizon that are developed as part of a disaster response. The market package provides enhanced access to the scene for response personnel and resources, provides better information about the transportation system in the vicinity of the disaster, and maintains situation awareness regarding the disaster itself. In addition, this market package tracks and coordinates the transportation resources - the transportation professionals, equipment, and materials - that constitute a portion of the disaster response.<br><br>The market package identifies the key points of integration between transportation systems and the public safety, emergency management, public health, and other allied organizations that form the overall disaster response. In this market package, the Emergency Management subsystem represents the federal, regional, state, and local Emergency Operations Centers and the Incident Commands that are established to respond to the disaster. The interface between the Emergency Management Subsystem and the other center subsystems provides situation awareness and resource coordinatio among transportation and other allied response agencies. In its role, traffic managemen implements special traffic control strategies and detours and restrictions to effectively manage traffic in and around the disaster. Maintenance and construction provides damage assessment of road network facilities and manages service restoration. Transit management provides a similar assessment of status for transit facilities and modifies transit operations to meet the special demands of the disaster. As immediate public safe concerns are addressed and disaster response transitions into recovery, this market package supports transition back to normal transportation system operation, recovering resources, managing on-going transportation facility repair, supporting data collection an revised plan coordination, and other recovery activities.<br><br>This market package builds on the basic traffic incident response service that is provided by ATMS08, the Traffic Incident Management market package. This market package addresses the additional complexities and coordination requirements that are associated with the most severe incidents that warrant an extraordinary response from outside the local jurisdictions and require special measures such as the activation of one or more emergency operations centers. Many users of the National ITS Architecture will want to consider both ATMS08 and this market package since every region is concerned with bo day-to-day management of traffic-related incidents and occasional management of disasters that require extraordinary response.<br><br>Disaster Response and Recovery is also supported by EM10, the "Disaster Traveler Information" market package that keeps the public informed during a disaster response. See that market package for more information. |

| Market Package | | Description |
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| EM09 | Evacuation and Reentry Management | This market package supports evacuation of the general public from a disaster area and manages subsequent reentry to the disaster area. The market package addresses evacuations for all types of disasters, including disasters like hurricanes that are anticipated and occur slowly, allowing a well-planned orderly evacuation, as well as disasters like terrorist acts that occur rapidly, without warning, and allow little or no time f preparation or public warning.<br><br>This market package supports coordination of evacuation plans among the federal, state and local transportation, emergency, and law enforcement agencies that may be involve in a large-scale evacuation. All affected jurisdictions (e.g., states and counties) at the evacuation origin, evacuation destination, and along the evacuation route are informed o the plan. Information is shared with traffic management agencies to implement special traffic control strategies and to control evacuation traffic, including traffic on local streets and arterials as well as the major evacuation routes. Reversible lanes, shoulder use, closures, special signal control strategies, and other special strategies may be implemented to maximize capacity along the evacuation routes. Transit resources play a important role in an evacuation, removing many people from an evacuated area while making efficient use of limited capacity. Additional shared transit resources may be add and managed in evacuation scenarios. Resource requirements are forecast based on th evacuation plans, and the necessary resources are located, shared between agencies if necessary, and deployed at the right locations at the appropriate times.<br><br>Evacuations are also supported by EM10, the "Disaster Traveler Information" market package, which keeps the public informed during evacuations. See that market package for more information. |
| MC01 | Maintenance and Construction Vehicle and Equipment Tracking | This market package will track the location of maintenance and construction vehicles an other equipment to ascertain the progress of their activities. These activities can include ensuring the correct roads are being plowed and work activity is being performed at the correct locations. |
| MC02 | Maintenance and Construction Vehicle Maintenance | This market package performs vehicle maintenance scheduling and manages both routi and corrective maintenance activities on vehicles and other maintenance and constructio equipment. It includes on-board sensors capable of automatically performing diagnostic for maintenance and construction vehicles, and the systems that collect this diagnostic information and use it to schedule and manage vehicle maintenance. |
| MC03 | Road Weather Data Collection | This market package collects current road and weather conditions using data collected from environmental sensors deployed on and about the roadway (or guideway in the cas of transit related rail systems). In addition to fixed sensor stations at the roadside, sensi of the roadway environment can also occur from sensor systems located on Maintenanc and Construction Vehicles. The collected environmental data is used by the Weather Information Processing and Distribution Market Package to process the information and make decisions on operations. The collected environmental data may be aggregated, combined with data attributes and sent to meteorological systems for data qualification a further data consolidation. The market package may also request and receive qualified data sets from meteorological systems. |
| MC04 | Weather Information Processing and Distribution | This market package processes and distributes the environmental information collected from the Road Weather Data Collection market package. This market package uses the environmental data to detect environmental hazards such as icy road conditions, high winds, dense fog, etc. so system operators and decision support systems can make decision on corrective actions to take. The continuing updates of road condition information and current temperatures can be used by system operators to more effective deploy road maintenance resources, issue general traveler advisories, issue location specific warnings to drivers using the Traffic Information Dissemination market package, and aid operators in scheduling work activity. |
| MC05 | Roadway Automated Treatment | This market package automatically treats a roadway section based on environmental or atmospheric conditions. Treatments include fog dispersion, anti-icing chemicals, etc. The market package includes the environmental sensors that detect adverse conditions, the automated treatment system itself, and driver information systems (e.g., dynamic message signs) that warn drivers when the treatment system is activated. |
| MC06 | Winter Maintenance | This market package supports winter road maintenance including snow plow operations, roadway treatments (e.g., salt spraying and other anti-icing material applications), and other snow and ice control activities. This package monitors environmental conditions a weather forecasts and uses the information to schedule winter maintenance activities, determine the appropriate snow and ice control response, and track and manage respon operations. |

| *Market Package* | | *Description* |
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| MC07 | Roadway Maintenance and Constructio | This market package supports numerous services for scheduled and unscheduled maintenance and construction on a roadway system or right-of-way. Maintenance services would include landscape maintenance, hazard removal (roadway debris, dead animals), routine maintenance activities (roadway cleaning, grass cutting), and repair an maintenance of both ITS and non-ITS equipment on the roadway (e.g., signs, traffic controllers, traffic detectors, dynamic message signs, traffic signals, CCTV, etc.). Environmental conditions information is also received from various weather sources to a in scheduling maintenance and construction activities. |
| MC08 | Work Zone Management | This market package manages work zones, controlling traffic in areas of the roadway where maintenance, construction, and utility work activities are underway. Traffic conditions are monitored using CCTV cameras and controlled using dynamic message signs (DMS), Highway Advisory Radio (HAR), gates and barriers. Work zone informatio is coordinated with other groups (e.g., ISP, traffic management, other maintenance and construction centers). Work zone speeds and delays are provided to the motorist prior t the work zones. This market package provides control of field equipment in all maintenance and construction areas, including fixed, portable, and truck-mounted device supporting both stationary and mobile work zones. |
| MC09 | Work Zone Safety Monitoring | This market package includes systems that improve work crew safety and reduce collisions between the motoring public and maintenance and construction vehicles. This market package detects vehicle intrusions in work zones and warns crew workers and drivers of imminent encroachment or other potential safety hazards. Crew movements a also monitored so that the crew can be warned of movement beyond the designated saf zone. The market package supports both stationary and mobile work zones. The intrusion detection and alarm systems may be collocated or distributed, allowing system that detect safety issues far upstream from a work zone (e.g., detection of over dimensio vehicles before they enter the work zone). |
| MC10 | Maintenance and Construction Activity Coordination | This market package supports the dissemination of maintenance and construction activit to centers that can utilize it as part of their operations, or to the Information Service Providers who can provide the information to travelers. |
| MC12 | Infrastructure Monitoring | This market package monitors the condition of pavement, bridges, tunnels, associated hardware, and other transportation-related infrastructure (e.g., culverts) using both fixed and vehicle-based infrastructure monitoring sensors. Fixed sensors monitor vibration, stress, temperature, continuity, and other parameters and mobile sensors and data loggi devices collect information on current infrastructure condition. This market package alsc monitors vehicle probes for vertical acceleration data and other probe data that may be used to determine current pavement condition. |