V. Developing the Mobility Plan

A.   Strategies for Development

The Plan has identified actions that have already started the coordination effort among current transportation providers, and additional actions that would improve coordination of services if the actions can be funded. While the Plan is formalized at this point to meet the Federal mandate, in order to be effective it must be flexible in its implementation as new needs are identified and unanticipated coordination opportunities are identified or planned efforts refocused.

The Allegany County Transportation Task Force has made a good start with this plan. The task force is organized and has set goals, and the Plan has been endorsed by the Allegany County Board of Legislators. The first steps to be completed include: data collection and analysis, identification of duplicate services, as well as identification of consumer needs via focus groups and surveys.

Upon completion of this integral piece of the Plan ACTTF will progress with addressing more integral parts of the coordination process such as organizational framework, expanded opportunities for funding transportation services to meet the needs of Allegany County residents and methodology for Allegany County and neighboring county coordination to reach fruition.

The mobility plan may include but is not limited to including the following items:

- Identification of the needs of the community or communities and all relevant interest groups
- Identification of unmet needs; from there determining which services will best meet those needs
- Tailor services to meet the identified needs of the community
- Offer the public, community and agencies involved in coordination efforts a set of products and services of true value
- Involve the public
- Establish systems that are easy to administer
- Approach coordinated transportation like a business paying particular attention to cost effectiveness
- Leverage funding
- Clearly define what services will be provided in contracts and when applicable, clearly demonstrate cost savings
- Focus on improved data collection and reporting allowing all parties to understand the full cost and service implications of their transportation decisions.
- Focus on the benefits that should be achieved

Particular attention will be given to coordination issues identified through preliminary data collection as follows. Further collaboration with surrounding counties transportation efforts is apparent for improving regional transit coordination. Continued integration of the Department of Social Services (DSS) and Allegany County Transit into the coordination efforts has also been recognized. While there is no known opposition to coordination efforts, these entities have limitations guided by decisions made through County negotiations. Endorsement by the Allegany County Board of Legislators may ease with these coordination efforts. Other than Allegany ARC it is not clear if any of the recognized Human Service agencies that serve clients only could coordinate services. The specifics of these circumstances are not known at this time. Centralized ride dispatch maybe a coordination improvement but logistics and funding is an issue that concerned transit operators, county officials and human service agencies alike. The issue of impartial ride assignment and the payment for services that goes with the ride are issues that will take time and cooperation to resolve if that objective is to be achieved.

Key local level success strategies to be considered during the mobility planning process include the following items:

- Invest sufficient time to find out the best way to set up and implement the system to provide quality service
- Work with individuals and agencies that are committed to coordination transportation and have access to funding
- Be realistic
- Build trust among coalition members, search for consensus
- Identify the pros and cons of coordination
- Look for alternatives to overcoming roadblocks
- Establish a transportation advisory committee with persons and agencies who share a common goal of meeting local transportation needs for their constituencies
- Generate support from local officials
- Work closely with local decision makers to respond to changing markets and new opportunities
- Cultivate partnerships establishing strong relationships with agencies identifying clear roles and responsibilities
- Ensure that participating agencies are fully vested in the program
- Secure funding to cover initial needs and to expand services once the initial funds are spent
- Maintain an ability to adapt to changing needs and conditions

Applying these strategies will lead to coordinated activities of a large number of different agencies that provide or sponsor transportation services.

B.   **Core Elements of a Mobility Management Plan**

Core Elements of a Proposed Traveler Management Coordination Center (TMCC)

The core functions of an ITS-enhanced TMCC would likely include many of the elements presented in Figure 1 below.
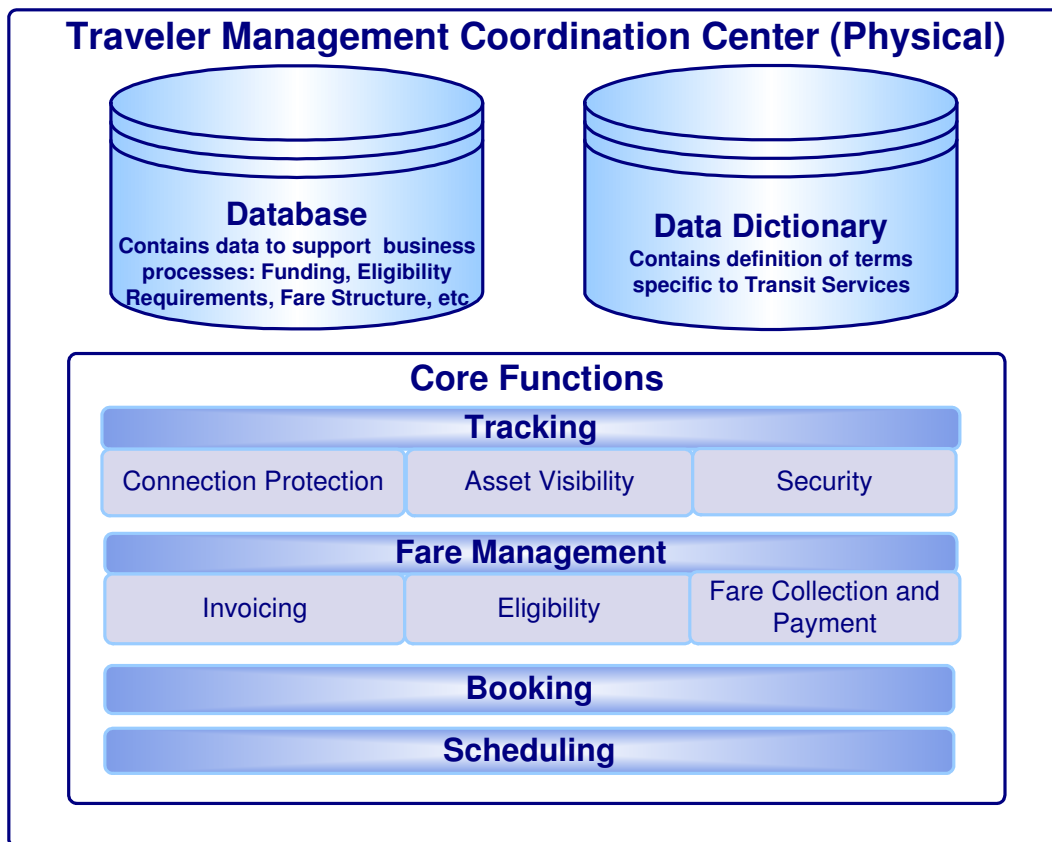
Figure 1: Core Components of a Potential Traveler Management Coordination Center

These components include the following:

- **Core Functions**: These are the core functional elements, they include:
  - **Tracking/Communication System**
    - *Connection Protection Subsystem:* minimizes traveler disruption at transfer points and facilities.
    - *Asset Visibility Subsystem:* supports both scheduling activities and the provision of real-time arrival and progress information to travelers.
    - *Safety and Security Subsystem:* provides facility, vehicle and passenger safety via equipment such as on-board cameras and collision detection, panic buttons, facility cameras, and automated activation of information and lights.
  - **Fare Payment and Management System**
    - *Eligibility Subsystem:* automatically determines eligibility requirements and supports or denies service requests.
    - *Fare Collection and Payment Subsystem*: automatically deducts fare payment based on passenger eligibility for program subsidies.
    - *Invoicing Subsystem:* automatically allocates costs across programs based on pre-agreed formulae, develops invoicing reports, and minimizes preparation time and errors.
  - **Booking System:** e.g., reservations; allows access through a variety of means including 211/511, web, etc. However, must contain at least some options for human interface
  - **Scheduling and Dispatching System:** optimizes asset utilization and minimizes customer wait and travel time.
  - **Traveler Information System**

- **Database:** repository to support business processes. Includes information on funding, eligibility requirements, fare structures, customer information, etc.

- **Data Dictionary:** allows translation between systems and sub-systems and ultimately between and among funding agencies and transit provider systems.

The elements represented in Figure 1 simply represent a core set of functionalities. Actual implementation of a TMCC requires defining the relationship of this system relative to the customer, the transportation providers, and the funding agencies. Subsequent sections of this document explore potential definitions of these relationships, including consideration of both a physical and virtual approach.

1.1   Option #1 – Physical Center

The first option considered for a full-scale deployment of a TMCC was a physical system as depicted in Figure 2. Such a system was envisioned and advocated by the transportation provider stakeholder group. It includes actual tangible resources, a physical location, and its own dedicated staff. A participating transit agency or another entity could provide operations and maintenance functions. This concept has been used in Europe, where it is referred to as a Travel Dispatch Centre.
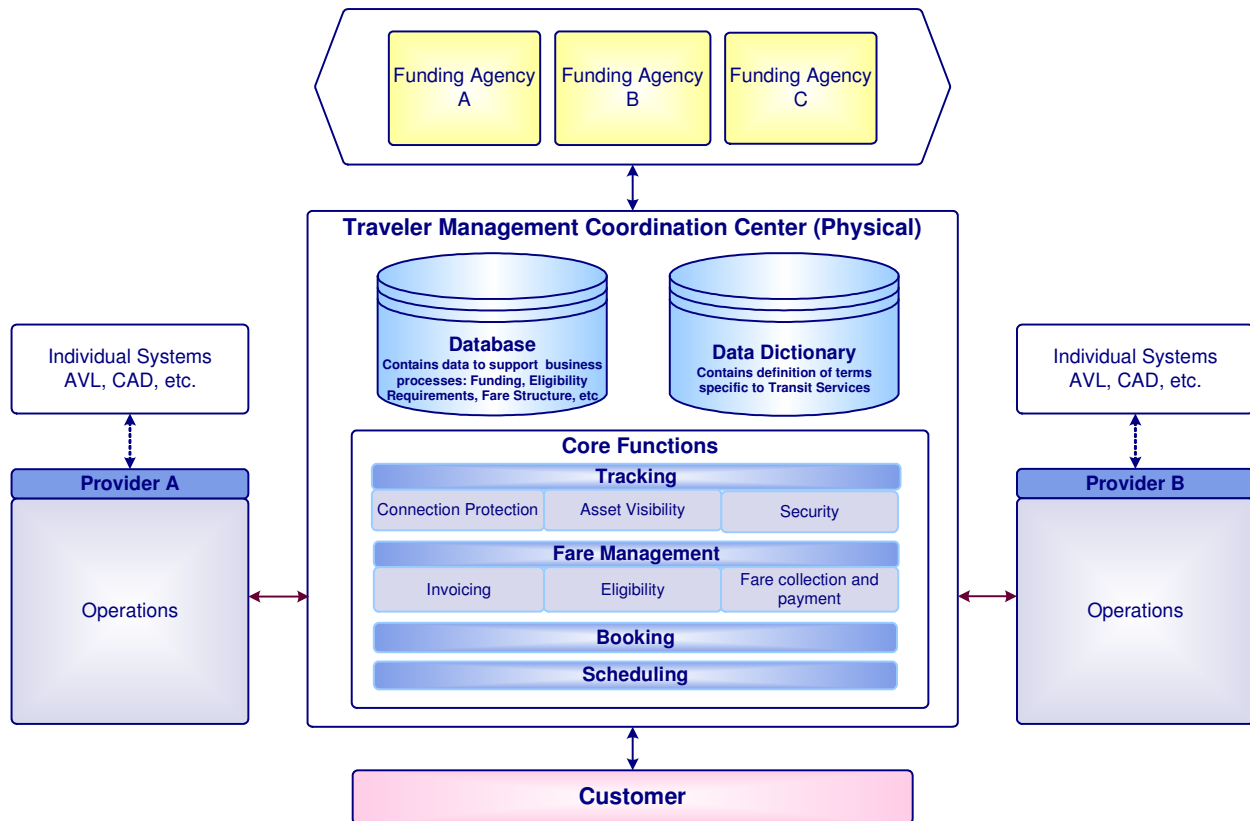
Figure 2: Proposed Traveler Management Coordination Center (Physical Solution)

Major elements of this potential system include:
- **TMCC** – Remains as described above in Section 1.1.
- **Customer** – Rather than interfacing with individual agencies, the customer now interfaces with a central entity or trip planner. This is similar to what is being proposed in the Oregon State-Wide Trip Planner. Interaction can occur through standard phone, 511 or 211 to human or IVR, internet, web enabled cell phone, PDA, etc. Experience (for example in the Reno-Tahoe evaluation) has shown that in addition to any automated system, users should be provided the option of reaching a human attendant. Subsequent to booking and scheduling a trip, the customer can utilize the TMCC to make changes to their planned itinerary or to receive real-time arrival information.

- **Transportation Providers** – Under this model, transportation providers would be able to focus solely on operations. Interaction with other providers, with funding agencies, and with customer bookings would occur through the TMCC. Passenger pick-ups, routing decisions, and scheduling would be processed by the TMCC and provided to the transportation providers in real-time. Providers would continue to monitor their assets (where capable) and seamlessly provide this information back to the TMCC. Eligibility decisions would be made by the TMCC and invoices would be automatically produced.
- **Funding Agencies** – Funding agencies interact solely with the TMCC. Agencies provide standards, which are updated as necessary. Centralized billing invoices are produced by the TMCC.

1.1.1 Strengths of the Physical Approach

A physical approach for deploying a TMCC affords a number of benefits to customers, transportation providers, and funding agencies. Among the potential benefits that would be largely unique to a physical approach (as opposed to a virtual approach) are the following:

- Provides one-stop shopping for the customer. This is particularly useful in situations involving chained trips when the customer must deal with different transportation providers for different trip purposes.
- Brings all agencies to same technological level. By centralizing advanced features such as scheduling, invoicing and eligibility, all participating agencies may benefit from these services without the need to make their own investments in this area. One caveat of course is that the individual providers would remain responsible for purchasing and operating any in-vehicle equipment.
- Relieves transportation providers of the burden and infrastructure requirements previously necessary to manage client bookings and scheduling.
- Transportation services are provided as an integrated system with mutual-aid support and improved asset utilization.
- Having a physical center can assist in streamlining customer eligibility screening process across (hopefully) all human service transportation programs.

1.1.2 Weaknesses of the Physical Approach

Some of the weaknesses or potential drawbacks of a physical approach as opposed to a virtual approach are as follows:

- There is a potential reduction in personalized services. Many transit agencies pride themselves on the interaction and relationship of their booking staff with their customers. Smaller agencies dealing with a limited client base are likely to offer more personalization than would a larger, integrated booking system. This potential loss of the "personal touch" was raised as a potential concern in a number of the discussion groups.
- A physical approach is likely to be expensive. Such an approach would require the construction of a physical infrastructure, training of staff, etc. It is anticipated that these costs would be off-set by savings in moving to an integrated system. Start-up costs for a physical system would be greater than for a virtual solution.

- Requires an extensive institutional paradigm shift. While the transportation providers that participated in the discussion groups seemed open to such a radical shift towards a centralized booking, tracking, and billing service, it is likely that such a change would require significant institutional, legal, and cultural changes.
- The length of time necessary to pursue a physical solution would most likely be considerably longer than for a virtual solution.

Given these potential weaknesses, the research team felt it important to consider virtual approaches for TMCC deployment also. These virtual approaches are discussed in the following sections.

1.2   Option #2a – Virtual Approach (with centralized hardware)

Under a virtual deployment of a TMCC, there would be no need for an extensive physical infrastructure or any new operating agencies. Depending on the sub-option selected, centralized hardware components (save a reference database) may not be necessary.

Development of a virtual approach could involve a number of different components depending on the degree of decentralization desired. For the purposes of this study, we have developed a potential solution that includes the use of centralized, shared hardware (Option 2a) and a solution that, at the other extreme, would require no centralized hardware, with the exception of a reference database (Option 2b).

The first of these options (2a – With Centralized Hardware) most closely relates to the previously discussed physical architecture. A potential solution for this option is presented in figure 3.
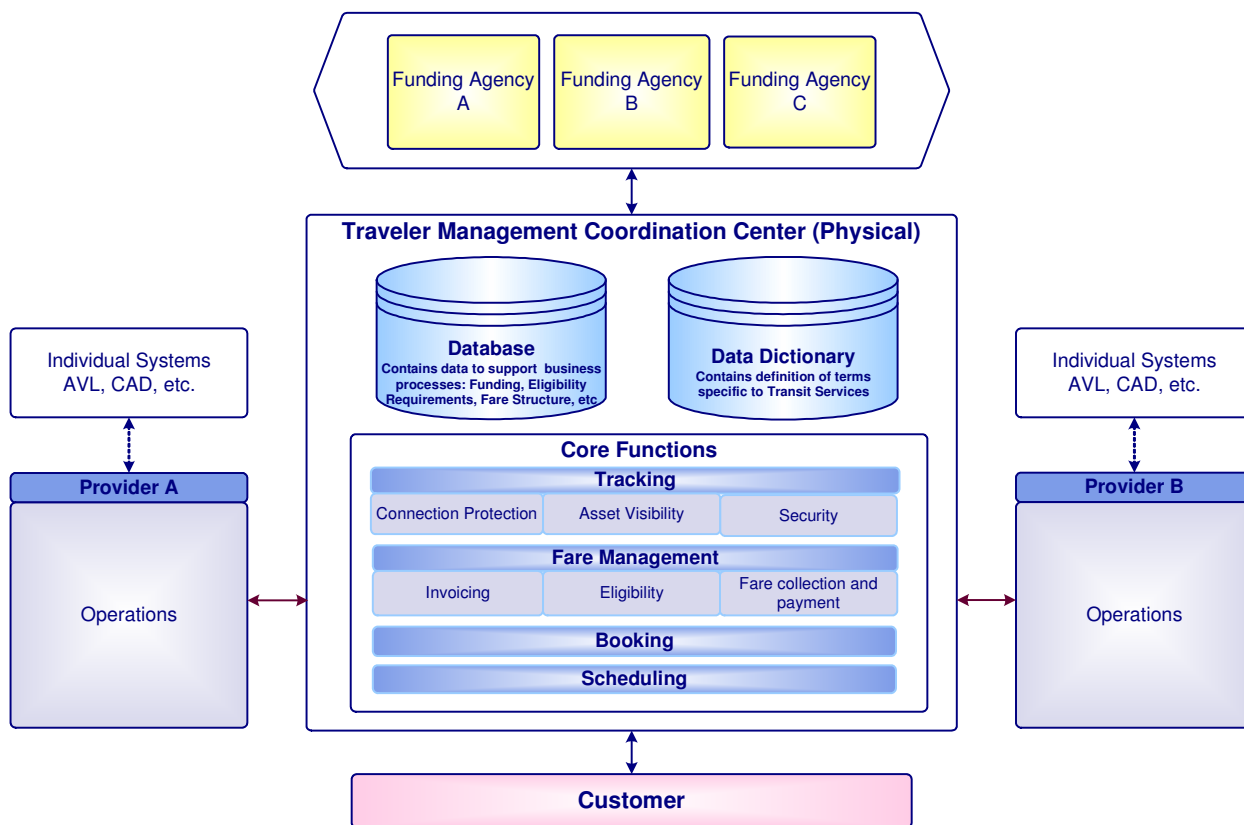
**Figure 3: Proposed Traveler Management Coordination Center
(Virtual Approach –Centralized Hardware)**

Major elements of this approach are as follows:

- **Core Functions** – The core TMCC does not require an extensive physical structure or staff. Core functions, however, are still maintained in a central location. This central location might be a separate entity or at any one of the transportation providers or funding agencies. With no staff, the core TMCC is no longer responsible for booking operations.

- **Customer** – Interacts primarily with one or more transit agencies, but can access information and book trips with multiple agencies through a single provider. Can still interact directly with the virtual TMCC to obtain real-time arrival information.

- **Transportation Providers** – Now interact directly with customers for both operations and booking functions. Continue to interact with other providers and funding agencies through TMCC. Also, transit providers have more flexibility to accept suggested scheduling options that may involve other agencies. Rather than acting as a cog in a fully integrated system, transportation providers may initially operate in a peer-to-peer permissive system. That is, scheduling requests to support other providers are made as suggestions and must be explicitly agreed to. Such a peer-to-peer form of operations has been successfully used in other ITS applications such as inter-jurisdictional traffic signal coordination.

- **Funding Agencies** - Continue to primarily interact through the TMCC, but now must contact individual agencies for any follow-up inquiries or required clarifications on bookings.

1.3 Option #2b – Virtual Approach (No Centralized Hardware)

Figure 4 represents another option for a virtual system of TMCC deployment and operations. This scenario represents the most de-centralized of all three options considered and is the furthest from the physical approach described in 1.1.

Major elements of this option are as follows:

- **Core Functions** – All core functions with the exception of a centralized data dictionary and communications network reside within the individual transit providers.

- **Customer** – Interacts only with transit providers.

- **Transportation Providers** – Maintain all core business functions, but coordinate with one another and with funding agencies through a streamlined communications network.

- **Funding Agencies** - Coordinate with transit agencies using a common data dictionary and interface.
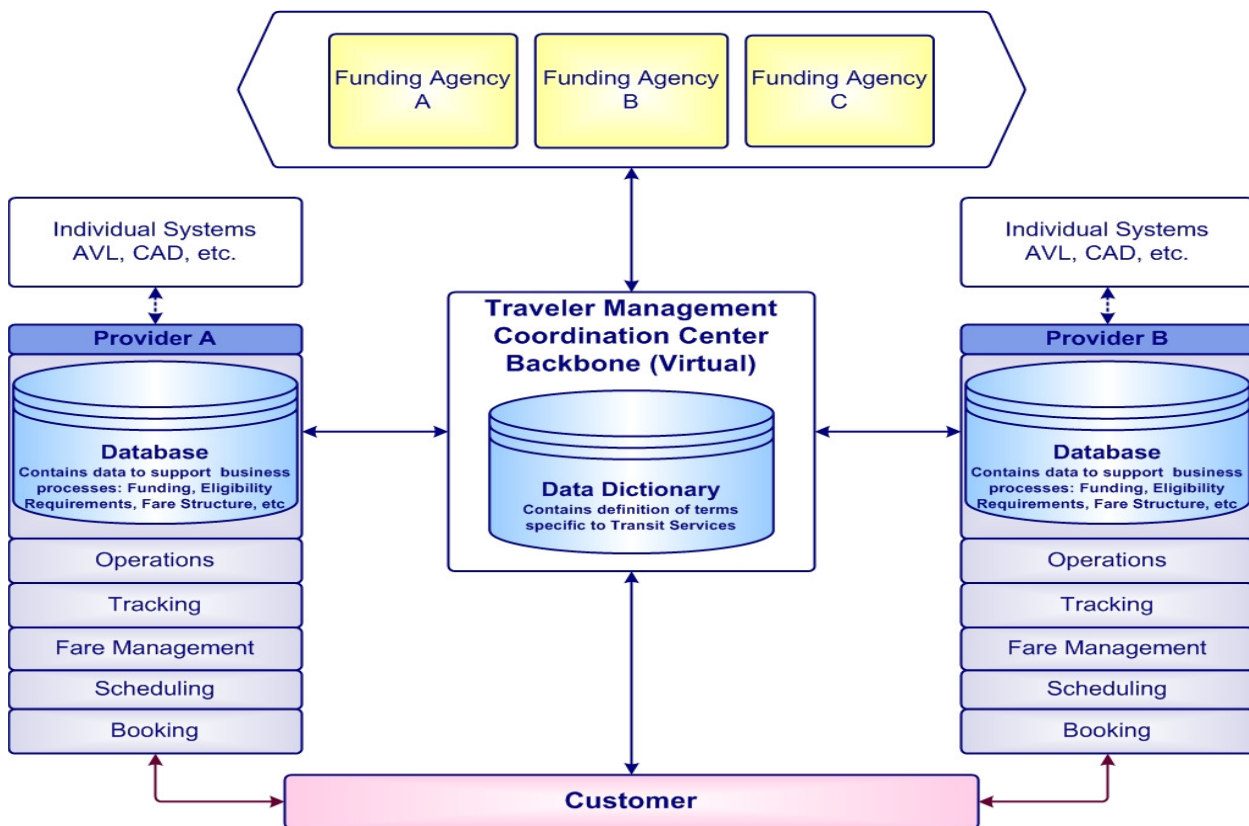
**Figure 4: Proposed Traveler Management Coordination Center
(Virtual Approach – No Centralized Hardware)**

1.3.1   Strengths of Virtual Approach

Regardless of the particular sub-option selected, the virtual approach to TMCC deployment and operations presents a number of unique benefits over the physical approach discussed previously. These benefits include:

- Lower deployment cost. With little or no physical infrastructure and no initial staff start-up costs, a virtual approach would be expected to be less expensive than the physical approach.
- Quicker implementation. In a related fashion, it would be anticipated that initial deployment and operation of the virtual approach could be accomplished much sooner than under the physical approach.
- A virtual approach facilitates an incremental deployment. This was a desired requirement of the technology vendor stakeholders participating in the MSAA foundation research discussion groups.
- Supports a peer-to-peer permissive mutual-aid operating philosophy. This has proven to be an effective tool in building early trust between newly integrated partners and overcomes many institutional concerns and barriers.
- Maintains personalized service offered by individual agencies.
- Allows for mutual support to handle surge capacity. With multiple booking agents at multiple operations, providers could (in theory) provide mutual-aid support for booking and customer support in the same fashion that they might for actual operations.

1.3.2   Weaknesses of Virtual Approach

Some of the weaknesses that are unique to the virtual approach are:

- Potential diminishing of opportunities for institutional integration. By allowing a peer-to-peer permissive operation, providers may be less inclined to integrate services and provide mutual-aid support.
- Potential increase in challenges afforded by proprietary systems. Because scheduling systems (and potentially other software applications) are maintained by individual providers, the virtual system may be faced with the challenge of systems that cannot easily communicate with one another.
- Maintains inefficiencies in multiple booking agencies.