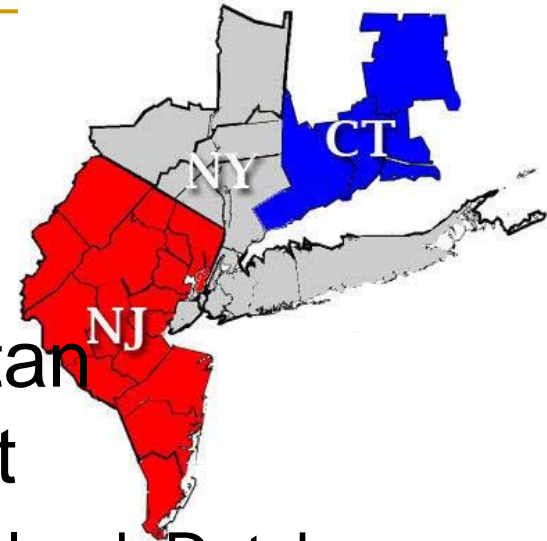

Building Public Transport Information Services for Downstate New York Travelers and Operators

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WC Paper 1005

Environment: Downstate New York Region



- Coverage -- New York Metropolitan Transportation Commuter District
 - 7 suburban counties: Orange, Rockland, Dutchess, Putnam, Westchester, Nassau and Suffolk
 - 5 NYC boroughs: Bronx, Brooklyn, Manhattan, Queens and Staten Island
 - New Jersey Transit, Connecticut Transit, Private Carriers
 - Over 52 transit carriers
 - bus, commuter rail, subway, ferry, commuter bus
-

Key Transit Systems in Region

- Large Sized Carriers
 - NYC Transit (NYCT), Long Island Rail Road (LIRR), Metro North Railroad (MNR)
 - Medium and Small Sized Carriers
 - Long Island Bus (LIB), Westchester Bee Line, CoachUSA, and more
 - Related Organizations
 - New Jersey Transit, Connecticut Transit, MTA (regional transportation authority), NYMTC (regional planning commission), Transcom (operates regional 511)
-


Region's Ridership Characteristics

- 2.4 billion passenger trips (in 2003)
 - Most passenger trips use multiple carriers
 - Suburban carriers provide feeder service to major commuter rail lines or subway service
 - 60% of Long Island Bus (LIB) passengers transfer to LIRR or NYC Transit
 - 30% of Westchester passengers transfer to MNR or NYCT
 - 13%-15% of Rockland & Dutchess counties transfer to MNR
 - Substantial % of passengers transfer at Penn Station, Grand Central Terminal or PANYNJ Bus Terminal
-

Need-Driven Schedule Coordination and Integrated Facility / Schedule Information

- With the substantial percentage of regional travelers
 - Destined for Manhattan, and
 - Transferring at the Penn Station, Grand Central Terminal or the PANYNJ Bus terminal to the subway for the final leg of their journey
 - The value of multi-agency schedule coordination and integrated schedule and facilities information becomes apparent.
-

How to sustain public transport service information?

- How does a complex, multi-agency, multimodal transport system sustain public transport service information?
 - DATA, DATA, DATA and  *Data Integration*
 - Data Integration is costly and resource intensive.
 - Automated Data Integration in a *federated* environment has only been accomplished in a few regions.
-

Transit Schedule Exchange Data Project

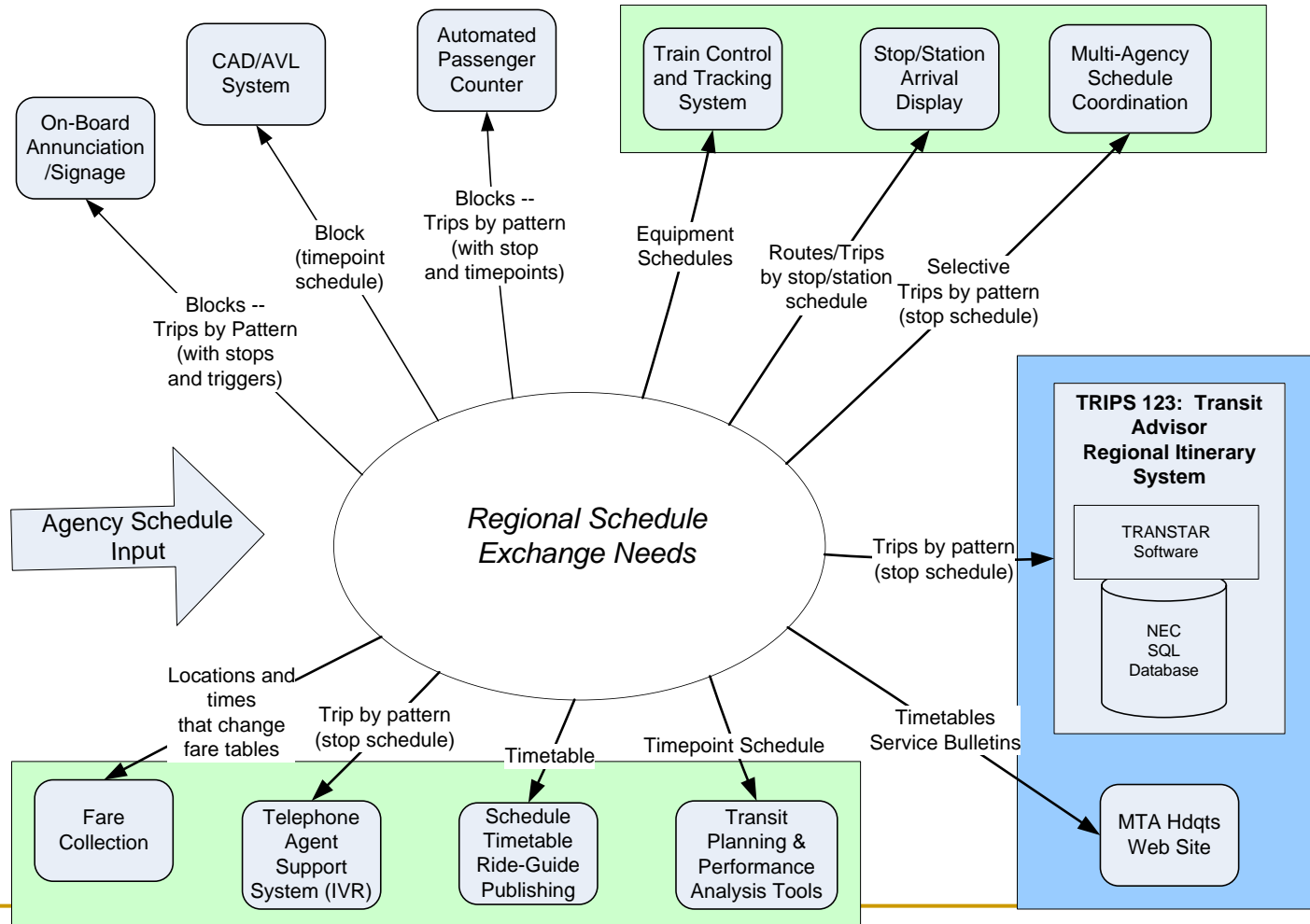
■ Project Scope

- Develop a regional data exchange architecture that
 - Represents Carrier schedule / facility data
 - Is scaleable to the diverse carrier environment (size, mode, resources, etc.)
 - Develop an exchange approach that allows the *automated* integration (semantic and format) of transit schedule and facility data to meet regional downstream application needs.
 - Develop Schedule Data Profile (SDP) (XML Schema)
-

Consensus-Driven Approach for Exchange Requirements and Framework

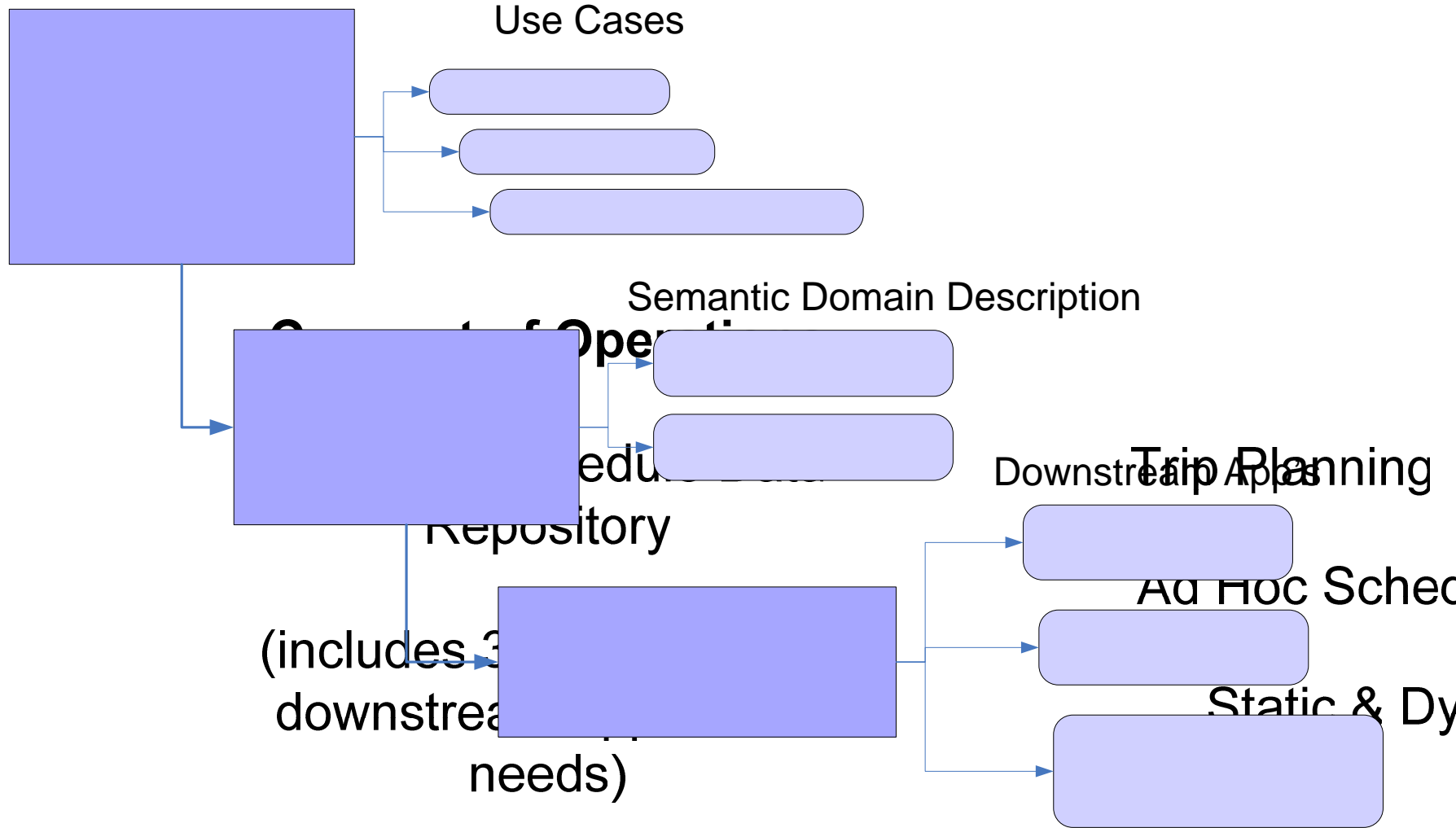
- Regional stakeholders participated in developing:
 - Schedule, coordination and downstream application requirements
 - Regional application issues (such as Trips123)
 - Schedule versioning and revision requirements, and
 - *Building and testing the SDP XML Schema using native schedule/facility data to drive downstream applications*
-

Requirements for Schedule Data Sharing in NY Region



Boxes surrounding processes indicate current (blue) and future (green) regional applications or coordinated schedule data activities

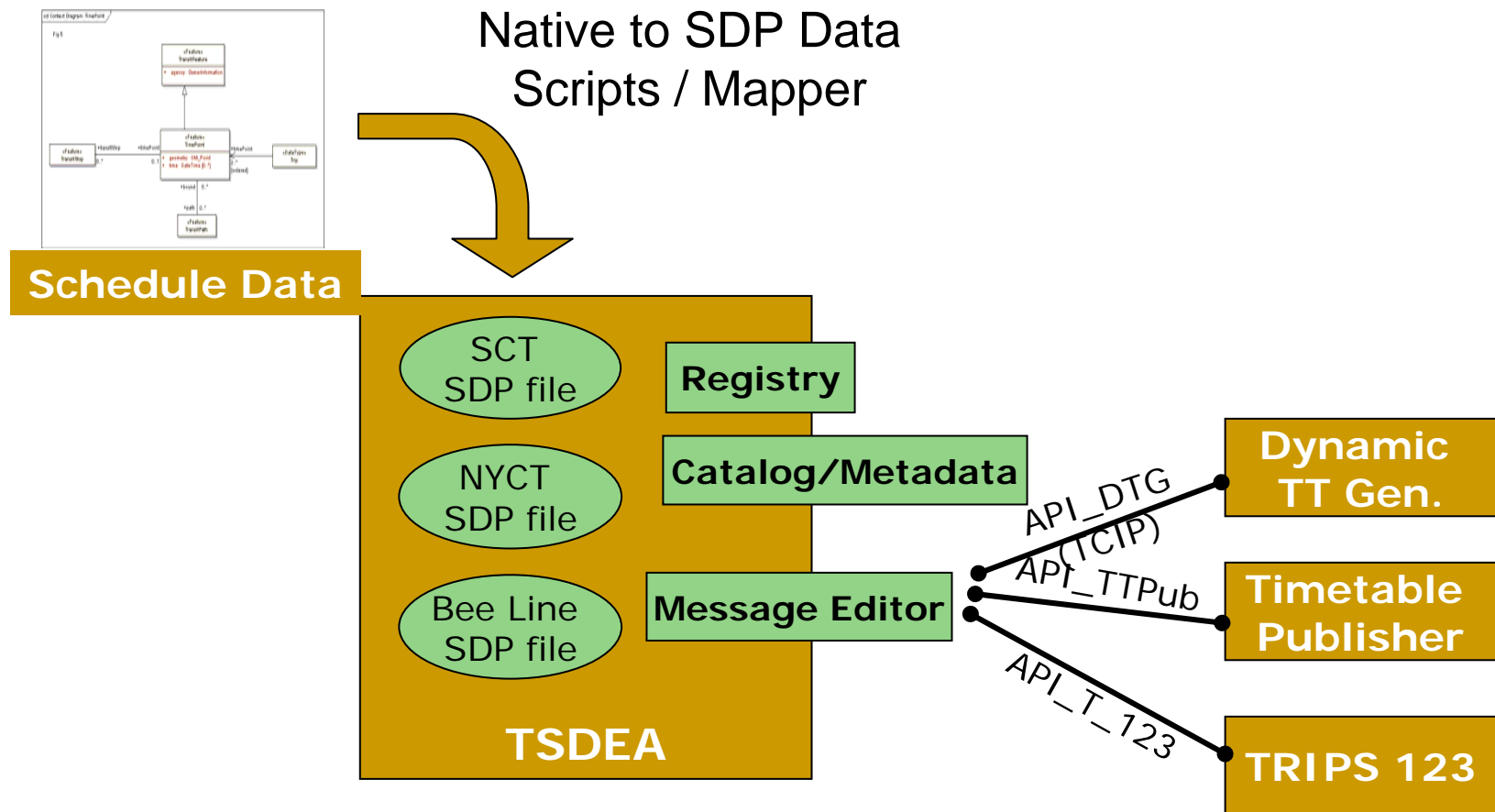
System Engineering Process



Benefits to the Region

- The Schedule Data Profile (SDP) describes the meaning and relationships among schedule/facility components.
 - Enables multiple operators to provide schedule/facility data to a repository without loss of information;
 - Enables access to multiple operator data using a single interface and application;
 - Framework is scaleable to multiple public transport service providers varying over a wide range of characteristics (e.g., mode, size, complexity of transit facilities and location resources)
-

What is the Transit Information Exchange Architecture?



Innovations

- Guidelines for validating semantic, format and referential integrity requirements.
 - An approach to describing location, location references and locations-related-to-other-locations using a “location” table.
 - A structure for updating only one route within an existing schedule.
 - A provision for defining an “ad hoc” schedule for
 - Unplanned rerouting due to service control/recovery
 - Planned rerouting and staging services due to known events (e.g., special events and construction)
-

Innovations, cont.

- A description of a *Federated* Transit Facility Model
 - Supports multi-agency, multi-modal facility model
 - Enables “ownership” of parts of the transit facility such as Penn Station which is composed of: NYCT subway stations, Amtrak, Long Island Railroad, and New Jersey Transit stations, and countless public and private carrier stops along the facility, in addition to their shared walkways, stairs, entrances, and amenities.
 - A description of “recommended” transfer points and connection instructions.
 - The transfers may be impacted by dynamic conditions such as walking through a rail car to make a connection between two trains.
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Current Project Status

- Completed Demonstration Effort
 - Validated over 3 operator data sets with Schema and Applications
 - Developed “Data Mapper”
 - Developing final Guidelines Documents
 - Finalized SDP Reference Model and XML Schema Definition
 - Project Completion Date: December 2007
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