

6. Intermodal

Introduction

It should be evident by now that each of the modes, and its accompanying infrastructure and equipment, have strengths and weakness relative to the nature of the service desired. As one moves from local services through regional, national, and international services, one is tempted to deploy those modes on that section of the service where their strengths prevail and their weaknesses can be overcome.

The idea being that by combining the modes – intermodal – one can provide a level of service that satisfies the customer at a cost less than using a single mode. Of course, in some cases, a particular modal opportunity does not exist (e.g., trucks across the Pacific¹).

It is tempting in the modern world to think of intermodal freight transportation as container traffic. And, after all, that is the thrust of our discussion about transportation management. But, just about any sort of freight can move in intermodal service.

Intermodal service is about combining the modes, the networks, the infrastructure and equipment into an optimally priced integrated service offering, and managing that offering in a seamless fashion, such that provides a competitive advantage to the customer as well as the service provider.

Googling “integrated intermodal service” provided 864,000 hits on February 26, 2007. This is an indication of the important, ubiquitous nature of intermodal and the number of firms that declare themselves ready to provide this service.

¹ Yes, I understand about RORO, but that’s not the perspective I want to take yet.

An Example

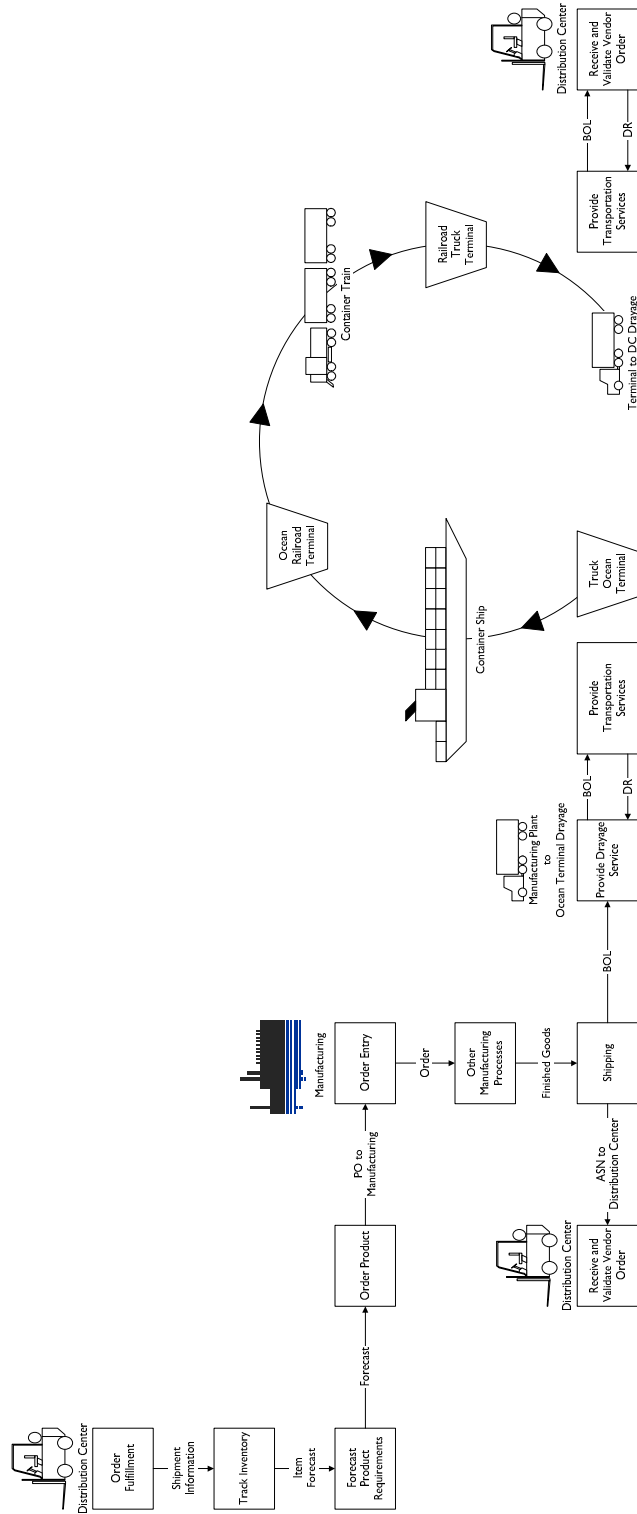
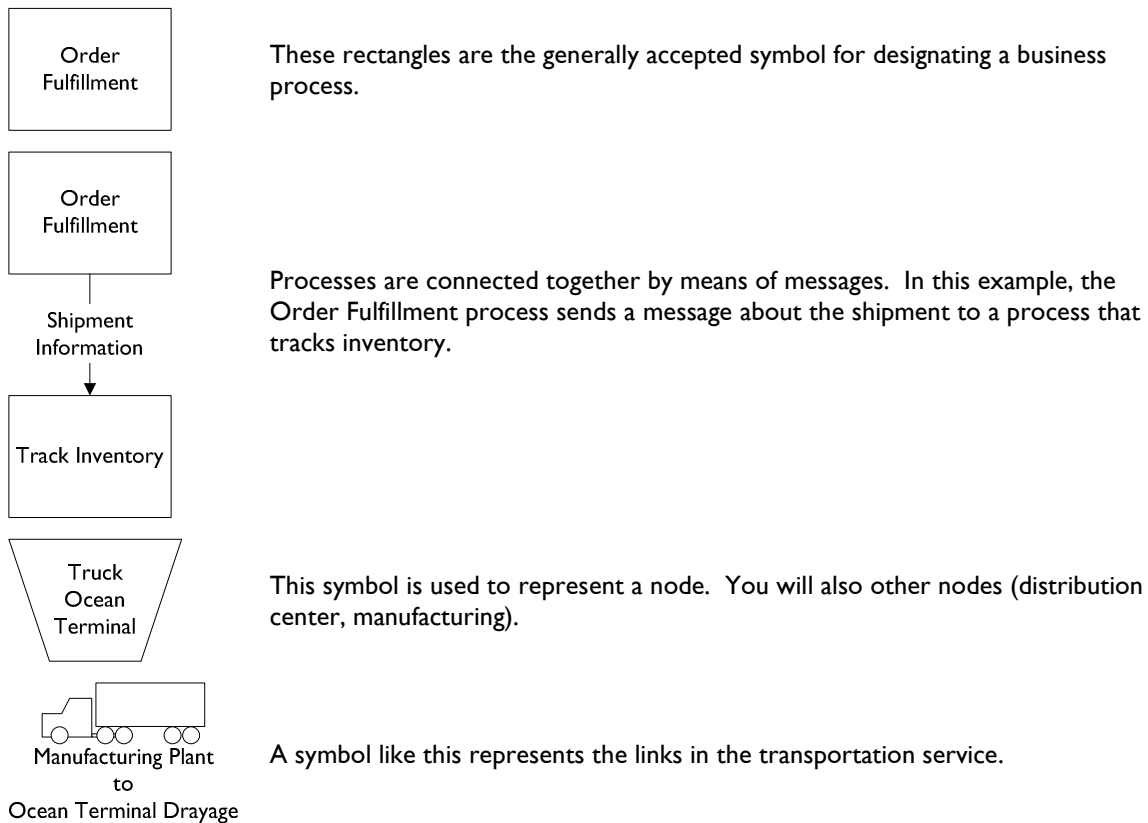


Figure 1 An Intermodal Example²

² International Logistics MKT 9774, Baruch College, Spring 2003.

Figure 1 grows out of an example of how electronic products find their way from a manufacturing plant in Asia to a retailer's distribution center in America. The distribution center at the upper left (when you rotate the page 90 degrees counterclockwise) and the distribution center at the lower right are the same. The truck, ocean, and rail modes are used during the service when it makes sense to do so.



The efficiency of intermodal rests on two key principles.

The Physical Interface: The ease and speed with which the freight is transferred from mode to mode with no loss of or damage to the freight in the transfer process. In 4. Networks³ we discussed how inventory can build in a transportation system that is slow and not easy to use. It is ease and speed that has been responsible for the rise in the use of containerization.⁴

The Information Interface: The ease and speed with which the freight is transferred from mode to mode is dependent upon the ease and speed with which the information is transferred from mode to mode. As a rule, freight should not move without its associated information.

Or to be more precise, the information should move, and then the freight should move. Having advanced information of the work to be done allows management to develop an appropriate operations plan to assure that the freight efficiently transfers with "ease and speed."

³ James Drogan, "4. Networks," (2007), vol.

⁴ Gerhard Muller, *Intermodal Freight Transportation (4e)* (Eno Transportation Foundation and Intermodal Association of North America, 1999). This is an excellent examination of all aspects of intermodal freight transportation.

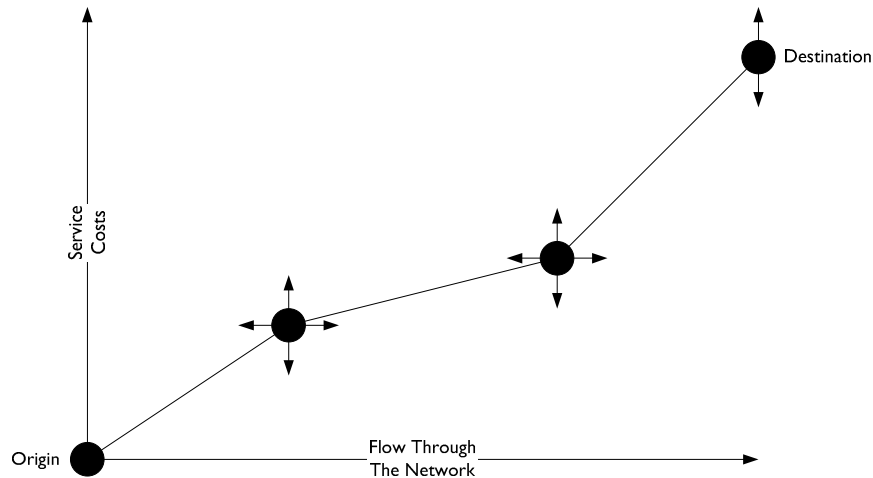
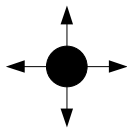


Figure 2 Intermodal Trade-offs

Figure 2 is a representation of the trade-offs made in intermodal transportation between an origin and destination.



This symbol at the intermediate nodes (not to be confused with the origin and destination nodes) means that the transfer node can be moved in the network, from left to right (the horizontal double-headed arrow). As this movement is made the cost of reaching this node (the vertical double-headed arrow) increases or decreases. This is not, by the way, a simple function of distance. For example, a node may typically have a delay that may not be present at another node. Or the charge for service (e.g., charge for performing a lift) may be different at one node versus another.



This symbol means that, as a result of decision made as to modes to use and where the interface between modes will occur, the final cost for the service will increase or decrease.

Now all of this is a very simplistic rendition of the processes associated with the analysis, design, and management of an intermodal transportation network, but the general point is valid – combining the characteristics of the modes to meet the customer’s service requirements at the least cost.

The Key Questions

I continue to return to this graphic go remind you of the framework for thinking established early in this course.⁵

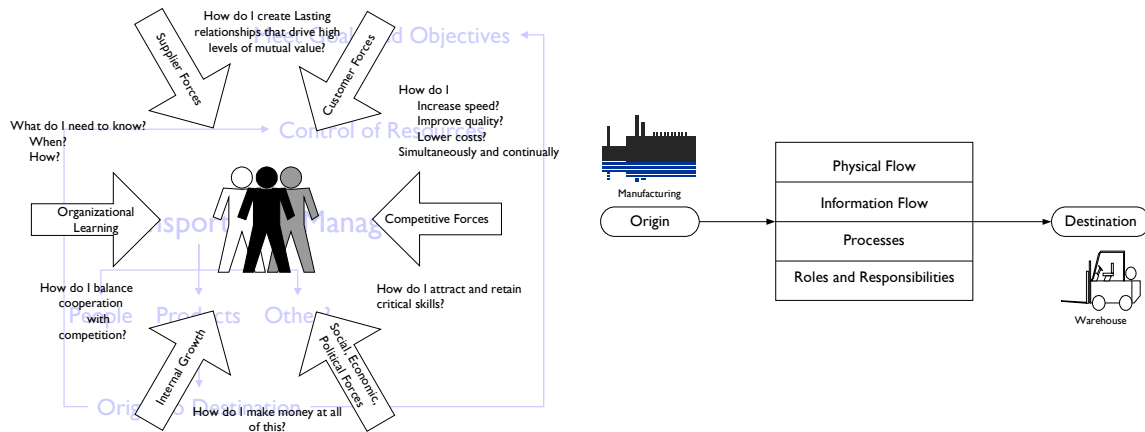


Figure 3 Business Drivers and Critical Questions; Themes

These lecture notes build an instance of the answers to these key questions – think of a layer cake.

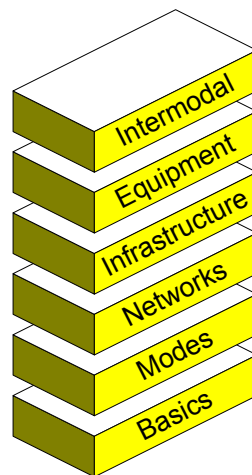


Figure 4 Transportation Management Layers

The trick will be for us, as transportation manager, to find the best ways to align the strength and weakness of these various layers to provide high quality, low cost service to our customers.

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February 27, 2007

⁵ James Drogan, "I. Introduction to the Course and to Transportation Management," (2007), vol.

Bibliography

Drogan, James. "1. Introduction to the Course and to Transportation Management." 2007.

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Muller, Gerhardt. Intermodal Freight Transportation (4e). Eno Transportation Foundation and Intermodal Association of North America, 1999.