Gaining Competitive Advantage through Real Time Information

Executive Summary

Immediate operational information leads to increased efficiency and better service.

Transportation executives face a broad array of information technologies capable of dramatically increasing operational efficiencies. Successful combinations of available technologies allow companies to develop advantages over less sophisticated competitors. Proper implementation eliminates information delays inherent in traditional paper shipping documents. Real time information systems feeding automated decision support applications allow transportation companies to increase dispatch efficiency, decrease operational errors and add services otherwise impossible with traditional paper-laden information systems.

The path to real time information advantages hides in a bewildering forest of technology options. Proponents of circuit-switched cellular, digital cellular, packet-switched networks, and satellite-based tracking and communication techniques vie for executives' attention. Other companies offer global positioning systems as a path to increased efficiency. Still others cite sophisticated fixed and mobile computer systems, battery operated printing systems, radio tagging, infrared communications, or other technologies as the best first step for automating transportation operations.

Only successful combinations of technologies deliver true strategic advantages.

Most of the technologies competing for executives' attention offer worthwhile, but isolated, improvements. Only proper integration of multiple technologies can fundamentally transform the competitive position of transportation companies. Companies who quickly exploit integrated real time information systems can leverage their advantage into increasing market share. Followers will find such information systems a competitive necessity required to maintain market position against increasing competition and rising customer expectations.

Raising the Bar

Rising customer expectations require increasingly sophisticated transportation logistics practices.

Your customers' expectations keep rising. Part of the change in attitude comes from the overnight package delivery business. Package delivery companies compete with each other based on increasingly stringent service promises. What began as a promise for "absolutely positively overnight" escalated to promises of delivery in the morning, then before the morning coffee and now "same day next city." Sophisticated information systems allow shippers to call any time of the day or night and find out exactly where their packages are. Within minutes of a package delivery, competitive couriers can tell a customer not only when it was delivered but who signed for it. Rising expectations in the airfreight business spills over into the transportation and trucking industries. Your customers now expect deliveries between specific hours, not just on certain days.

Changes in your customers' operations also increase delivery expectations and simultaneously increase the consequences of service failures. Just-in-time material management by manufacturers, retailers, and distributors transforms a late truck into idle assembly lines, lost sales, and angry clients.

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Current Techniques

Most transportation companies move information about shipments on paper documents that must be read and interpreted by people. Since bills of lading exist on a physical media, the information moves at the same speed as the goods. As a driver executes a pickup route, information about the shipments accumulates in the cab of the truck. The stalled information remains invisible to the rest of the organization until the vehicle and driver arrive at the hub.

Paper documentation arrives late and contains errors.

When the shipments and their associated information arrive at the hub, a critical race begins. Warehouse staff rushes to unload shipments and begin consolidation. Data entry staff rushes to input all the shipping documentation in time to support the outbound consolidation. If the data entry staff cannot keep up, shipments languish.

The same information delays plague delivery operations. Drivers deliver shipments throughout their shifts, accumulating written information. Until the driver returns the documentation at the end of the shift, billing and customer service departments do not know what has happened.

Real Time Information Key to Speed

Two technology tools integrated into transportation systems will prevent information delays from slowing commodity movement and enhance customer service levels. First, efficient data capture techniques acquire data in the field without distracting workers from other tasks. Second, real time radio frequency (RF) communication systems immediately relay the information to decision support systems at the hubs.

Paper-based messaging allows drivers to accurately input entire bills of lading in less than one second.

A 2-D bar code symbol currently deployed in other industries provides an efficient technique for capturing shipment data in the field. It allows shippers to encode an entire bill of lading in a symbol about two inches square. Shippers produce the symbol with standard printers. A hand-held scanner used by a driver reliably reads the document in less than a second. The entire printing/scanning process delivers all the reliability and security of standard electronic networks.

Once the driver captures the information, it can be relayed to the hub staff using a variety of wide-area, radio-based techniques. Information no longer languishes in truck cabs waiting for the mad rush at the end of the day. As drivers progress on their routes, information about shipments accumulates at the hub. Traffic managers see shipment patterns and can actively plan rolling stock and personnel requirements before the pickup fleet arrives at the hub.

Real time information systems allow transportation companies to dramatically improve all phases of their operations, from pickup through hub operations to deliveries.

This paper-based message can contain an entire bill of lading. Shippers can print it on existing paper documents with existing printers. Drivers can read it into portable computers with a hand-held scanner in less than a second. Even with substantial damage to the symbol, the entire message can be accurately and easily extracted with no additional effort.

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Field Operations

Real time field information requires effective data capture technology coupled to a wireless wide area network. The data capture technique must allow drivers with little or no computer background to quickly input required information. Paper-based portable data files meet this goal by allowing drivers to enter an entire bill of lading by pointing a hand-held device at a special bar code symbol and pulling a trigger. With wide area radio communications, carriers pay third party providers a fee based on the amount of data moved.

A variety of wide area wireless network technologies meet the field communications requirement. Most wide area alternatives move information across networks that are installed and maintained by third party providers. The transportation company pays the network provider a fee based on the amount of information moved. Choices between available providers depend on the geographic area to be covered; the type of data traffic to be supported and whether voice communications is a requirement.

Planning

When a driver accepts a shipment during a routine pickup, at first everything seems familiar. The driver checks the shipment against a paper bill of lading prepared by the customer. After confirmation, the driver loads the cargo and takes the document into the cab.

Once in the cab the driver pulls out a device that looks much like a hand-held bar code scanner, aims it at a special symbol printed on the document, and pulls the trigger. The operation reads the entire bill of lading in about a second and transfers it to a hand-held computer. The hand-held computer is then "docked" in a cradle in the truck cab and transmits the information to a central computer at the hub over any of several wide area wireless radio networks.

Four more BOL documents, four more trigger pulls, one more radio transmission, and the hub knows about all five shipments. In less than thirty seconds the driver completes the data entry, stores the documents in an envelope, and puts the truck in gear for the next pickup.

Back at the hub, radio transmissions from the entire fleet keep a database constantly updated. Traffic managers know about all inbound cargo, all destinations, and all special handling requirements. As the day progresses, patterns clearly emerge. The managers know ahead of time when they need extra people to handle the evening's consolidation, and whether the rolling stock available will support the demand.

Routing

Each transmission from the driver informs the hub of a completed pickup. Because the transmission contains information about the shipper as well as the destination, by inference each transmission also includes the current location of the driver and vehicle. Location information also may come from a global positioning sensor in the truck.

One data transmission frequently feeds many applications.

At the same time shipment information feeds the planning database, location information updates a routing support application. When a customer calls in unexpectedly for a pickup, dispatchers can quickly identify the nearest driver. They also know if the driver has time to satisfy the request and still complete the route on time.

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Supported by real time fleet position information, the traffic manager assigns a pickup time and vehicle for the request. When it's time for the pickup, the nearest driver receives a message over the radio link. The message can include expected cargo and directions.

Real time data means drivers complete more stops per shift.

Because of efficient routing and elimination of stopping for phone instructions, drivers complete more stops and still get their cargo back to the hub in time for the evening's consolidation.

Hub and Yard Operations

Hub and yard information management again rely on efficient data capture. The same symbol used by the driver to scan bills of lading can be placed on each carton being shipped. In other instances standard bar code symbologies may identify cartons. The same scanner used to enter bills of lading can read traditional bar codes.

Local area radio networks are installed and maintained by the carrier.

Information scanned inside hubs normally moves across a local area wireless network dedicated to yard and hub operations. Local area radio networks are installed and maintained by the transportation company or its subcontractors. There are no additional fees for data moved across the network.

Yard data can either move across local or wide area networks, depending on circumstance. Generally, hubs support high activity levels and high data traffic. Local area wireless networks economically support these yards because the company buys the network instead of renting the capacity. On the other hand, smaller yards may require significantly lower data traffic. In these cases, it may make more sense to use the same wide area wireless network as used in the truck and pay for the transmissions.

Cross Docking

As cargo enters the hub, planning systems give way to applications that optimize current operations. Cross docking is one key application driven almost entirely by efficient data management.
Dock personnel remove consignments from inbound trailers. On the outside of each consignment is a bar code containing all necessary information, including destination and handling instructions. A hand-held terminal allows personnel to capture all handling information in about a second. The terminal relays the information over a local area radio network to a central computer. Within seconds of scanning the consignment, the central computer knows where the consignment is bound and how it must be handled. Seconds later directions appear on the operator's terminal. The operator immediately takes the consignment to a waiting outbound trailer or staging area.

Shipment Tracking

Hub operations immediately knows every time a carton moves.

The same scan used to direct the lift operator automatically reports the progress of the consignment. The trucking company now has two records for the consignment - when and where it was picked up and when and where it entered hub operations. Whoever moves a consignment scans it to report the movement to the operations computer.

Hazardous material tracking and government paperwork become automatic.

If the package must wait for consolidation before leaving the hub, hub operations directs the staging operation and notes the time the item moved and where it waits. If the consignment contains hazardous materials, special precautions can be taken and all government records can be automatically compiled. At any time a government inspector arrives, a quick computer printout can detail exactly what materials are present, where they are located, and how long they have been there.

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Finally, when a consignment is loaded on an outbound trailer, one more scan ensures a hub operation has sent another validated shipment. Another scan during delivery closes the loop by confirming the correct destination.

Customer Service

All the information used to increase operational efficiency also increases customer service levels. Because accurate and timely information freely moves throughout the organization, transportation companies more consistently meet customer expectations and more quickly resolve problems when they arise.

Every increase in operational efficiency means better customer service.

Package tracking is a good example of an application that supports both operational and service goals. Managers need complete visibility of all cargo to monitor and optimize operations. Customers also increasingly demand immediate answers to the status of shipments. Efficient package identification coupled with complete communication coverage allows a driver making a pickup to quickly respond to a question about yesterday's shipment and today's delivery.

Routing applications can also be fine-tuned to increase customer service. If dispatchers know the location and status of all drivers, they can more effectively deploy the fleet to service unscheduled pick-ups and re-routing of priorities. If a driver's next scheduled stop would arrive before a customer will accept delivery, the driver can be rerouted to another location first.

Take Control

Transportation companies constantly manage and route both cargo and information about cargo. The volume and cost of information management continues to rise, while competitive pressures hold revenues stagnant. Integrated, deployed and tested technologies allow companies to convert information from an expense to a strategic asset. The key to the transformation is moving information ahead of consignments.

The key to competitive advantage is moving information faster than cargo.

First, companies must capture information the moment it becomes available. Since drivers collect information first, the data input technique must not require extensive computer skills. It must also be extremely fast to augment driver productivity.

Portable data files meet the needs of transportation companies. A symbol printed by the shipper on standard paper bills of lading contains all required information. A driver inputs the data in less than a second with 100% accuracy and data entry into the billing system is automatically accomplished. A similar symbol on the outside of a carton allows the company to positively track all cargo throughout its movement.

Second, companies need communication techniques that immediately move information from where it is captured to where it is needed. Wide area wireless networks maintained by third parties provide coverage over most of North America. Local area networks installed by carriers at hubs complete the communication picture for transportation companies.

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We at Compsee have experience combining data capture and communication technologies into profitable information systems.

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We have ongoing relationships with key communications providers, networks and computer companies. We have on staff or on call the software expertise, project management skills, and installation personnel to completely design and implement worldwide strategic information systems.

You can manage the information flooding your organization, or the information will manage you.

The flood of information can drive an organization either into skyrocketing costs or increasing efficiency. Think about how immediate information availability could help you improve customer service levels to beat your competition and form the foundation for your company's future growth and prosperity. Then call us.

For system, product or services availability and specific information within your country, please contact Compsee.

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