Chicago intermodal problem

Problems and proposed solutions for "seamless" hand-offs with draymen on local pickups and deliveries.

By Ted Prince

The intermodal industry is accustomed to using the relay race as an industry model. In the search for quality service, the hand-off between service providers needs to be "seamless."

While all members of a relay team are important, the first and last are critical. The first runner establishes position. The last runner, or "anchor," tries to finish in a winning position. In the intermodal world, both the first and last runners would be the drayman, or local trucker, who provides the local pickup and delivery.

Intermodal marketing companies (IMCs) have tried to make the rail intermodal product "look like truck." They have marketed door-to-door service sandwiched around a rail intermodal move. By bundling pickup and delivery, with the rail move and a fee for their services, IMCs could offer a one-invoice service similar to that of a truckload carrier — although the same performance has not always been achieved.

There is another intermodal drayage portion — the cross-town — a critical but often overlooked portion. But it has become increasingly critical because it takes place in congested metropolitan areas that are often accompanied by geographical barriers.

As the railroad industry enters the winter season, it is worthwhile to review the problem and possible solutions.

Cross-Town Problem

When more than one railroad is involved in the rail transportation, it is necessary to interchange this traffic. Whereas rail carload traffic can only be interchanged by terminal switching, this "steel-wheel" interchange is not always the norm for intermodal traffic. Very often, intermodal traffic arriving at the destination terminal of the first railroad is unloaded, trucked to the next railroad, and reloaded for further movement.

This "rubber-tire" or cross-town interchange adds to terminal congestion by creating two extra gate moves than would exist with a steel-wheel interchange. The reasons for rubber-tire interchange are often compelling:

• Cargo modification. The trailer/container will have goods added and/or removed before furthering on to destination. (This is especially frequent in natural freight centers like Chicago.)

• Service requirement. The service criteria for cutoff connection to the next carrier cannot be met. This may be because steel-wheel interchange is time consuming, has
obstacles (i.e., commuter train curfews), or because an inbound train was delayed arriving.

- **Car shortage.** The first railroad may be suffering a flatcar shortage and does not wish to relinquish scarce assets.
- **Unsatisfactory loading.** The trailers/containers are not loaded in block order for the receiving railroad. There are many possibilities for this. One reason is because the origin terminal could not maintain block order, although it had sufficient volume. (i.e., Los Angeles loads 300 units on a train for Chicago. Although 50 units may be for Philadelphia, it is too hard to maintain these loads together because there are upwards of 30 different destinations.) Another reason is the proliferation of on-dock loading and the disaggregation of volume due to vessel sharing agreements and the proliferation of intermodal destinations capable of handling double-stack loading.

**Chassis Problem**

Furthermore, the intermodal traffic base has migrated from one of primarily trailers to primarily containers. This conversion has arisen from the growth of inland international cargo as well as the conversion of domestic trailers to domestic containers. The development of double-stack transportation enabled railroads to greatly increase the amount of traffic they could handle through their linehaul networks. It also improved the profitability of this traffic segment.

Unfortunately, it created significant terminal operating problems. A container cannot move on the highway without the wheels provided by the chassis. The chassis has become a significant operating problem. Chassis generally fall into the following categories:

- **Dedicated chassis that are only compatible with specific containers (i.e., J.B. Hunt).** These are easy to manage and control because they operate in a closed system and are relatively useless to other users.
- **Chassis pools to support specific domestic container pools (i.e., EMP).** The railroads do a fairly good job because these assets are intensively managed by the railroads themselves in a closed system.
- **Steamship line chassis.** These are placed by a steamship line to support that particular line’s business. Very often this supply swings between surplus, causing parking congestion, and shortage, causing operational disruption. Both problems are serious.

To handle surplus, some railroads have invested in chassis stacking systems that enable chassis to be stored upright (up to eight chassis in the parking space previously used by one). This is an expensive operation and very often leads to rancorous disputes over damage.

When a steamship line is short of chassis, a railroad is often forced to either "ground" the box (place it on the ground without any wheels) or to use another chassis. Both exponentially increase the workload. In the former case, another lift is required to place the load on a chassis when the line finally provides one. In the latter case, another lift (a "swing") is required to move the container from the intermediate chassis to the new one.

Both of these cases are disruptive. A grounded container can often end up with other containers stacked on top of it. Therefore, it may take many moves to get to the proper load when a chassis is finally available. An intermediate chassis can be a problem because it penalizes the line that had an adequate supply of chassis available. That line can then be thrown into chassis shortage — further compounding the problem.

- **Leasing company chassis pools.** Because of their (apparently) high daily rates, steamship lines view these as a chassis supply of last resort. Although their daily rates appear high when compared to steamship line cost of ownership, the cost is only incurred when the chassis is in service. Steamship lines do not track chassis utilization very well, and this alternative may not be as expensive as it appears.

The chassis problem is further exacerbated because ownership and control are not always
clear from looking at the physical asset. Furthermore, reporting of empty (or "bare") chassis moves is far from comprehensive. (Railroads are only recently keeping track of chassis in their terminal operating systems.)

The chassis problem causes a great deal of operational disruption. Not only is there internal confusion, but external stress. There are a large number of empty chassis moves between terminals. Like cross-towns, these chassis relocation moves just add to the burden of gate processing and equipment tracking.

The chassis problem is an industry-wide problem. In a few locations, the problem has been addressed by creating chassis pools. These are cooperative arrangements whereby steamship lines place their chassis in a common-user pool that is administered by an outside party, usually a leasing company or terminal operator, for all parties. The lines contributing equipment usually form some sort of oversight body.

Chassis pools have been effective in reducing the number of chassis required, in turn reducing terminal capacity consumed by empty chassis storage and repositioning. To date, chassis pools have been limited to discrete locations that are controlled by a single authority (e.g., a single port location or marine terminal). In theory, these pool arrangements could work in larger areas, however, the disparate operating authorities have precluded such an initiative.

Terminal Capacity Problem

Intermodal growth has been somewhat constrained by a lack of capacity. In recent years, railroads have invested significantly in linehaul capacity expansion, such as improved signaling, double-track conversion and additional motive power. These projects improve the network for all railroad customers. While intermodal will benefit from these improvements, intermodal also requires adequate terminal capacity.

Of late, terminal capacity has become the constraining factor for intermodal growth. Although there have been some new intermodal facilities built, these are often green field facilities removed from urban centers. Examples are Union Pacific in Lathrop, Calif. and West Memphis, Ark.; and Burlington Northern Santa Fe in Alliance, Texas and San Bernardino, Calif.. Building facilities located in urban centers is often constrained by the availability of land parcels of suitable size and zoning obstacles to construction.

Although some terminals have been built by conversion (e.g., CSX 59th Street) and several others remain viable alternatives (i.e., Norfolk Southern in Calumet, Ill.) the terminal infrastructure is fixed for the immediate future. To increase volume, capacity must be increased. The most obvious and cost-effective method to increase capacity is by improving throughput.

Information Problem

The cross-town information problem is as old as intermodal. Although technology has greatly improved, the industry still lacks the ability to manage a problem that it cannot measure.

The Chicago Listening Session, held by the U.S. Department of Transportation on Nov. 19, 1998, highlighted many information-related impediments to intermodal freight movement:

• Local and corridor data is weak.
• Draymen have different information needs because of differences in cost structures and types of operations.
• Small carriers — typically operating at a margin of 2 percent or less — cannot afford sophisticated technology solutions or expertise.
• Improved pickup and delivery scheduling at terminals by expanding information
exchange among railroads and carriers could accelerate the application of technology to intermodal freight operations.

**Chicago — Heart of the Problem**

Chicago remains the intermodal crossroads of North America. The six major Class 1 railroads (BNSF, Canadian National/Illinois Central, Canadian Pacific, CSX Transportation, NS, and UP) interchange large amounts of traffic.

The Chicago Listening Session, highlighted further impediments to intermodal freight movement:

- High volume of rubber-tire interchange (perhaps as high as one-third of rail-related moves) adds to congestion.
- Driver shortages, especially for night shifts, force carriers to schedule most moves during the day. Off-peak moves are not cost-effective; they are low-revenue moves.
- Draymen cannot afford to absorb the cost of shifting freight moves from time-slot to time-slot or terminal to terminal to avoid congestion. Demand of just-in-time shippers also reduces flexibility to reroute freight.
- Chassis shuffling — necessitated by the need to match proprietary containers and chassis — is time-consuming and expensive for rail terminal operators.
- Improved pickup and delivery scheduling at terminals by expanding information exchange among railroads and carriers could accelerate the application of technology to intermodal freight operations.

There is some opinion that this problem will disappear if — and when — transcontinental railroad systems emerge from industry consolidation. That may occur, however, it is also possible that consolidation will exacerbate the problem since interline gateways will need to remain open as merger conditions.

**Proposed Solution**

Solving the cross-town problem is a major project, however, a series of initiatives should generate improvement. The Association of American Railroads has embarked on a series of initiatives in Chicago. These range from train dispatching improvements to long-term construction projects. While these projects should be encouraged, it is time to consider some immediate intermodal improvements (Some of these are being considered by the National Center for Intermodal Transportation, a joint effort of the University of Denver and Mississippi State University.).

**Internet Community**

The most obvious step is to develop an internet-based information community. The Internet community should be established with providing views to various industry participants:

- **Providing a Trucker View.** Truckers need to have a community-wide view of their activities. Truckers need to see, with a single request the status and location of all their intended movements within the city, regardless of terminal. This will enable them to plan an entire day’s activity in advance and support ongoing revisions to the plan.
- **Providing a Terminal View.** Terminals should be able to provide an overview of their operational situation. This would include operating schedules, equipment availability and congestion.
- **Providing a Railroad View.** Railroads should be able to view equipment destined for them. In addition to getting terminal activity, intermodal equipment moving by rail should also be made available. Ideally, railroads would be able to track inbound trains as they arrive
so as to facilitate steel-wheel interchange as well as rubber-tire.

- **Providing an Equipment View.** Equipment needs to be tracked so that complete utilization statistics can be compiled. This is especially true for chassis to determine the true cost of ownership by understanding the percent of time they are actually utilized and the amount of empty repositioning.

**Success Criteria**

With raw data being collected automatically, the project could start to develop information that would form the basis of improving intermodal freight operations.

The information could be used to develop metrics (see chart for examples).

Some information might be considered confidential, and guidelines on dissemination would need to be developed (For example, participants might be provided with average values and specific numbers for their operation.).

As information becomes available, stakeholders could work to develop a pilot application to demonstrate the value of the information. A pilot application would be an information exchange of possible cross-town and other discretionary moves, such as empty repositioning and terminations. The goal would be to spread cross-town moves over a 24-hour period, rather than remain concentrated during daylight. In order to do this, an Internet-based information system could be developed.

The Chicago listening sessions identified an overall chronic shortage of drivers and a concentration of work during daylight hours. While this is indicative of a problem, it may be symptomatic of other shortcomings. Since most drivers are owner operators, their revenue is directly tied to how many moves they make.

Better information should enable all drivers to plan their moves better. A disparity in volume between day and night should be equalized as drivers move to less-congested time periods in order to take advantage of faster turn times. Drayage firms would have better visibility of possible work.

The Internet community should give cause for many infrastructure improvements, including:

- Reduced dwell time of loads prior to departure.
- Reduced movement during peak traffic periods (i.e., load-leveling).
- Reduced cross-town moves.
- Reduced chassis inventory.
- Reduced chassis repositioning.

The methodology developed in this project would have the ability to be ported to other locations and modes. The cross-town problem is an issue in other cities, such as St. Louis, Kansas City and Memphis. The expertise developed in Chicago would be easily converted.

This information could be used to analyze network flows for developing rail intermodal terminals that perform car-to-car transfers in lieu of rubber-tire cross-towns.

**Strategy for Success**

The Internet community would enable a great number of additional improvements to become possible. The project would progress through three time frames:

- **Short-term.** Use the Internet community to achieve operational improvements made possible by enhanced interchange and terminal visibility. It would also provide quantitative data for measurement to determine the scope of improvement.

- **Medium-term.** Analyze the information generated from the Internet community to determine tactical options given network operating cost and performance. Find ways to improve efficiency by load-leveling and increasing street-turns.

- **Long-term.** Develop strategic options involving the shedding of assets (i.e., chassis
pools) and rationalizing infrastructure investment.
Finally, some may argue that Chicago is too large a problem for a first attempt and that lesser gateways should be analyzed first. However, in order to obtain buy-in from all the necessary participants — especially the railroads — the problem needs to be one that is recognized by all.