GOPA
IT CONSULTANTS

Generate Instant Value with SAP® TM

while transforming your transportation organization

GOPA IT Consultants Inc. White Paper

Foreword

Less is More

Well not always, but in the modern IT world having fewer systems will allow you to better extract value out of each system. This is especially true of operational and execution systems like transportation management systems (TMS) that require extensive interaction with a host of other systems.

Let's be realistic, most features and functions of a modern TMS do not get utilized. More often than not, TMS projects start out with wonderfully elaborate plans that even if successfully implemented, tend to fall apart over time. Why? – it is because people treat their TMS as a point system and not an integral part of their overall processes. TMS integration costs and complexity generally become the bottleneck restricting future process changes. The end result is that the TMS starts the aging process where it is no longer able to grow with the company.

As customers become more and more automated they expect more and more from their vendors. Customers are already demanding more real time inventory and in-transit information, shorter lead times, later order changes/substitutions and more flexibility in transit times/costs. TMS are now more likely to be providing functionality directly to customers, but they can't do it alone. A TMS needs to work as one with inventory planning, order and event management, finance, manufacturing and a host of other systems to meet the ongoing needs of customers.

In today's world features/functions are the easiest part for a software developer to create, it is getting these functions to work across business processes where the real and *ongoing* challenge resides.

I am pleased to write this foreword for our strategic partner GOPA ITC, because as a system integrator (SI) GOPA ITC understands that a SAP TM install is not just about putting in a point system to manage freight. GOPA ITC knows that successful TMS have well thought out integrations. They look at the overall environment, use their extensive SAP TM expertise and develop a plan that meet the needs of the execution system, while maximizing the value across the enterprise. GOPA ITC knows how to bring you more with less.

JP Wiggins,
Solution Principal – Supply Chain Execution
SAP

March 2012

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Purpose

In Summer 2011, SAP announced General Availability (GA) status for its 8.0 version of SAP Transportation Management – a milestone that had been anticipated eagerly in the marketplace. Customer success stories are proof that SAP finally got it right, and consequently has to be considered a major force in the TMS marketplace. SAP can now dive into its large installed base and drive market adoption.

With SAP preparing the GA announcement for TM 8.1 and TM 9.0 around the corner, we sense a significant need for education about this closely watched solution. This notion comes not only from our many conversations with interested SAP customers, but also from wide areas in the SAP Ecosystem of vendors and partners.

For a prospective customer the questions are – 'How does SAP TM fit into my respective IT strategy and landscape?' and more importantly 'How can I make it work?' Undoubtedly, any implementation of a TMS system will have a more or less dramatic impact on an organization, starting with the implementation of the software itself and once the software is in operation. This White Paper aims to provide guidance around these questions.

Following up on GOPA ITC's 2011 White Paper that reviewed SAP's strategic direction with SAP TM, the authors now review deployment and transformation aspects of a TMS initiative. Successful software projects always have been characterized by clear and early value and benefit definitions before the project starts, ensuring success can be measured afterwards. This White Paper defines transportation value criteria and ties them to standard SAP TM processes.

GOPA ITC has guided various early adopters of SAP TM through Product Demonstrations, Proof-of-Concepts, feasibility studies and end-to-end implementations. This White Paper is a direct result of these engagements and can be taken as a guidebook to start or accompany your own TMS initiative. To learn more about SAP TM, please contact your SAP Account Executive or the authors of this White Paper.

Thank you for your interest in this white paper!

Joerg Rohde Bjorn Bernard

TMS Software Selection Process

SAP Customers now have a new option from their most strategic Business Applications vendor, relieving them of the headache of building their own systems integration across different vendor platforms. Drivers for a SAP TM Initiative are multifold, however, in the end, typically all of them seek improvements in transportation cost and customer service. *See section value categorization for more on this subject.*

The current situation of shippers starting a TMS System Selection can be summarized as follows:

Current TMS	Set-Up	Change Trigger
Outsourced to 3rd Party	External Vendor (typically 3PL / 4 PL) handles all Transports	Transportation Cost, Lack of Integration
Manual Processes	Spreadsheets and Paper driven	Transportation Cost, Poor Customer Service
Custom solutions	Own developed Applications	TCO, Responsiveness
SAP ERP / LES / TRA	SAP ERP/ECC Configuration	Outgrown Solution, need more functionality
SAP APO/TPVS	TP/VS	Need for end-to-end process support beyond planning, Upgrade
Non SAP TMS Solution	OTM, JDA/I2, Manhattan etc.	Old Technology, Upgrade, Pain of Integration with SAP ECC.

Now or Later?

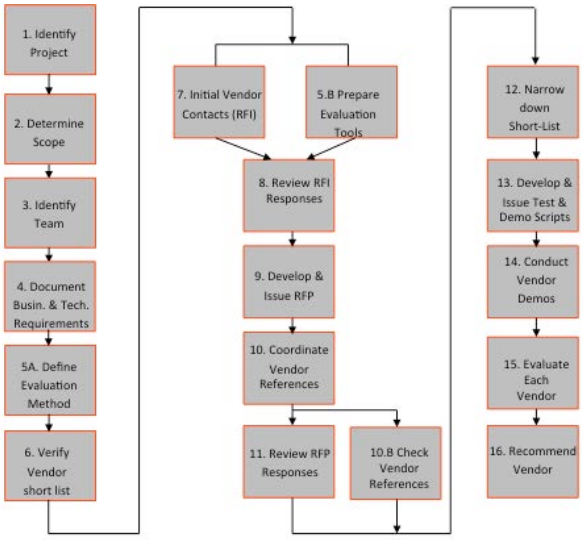
A TMS initiative is a strategic, long-term decision. Its deployment is not an event but a multi-step process until full benefits can be harvested. Therefore, it is important to develop a coherent picture prior to starting the system selection to ensure the implementation decisions will still be valid years from today.

This picture should include a forecast of the company's developments in terms of business volume, transportation sourcing strategy, distributions model and other mid to long-term considerations to frame a system selection. It translates into a more detailed definition of process requirements and functions, which should be guided by transportation best practices rather than by 'as-is'.

The outcome here will then be verified against SAP's TM capabilities and functionalities. In this process the time dimension is critical, which means defining when a certain requirement needs to be available for implementation. That way the customer can consider SAP's Development Roadmap for TM and map it to its implementation strategy and the intended rollout schedule. In aligning their individual rollout strategy with the SAP TM Product Roadmap, customers will find

an opportunity to grow their SAP TM Deployment along with a further evolving SAP TM Application release schedule. SAP TM 8.0 / 8.1 is already powerful and offers a rich set of functionality – far enough for most SAP customers to reap significant transportation benefits right away in initial deployments. This approach is familiar to many SAP customers from their original SAP ERP/ECC Deployments.

With regards to the business case, however, the full, long-term picture matters when verifying SAP TM capabilities against a company's requirements. A typical Business Application Selection process takes the following path:



It is a fairly involved process consuming various resources, time and cost, sometimes supported by an external consultant. Most SAP customers made a strategic decision many years ago to partner with SAP strategically for the long run. Many of these customers have adopted a strategy of 'Why not SAP?' when considering new business applications. These loyal SAP customers can follow an accelerated path of evaluating SAP TM for their organization, resulting in much lower selection cost, a faster decision, and consequently faster time to benefit.

How Should Customers Evaluate a TMS Solution?

Criteria for a TMS are obviously significantly different between LSP's, shippers, and wholesalers or traders.

While there are some differences between shippers from different industries, for example specific compliance requirements, there is wide overlap about how to extract value from a new TMS System. A solid functional coverage of the major scenario's for international and domestic transport with combined inbound and outbound shipments fully integrated with Order Management is fundamental. The major modes of transport should be integrated for seamless end-to-end shipment planning and execution at minimal cost. A typical TMS RFP includes a long list of functional specific requirements. Please see the section 'Mapping of Value Categories' further below for examples of how to organize these requirements. Please contact us to obtain a TMS RFP requirements document template.

While due-diligence check of these requirements is very important, **it is easy to get lost in the details on the expense of the bigger picture**. Fundamentally, any TMS is embedded in a variety of other surrounding applications in the Supply Chain such as Planning, Warehouse Management, Trade Compliance, Visibility, and trading partner / carrier integration to name a few. Only a solid integration of these SCM applications enables the desired convergence of SCM processes and ultimately allows for automation, cost savings, and other value delivery that the customer is looking for. A modern, flexible, and open platform underneath the TMS is critical so that down the road new developments, from the TMS Vendor itself or its partners, can be added with low effort. IT in Transportation Management is an area that is hungry for innovation. Customers can expect new interesting technologies, i.e. in mobility, process automation, and analytics to surface frequently, especially from the SAP Ecosystem. In addition, SAP's new HANA technology also promises more innovation in Transportation Management.

For SAP TM customers that means most specific TMS requirements can be added to the application with reasonable effort, in case they are not completely covered today, while they will not have to worry about Application Integration on SAP's robust, open SCM Platform.

In general SAP applications differ from Best-of-Breed applications primarily in terms of its integrated design. Although SAP TM offers market-leading features throughout its embedded processes, as a result of the GA announcement of version 8.0 the TMS market is now a battlefield of IT philosophies. As the SAP author of this White Paper's foreword eloquently emphasizes, a lot of features of modern TMS systems never get utilized. Every customer has to decide whether having

all the latest bells-and-whistles is more important than having an integrated platform at its disposal that will easily allow future process change. Less can be more, especially when it comes to operating a complex system infrastructure.

Value Categorization of TMS Systems

Any software system is designed to deliver specific benefits. A buyer of software typically looks for particular benefits that help to improve the current situation. Once the software has been implemented, it is often not trivial to quantify the benefits that have been gained with the adoption of the software. Historically, software systems have enabled automation and riddance of manual steps that frequently are error prone and, in plain words, boring, laborious, and tiring for humans.

When we look into the Transportation and Logistics area of large companies it is more often than not still the norm that a lot of processes are not automated – or in many cases not integrated since many legacy systems that represent silos of information are still in operation.

Similarly prevalent is the use of spreadsheet tools like Microsoft Excel to manage freight contracts, Routing Guides, business share volumes and the likes. It is amazing to see that very sophisticated supply chains in some of the most successful companies in the world are still partly or holistically managed with spreadsheet applications. As we mentioned in our first White Paper edition, the early 2000's were dominated by Supply Chain Planning implementations – the current trend is to improve upon Supply Chain Execution capabilities in the areas of Transportation, Warehousing and Order Fulfillment.

In order to structure the value discussion it makes sense to classify benefits of a TMS implementation into

quantitative and qualitative categories. A well-prepared software project will identify benefits in both areas that ultimately will determine the success of the deployment of new technology in an organization.

Quantitative Benefits

Benefits in this area can be measured with relatively low effort and are the so-called low-hanging fruit that every CFO of a company is after. Total Freight Spent on an annual basis should be measurable even without a TMS system; categorizing it even further into spread across Transport Mode like truck, rail, intermodal, ocean, air, or small package is the next step. Depending on the sophistication of a company the ability to quantify freight spend on different levels however is highly differentiated - clearly an area where TMS deployments have their first anchor point.

SAP TM ultimately allows you to extract shipment volumes and freight costs into a Business Warehouse environment where freight spend reporting will become a regular task.

Freight Spent is certainly the most direct indicator to measure your transportation activities. A more indirect – but equally effective – way to conduct transportation is to strive for a high utilization of assets like trucks, containers or railcars. Having a consistent way to visualize the average utilization rate of asset types is a great way to steer your organization to more efficient operations. Higher asset utilization will lead to higher weight, volume, or cube per shipment ratios and ultimately reduce the total freight spent.

Labor costs in the logistics and transportation area represent a high amount of total cost. It is a fact of life that shipping goods requires people and labor – automation systems have physical limitations although even here major improvements are available in material handling technology that move containers in ports or shrink package cartons to optimal sizes while on the conveyor belt.

Still, other areas like Freight Payment or Audit can be excellent areas where actual headcount can be reduced. Instead of manually scanning paper invoices and starting labor-intensive claims processes, automating an invoice process is a clear-cut area for headcount reduction. It is difficult in a focused White Paper like this to present an exhaustive list of benefits, it is rather intended to provide food for thought – this will

Quantitative Benefits		Qualitative Benefits	
Benefit	Examples	Benefits	Examples
Lower freight spent	Achieved in multiple ways, e.g. take advantage of lower-cost transport modes if delivery dates can be met	Higher customer service	Offer customers expedited services (e.g. rush orders) in constraint situations like Friday evening pick-up
Increase asset utilization	Automation of planning process would allow to hold up a larger pool of orders that are candidates for consolidation	Improve carrier relationships	Provide better forecast numbers in terms of required capacity. Eliminate phone and fax as communication methods.
Eliminate legacy systems – reduce IT costs	Streamline IT landscape by implementing a platform that is future proof. Reduce reliance on people who support legacy systems	Eliminate 'offline' processing (spreadsheet)	Implement business rules in TMS systems that can be automatically applied to orders and deliveries. 'Routing Guide' maintenance in TMS
Improve on-time performance	Customer satisfaction will increase by reliably meeting delivery windows	Eliminate data redundancies	ERP integration allows to re-use business partner, product or geographical information in transportation planning and invoicing processes
Reduce headcount in transportation area	Often invoice processing is significantly based on paper and requires a lot of people to process that don't necessarily add value	Increase visibility into transportation processes	Tracking containers, railcars or trucks in real-time based on signals collected from scanners, mobile devices or gate readers

become more obvious in the next chapter when we tie benefits to specific process steps in SAP Transportation Management.

Qualitative Benefits

How do you measure automation or customer satisfaction? Of course one can argue that everything is measurable somehow by defining indices or conducting surveys and benchmarks – if you spend enough effort on it. Fact, however, is that time and resources are often scarce and companies do not have such indicators readily available.

The first end-to-end implementation that GOPA ITC conducted for SAP TM 8.0 in the Consumer Electronics industry had one primary goal – eliminate a significant amount of spreadsheets that were used to house carrier routing guide information in the form of business rules. These spreadsheets were changed on a daily basis and sent to contractors who were tasked to implement these business rules and subsequent changes in their own systems. This spreadsheet based process was not only labor intensive and error prone, but most importantly hard to control. In the grind of daily global operations, enforcing compliance to the rules was becoming more and more difficult, compounded by the fact that the customer's business is growing in tremendous numbers.

From a design perspective SAP TM lends itself nicely to build a solid foundation for transportation best practices. Out-of-the-box integration to SAP ECC for order and delivery integration will reduce or rather eliminate data redundancies. Based on a global and consistent data set, it is now possible to lift the organization to a level where more and more tasks can be automated with confidence that the TMS system provides decision support to users, who can then focus on exception handling.

Before we conclude this chapter there are two other aspects that we would like to highlight - carrier relationships and the general aspect of visibility.

Managing carrier relationships is a tricky task. On one hand every shipper is interested to squeeze costs out of its supply chain, often by lowering negotiated freight rates. In some ways this is almost counter intuitive, as trucking companies for example will be forced to save these costs somewhere else – often in customer service. After all, the worst carrier is the one that is going out of business and forcing you to look somewhere else for capacity. Like with many things nothing is black and white – fact is that maintaining good carrier relationships is rapidly becoming a critical success factor in transportation. How do you measure carrier relationships? There are many KPI's that one could come up with that are of quantitative nature,

such as On-Time Performance or percentage of damaged shipments. However, measuring the quality of the commercial bond is more complex. How can you guarantee that a special type of equipment is available in a critical situation? What are the carrier's capabilities to convey qualitative tracking data?

The last question ties nicely into the general concept of visibility that only becomes an issue once things are broken or are about to break. Companies struggle mightily with providing users – internal as well as external – with status-quo type information in transportation processes. Anticipating delays and allowing users to be more pro-active is a major asset in supply chain operations. Getting the right information to the right user at the right time is immeasurable. Calling a customer with information that a shipment will be arriving late will be greatly appreciated as it gives your business partner the chance to prepare accordingly. Such a pro-active 'mea culpa' - for whatever the reason - beats the alternative of having the customer calling you by a long shot.

Mapping of Value Categories to the SAP TM Solution

After depicting different value categories of TMS systems and before tying value categories to specific processes within SAP TM, it helps to quickly look back on some important Positioning aspects. After all, value lies in the eye of the beholder and different vantage points can dramatically alter the perception of gained values. IT benefits like having a future-proof upgrade path or elimination of outdated legacy systems might not raise a business audience out of their seat – to reiterate the vantage point makes a big difference. In this sense it is critical to remind ourselves that SAP TM addresses two radically different groups of companies – shippers as well Logistics Service Providers.

A Quick Look Back on Positioning

In our 2011 White Paper we portrayed SAP's positioning of SAP TM, where version 8.0 was geared primarily towards its large shipper community of manufacturers, consumer package companies, retailers, or wholesalers. In June 2011, TM 8.0 entered General Availability status and in 2012 it forms the basis of SAP's go-to-market. It is a foregone conclusion that version 8.1 will exit Ramp-Up in early Spring 2012. With version 8.1 SAP broadened the functional spectrum to Logistics Service Providers, in particular to those in the Forwarding segment, respectively the non-vessel operating environment.

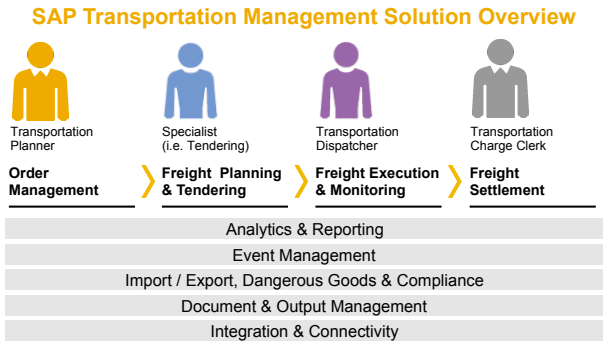
Roadmap topic – Fleet Management:

After its successful GA release of SAP TM 8.0, SAP has shifted gears and is addressing the needs of Logistics Service Providers more and more. However, for both shippers and Logistics Service Providers the product roadmap remains a very important focus topic – effective management of fleets of containers, trucks and trailers, or railcars. While TM plans vehicle capacities or calculates asset-based freight costs, SAP has communicated its intention to enhance capabilities in the area of fleet maintenance and operations. While many SAP clients utilize SAP ERP Plant & Asset Maintenance features everywhere in their business, SAP TM today does not actively integrate into this feature set. With versions 9.x SAP will start to deliver more functional support for asset / fleet focused processes. Anyone with a stake in SAP's TM solution will keep a close eye on how exactly TM will be enhanced around Fleet Management aspects in the years 2012-2014.

The 2011 White Paper briefly introduced business processes supported by SAP TM 8.0. We then stressed that TM does not force customers to implement every process step listed, emphasizing that the most successful TM implementations would be those that carefully manage the scope early and find a fast time to value. Now that SAP TM 8.0 has entered the grounds of proven technology, it is a fact that every customer implementation differs in terms of the deployed functionality and consequently realizes different benefits as the outcome.

The following chapter should be understood as a listing of guiding principles and anecdotal evidence rather than a deeply analytical summary of value category allocations that would claim to be complete or exhaustive in nature.

Allowing us to structure the following observations, we fall back to a logical sequence of business processes that are supported by SAP Transportation Management. In the spirit of Positioning we will also restrict ourselves to shipper-related processes unless otherwise noted.



Source: SAP AG

Order Management

The obvious advantage that SAP enjoys in the TMS market is that of 'Integration'. This particular aspect of 'system integrity' might feel even 'overused' or 'overrated' to some, however a quick analogy reminds us of the 'Power of Integration'. Imagine replacing the engine of a well-engineered German luxury car - let's say a BMW - with that of a racy Italian sports vehicle like a Ferrari, or better, a Lamborghini. It is safe to say that faster is not always better. It cannot be ruled out that this combination can't be made to work, but without doubt it would take significant effort to get two separately designed parts working harmonically. There are numerous customer stories where significant concessions were made when integrating SAP ERP to an external best-of-breed TMS. One such example restricted order consolidation to a single pick-up location, effectively eliminating multi-pick scenarios.

SAP has done a very nice job of seamlessly tying order and delivery based processes in SAP ERP to SAP TM. The benefit is definitely IT related – saving the heartache of physically linking different systems, however the business also gets its fair share of value from this tightly woven process support. We will discuss data redundancy at a later point in time. Two other TM capabilities lend themselves beautifully to describe different value categories – Change Control and Order-based integration.

Starting with the latter, planning transportation immediately after sales, purchase order, or stock transfer order creation provides opportunity to take advantage of more cost effective modes of transport while still adhering to customer service levels. Replacing truck volume with rail or moving air cargo to ocean freight has obvious freight cost savings tied to it.

Critics of SAP will argue that interfacing orders to an external TMS is not that difficult, after all SAP drives a general company-wide strategy of publishing web service-based interfaces, including in the ERP SD module. The critics' argument starts to fall apart once the topic shifts to controlling change processes. Clients change their mind a lot and customer service departments dislike nothing more than to restrict customers from changing orders – TMS systems as a result are constantly trying to play catch-up with order entry systems. SAP TM from its core design is built to consider order changes and cancellations until the very last minute, classify the specific order change in regards to quantity, location, or date/time and react accordingly. The classic example is that of a last-minute order change in ERP triggering a tender cancellation in TM that is electronically transmitted to a carrier without any human intervention.

SAP TM becomes part of something larger – it does not purely manage transportation – it allows a company to provide better customer service by allowing last minute order changes without compromising certain principles in the logistics and transportation area.

Booking Freight and Import/Export

Booking processes are most prominent in ocean and airfreight scenarios. The main leg of many multi-modal transportation scenarios can often be considered the bottleneck in a logistics chain, after all container ships or air cargo freighters are very often tied to strict sailing or departure schedules. Missing the boat, literally, can often be a costly affair. SAP TM helps managing booking processes, allows for stringing multi-modal shipments together, and drives communication to every business partner involved in such a process. Drayage movements such as delivery of containers to a seaport can be planned after receiving a booking confirmation that contains valuable information, i.e. a port cut-off date. We have often heard from customers that they needed to expedite ocean shipments as goods did not make it to the seaport in time – SAP TM will allow you to manage these processes more carefully.

Ocean contracts are often tied to annually committed volumes in order to receive discounted rates. Missing the annual targets consequently leads to penalty charges, which are particularly hurtful as they often come at the end of a financial period. The SAP TM concept of Business Share and Allocations is a powerful tool that enables you to monitor shipment volumes on an on-going basis, allowing you to hit your targets regularly.

The authors have spoken to many customers about international shipping over the last few years. For various reasons, international transportation is still dominated by manual processes, phone calls, faxes, sticky notes, and Excel spreadsheets – more so than domestic transport processes. Time has come for more automation in this area – freight savings, higher visibility, and customer service will be the result!

Freight Planning and Selecting Carriers

Transportation Optimization is arguably the capability of any TMS that has been analyzed the most. We therefore will not emphasize this much further – literature exists in abundance to explain technology such as genetic algorithms that are used to consolidate orders into single truckloads. Concrete cost savings quite naturally are the outcome of such planning runs – SAP TM provides Optimization capabilities like many other TMS systems.

Before consolidating orders, many other logistical constraints have to be considered – for example requested delivery dates, opening times of customer facilities, or preferred carriers by your customers. This is an area of particular strength for SAP TM; it takes the form of a rules engine that considers many business rules before making cost decisions. What good does it do to create a multi-stop shipment and select the lowest cost carrier, but then having the truck wait in front of a closed door at the customer site? We have come full circle to the beginning of this chapter – Transportation Planning can and should not happen in a vacuum. The planning engine needs to be tied to your order entry system at the hip; otherwise any plan that you create is outdated as soon as it is released to execution.

BRF+ 'Rules Engine Deluxe'

The Business Rules Framework (BRF+) is a business rules system in SAP NetWeaver. It represents a comprehensive framework that helps business and IT users to model rules used for automatic decision support in business cases of all kinds. Conditions in SAP TM make use of a particular feature of BRF+, the so-called Decision Tables. Advanced techniques in BRF+ can be leveraged in customer specific scenarios and its applications are basically unlimited.

For example Carrier Routing Guides are often nothing but a collection of business rules that drive decision-making. BRF+ is the engine that drives rules-based planning and execution in SAP TM.

Tendering Freight

In SAP TM the process of Tendering refers to a highly interactive concept. Typically set up in Peer-to-Peer or Broadcast mode (or in a combination thereof), this process takes advantage of todays modern communication patterns in the form of EDI/XML, email, or even SMS. The result is faster and more reliable response times from carriers. Taken to its most sophisticated level, SAP TM Tendering can take the form of an auction where carriers bid for shipments based on price. The clear intention of this process does not need any further explanation.

Broadcast Tendering also helps to resolve bottleneck scenarios. Executing on Rush orders such as Friday afternoon shipments often has been heavily restricted due to capacity constraints. Broadcasting tenders out to a large number of carriers now leverages technology to receive quick responses from a number of carriers in a short amount of time. Such strategies also become more popular at the end of financial periods. When pressure is high to relieve balance sheets of inventory in order to recognize revenue, finding any available carrier often outweighs finding the low cost option.

Freight Execution and Monitoring

Transportation will always be an area where things go wrong – delays, accidents, labor strikes, natural disasters, and a high dependence on external parties, amongst others, characterize this important business process. Companies strive to take control, however, often struggle to find the means. Picking up the phone undoubtedly remains a valid option to find out where a container is, but it becomes problematic if it is the norm.

Plenty of tracking technology exists today in the form of GPS, RFID, or other sensor-based technology. It is also possible to find business partners in the transportation industry who provide real-time or near-real-time tracking services. However, tying everything together in a single platform remains a challenge. Often, business users are still forced to enter order or shipment information on another company's website to retrieve status information – SAP Event Management provides the solution. Acting as a platform to collect order, manufacturing, or logistical information from different data sources, it quickly grows into a status portal for all types of parties – internal as well as external.

Another attribute of the SAP TM architecture is that it leverages SAP Event Management to its fullest extent – for users its usage is completely transparent. SAP TM Planning information of shipments naturally flows into Event Management where it automatically becomes relevant for tracking, if so desired.

As a final benefit, the valuable tracking and status information can easily be extracted into SAP Business Warehouse for analytical reporting. Directing your transportation processes based on some key performance metrics is, and should be, the ultimate goal for many heads of Supply Chain – SAP TM and EM are the catalysts in the SAP architecture to fulfill this ambition.

Freight Settlement

Understanding the SAP TM architecture is vital in terms of understanding Freight Payment and Invoicing. On the highest level, TM will be used to calculate shipment costs on a charge element type of detail based on systematically maintained freight contracts. These freight costs are then passed to SAP ERP for Invoice Verification, which, after any eventual Claims handling, ultimately triggers payment transactions.

Going back to Management of Transportation Requirements, data integrity is a major advantage in this architecture, as no redundant data elements need to be maintained. We already discussed the change control mechanism that similarly applies to the settling of freight invoices. Data integrity always needs to be looked at from two sides – master data and transactional data. From an IT perspective the re-use of master data eliminates the necessity for a business process to keep systems in sync. Changing of customer or carrier data in one system immediately updates the mirror image on the other side – a concept that SAP introduced from day 1 in its Business Suite architecture and embodies one of the key IT benefits. On the transactional side the SAP TM architecture removes the need to re-key any invoice data and therefore limits user input errors.

Outsourcing the complete Freight Payment & Audit process is still widely spread, especially in North America. This outsourcing is certainly convenient, but companies pay a hefty price for it. In addition to paying for the service itself, the loss of control might be the bigger issue.

Software like SAP TM allows companies to re-think this outsourcing approach. Regardless of automation capabilities like EDI Invoicing or ERS (Evaluated Receipt Settlement, aka Self Pay), invoice verification will always be somewhat labor intensive. However, if you want to pay an outsourcing firm for their human resource services, then why not have them conduct the service in your system? That way you do not lose control of the process itself and take advantage of an

integrated system environment that does not leak any valuable information along the way.

Transformation and Organizational Impact of SAP TM Deployment

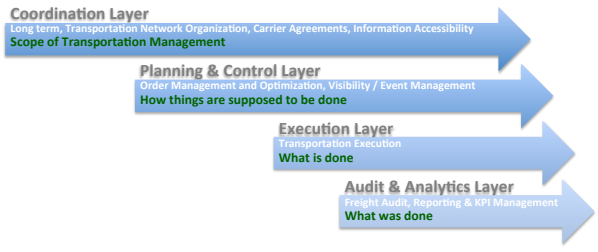
Any TMS System Implementation leads to a transformation of a company's respective Transportation Business Organization. How big the delta between 'before' and 'after' will be depends on the starting point and how far the company is taking the implementation. In any case, customers can expect an organizational change impact on:

- **People** (Skills, Role, Accountability)
- **Processes** (Automation, Policies, Timing, Reporting)
- **Systems** (Integration, Data Governance, Support, Scalability)

Transformational Aspects Before and During Deployment of SAP TM

If we come back to the table on page 1 (Software selection chapter) and review the As-Is situation, we will note that the change impact is significantly higher for a company that is currently outsourcing its transportation operations when compared to a company that is already running an advanced TMS System, such as SAP's APO TP/VS or one of the non-SAP TMS applications, such as I2 or Red Prairie.

Converting from outsourced to in-house requires the set-up of an in-house transportation management department. Such an organization can be can be set up according to 4 layers under coherent management:



The company will have to decide if transportation is to be managed centrally in the headquarters or de-centrally in its Business Units and Subsidiaries. A combination between central for Coordination, Planning and Strategic Freight Procurement and de-central for Execution, Visibility and Audit could make sense.

If your company is already running an in-house transportation management group, perhaps an outdated system with limited functional support and integration (MS Excel seems to be the glue-stick with an amazing number of shippers), then the change impact is less severe, however can still be significant in all three dimensions of people, process, and systems.

Your Most Valuable Asset

Let's zoom in on people a little: A critical consideration is the timeframe in which the changes will come. So you should ask: how adaptable is your organization's culture, how adaptable is your team, how adaptable and ready are you? Giving some thought to what it takes to prepare for the change ahead of time is well worth the investment. It's easily neglected, because the 'soft side' is not what is at the top of Business and IT's mind all the time. An effective training program and matching responsibilities with the right personalities are critical. Empowerment in the new-to-be world and giving employees the right tools is a pre-condition to achieving the expected business case benefits. Besides, it creates the 'Change Agents' needed during the process and drives the adoption of the new system. Leading companies often cite that their employees are their most valuable assets. So in the end, only if this 'asset' is well cared for, you will see your transportation project investments deliver sustained value over long periods of time.

Transformational Aspects After Go-live of SAP TM – 'Life after Go-Live'

Organizational Integration

In general, SAP applications differ from Best-of-Breed applications primarily in terms of its integrated design. As SAP TM is not a point solution, but an integrated platform across various Supply Chain disciplines, it invites different stakeholders to the table - an aspect that of course should be a major consideration during project planning and management. Consequently, the orchestration of integration transforms processes across disciplines and removes isolation, in other words SAP TM customers intending to use integration as a competitive advantage must design and adapt their organizations along respective end-to-end processes. Below we list two specific examples where SAP TM drives organizational integration across business processes:

a) **Delivery Proposal** – In order based scenarios TM performs transportation planning and carrier selection based on sales, purchase or stock transfer orders, and possibly returns. TM can now be configured to 'Propose' the creation of deliveries in the ECC system based on transportation relevant dates. Subsequent warehouse processes like picking or packing now are conducted exactly when the business process mandates and not when a stand-alone WMS might believe is optimal. A not to be underestimated side effect is that this Delivery Proposal effectively allows customers to keep inventory available to the last minute (to the non-informed reader it is important to understand that Delivery creation in SAP ERP blocks inventory from being assigned to other orders).

b) **Sales Order Scheduling** – A feature that during sales order creation allows a user to interactively trigger a check in the SAP TM system. Constraints like transit times, operating hours of facilities, or customer routing guides can be considered during this check and give the Customer Service Representative as well as the client itself a better idea of the transportation situation during order entry.

Business Partner Relationship Management

There is a wealth of literature that describes how managing relationships with business partners has become a core competency of a world-class organization. Managing such relationships in an automated system environment has obvious advantages. Well-functioning relationships – not only in the business world – are built on trust and a good amount of fairness, regardless of the size of the companies involved. To be more specific, this means that particular events business partners encounter should be considered during a system implementation, including situations that cannot always be foreseen in advance. Let's be honest, how often do things go according to plan – as we know supply chain management is about being able to adapt to unforeseen changes.

In this context let's focus on a specific feature of SAP Transportation Management – the 'Change Controller'. An attribute of SAP's vision for TM is that it is able to react to an impulse from external sources in a controlled fashion and trigger appropriate actions. In an earlier chapter we already mentioned the scenario where a sales order change triggers the change or cancellation of an already tendered shipment without any user interaction based on configured business rules. The Change Controller is what regulates this behavior in TM.

An attribute of SAP's vision for TM is that it is able to react to an impulse from external sources in controlled fashion and trigger appropriate actions.

The flip side of this example would be a scenario where a carrier must cancel a shipment at the last minute, potentially because of a broken down truck or any other logistical circumstance. Architecturally, the Change Controller allows clearly defined access to different transactional objects in TM like transportation requirements (e.g. order or delivery based) or shipments. It is up to the customer to define

how the system shall classify the change itself and then, based on the classification, trigger appropriate action. In this example a Tender cancellation by a carrier can trigger the automatic tendering of the same shipment to other carriers – potentially in Broadcast mode. SAP TM effectively saves precious time and an otherwise awkward phone call to your customer with a notification of a shipment delay.

Effective business partner relationship management oftentimes is not a precise science; 1+1 does not always equal 2 in this equation. Capabilities like the TM Change Controller can elevate your relationships to levels that beforehand seemed unattainable.

Continuous Re-engineering Through Analytics and Performance Management

In its initial project stages the SAP TM Solution is implemented with focus on scenarios, features, and processes. Once the system is in operation and matures further over time, it is a natural step to leverage SAP TM's inherent analytical capabilities; after all TM provides a standard toolset to extract transactional data into SAP's Business Warehouse. Aggregating freight volumes and cost over a period of time and analyzing these on different levels provides the greatest opportunity to get a picture of a company's performance. Adding event-based information such as arrival times or damage information will only enrich the BW experience as we discussed earlier in the context of SAP Event Management.

Companies will have the most success with a TMS if they understand how they can continuously tweak their processes. One SAP customer in a SAPPHIRE presentation once labeled their particular implementation as a 'Journey' as they roll out SAP TM to more than 70 unique business units who operate mostly as independent businesses.

We would like to take this customer's assessment a step further by arguing that the journey shall not end after a successful company-wide deployment of SAP TM. The full potential of SAP TM will be leveraged once continuous improvement and re-engineering has been established as best practice within a company.

Implementation Strategy

Every TMS customer is challenged with figuring out how to tackle the problem. It deserves a fair amount of consideration given that there is much at stake based on the selection of the given strategy.

The SAP TM system implementation process should be closely aligned with the Transformation strategy. A phased implementation plan with stages that correspond to the organization's ability to adjust as outlined above is highly advisable. In a high complexity, high-risk environment a pilot project or a proof of concept phase prior to the implementation project could make sense to ensure implementation success.

Implementation Strategy Questions

- What are the pain points?
- Where can we first improve, automate, and take cost out?
- What area would deliver tangible value to the business with an acceptable level of risk?
- What are our SAP project delivery capabilities and how much external help do we need?
- Are there competing projects?
- Should we pick a certain transportation mode or region first?
- How can we organize the implementation considering our business divisions & product group?
- When and how can we retire our expensive and difficult to maintain legacy systems?
- What is our desired end-state?

Options

Let's take a look at the specific parameters in transportation management when implementing SAP TM: The task at hand is identifying and mapping your specific transportation improvement priorities and project constraints with the SAP TM software capabilities as discussed above. At the same time, we need to consider the possible degree of flexibility in terms of deployment sequence scenarios. What do we mean by that?

In general, SAP TM Software offers a high degree of freedom in terms of how it could be implemented. If you look at SAP TM functional components, you could pick various entry points, i.e. start with order management and tendering functionality, or your routing guide design, or perhaps with better-integrated Transportation Charge Management & Freight Audit. Overall, there are not too many constraints here, however, let's keep in mind that

custom interfaces will be needed if slices of SAP TM functionality are mixed with legacy applications. These custom interfaces are expensive, restrictive, and may become obsolete quickly at a later implementation phase when TM is more fully deployed.

Phasing Your SAP TM Deployment

SAP Transportation Management offers a variety of processes and functions that customers can implement over time to extract value – there is no reason to deploy everything at once. Quite in contrast, early experience shows that a majority of projects chose the path of phasing the scope into 'digestible' chunks. There are a variety of ways to slice your project scope so your organization will be able to transform itself in a natural way. A positive side effect of this strategy is that it permits a company to follow the growth path of SAP TM itself, as SAP will release more and more functionality in future releases. The following are common options, which are typically blended into the specific rollout strategy for an individual customer:

a) **Phase by TM Process** – Start by implementing Planning/Optimization and Carrier Selection. Tendering, Freight Payment and Settlement in future phases. Other strategies can start with Tendering only or Freight Costing and Settlement in order to gain more control of the financial aspect of Transportation.
b) **Phase by Scenario** – Inbound and Outbound Transportation typically can be implemented separately, unless more sophisticated scenarios like Cross-Docking are in scope immediately. Domestic versus International Transportation would also fall into this category.
c) **Phase by Geography or Facility** - Oftentimes larger locations like Plants or Distribution Centers can be implemented one by one, unless consolidation scenarios go across facilities.
d) **Phase by Business Partner** – In case of Inbound Planning, suppliers and vendors can be segmented rather easily. In Outbound scenarios key accounts with high order volumes might be deployed separately. Finally, carriers based on their often-diverse technological capabilities frequently force TM customers to bring them online in groups if not individually.
e) **Phase by Mode of Transport** – Initial Scope is selected according to the transportation mode, i.e. Truck first, followed by Rail, then Ocean etc.
f) **Phase by Product Group** – For an organization with a variety of products, starting out with a certain type of product. For example, a chemical company could start with non-hazardous bulk products followed by specialty chemicals, etc. Often, Business Units are organized around major product groups, which allows for phasing an implementation project along these Org-Units.

SAP TM with its service-based architecture favors phased approaches, supported by the ERP integration layer, which enables selective transfer of orders to TM with very little effort.

The actual transportation scenario an organization would want to implement first is critical and in most cases will be a combination of options listed above Globally operating customers seeking to improve domestic and international transport, inbound and outbound, need to find a good starting point that allows to ease into the new SAP TM Technology while producing value quickly. We are in favor of rapid implementations, delivering value swiftly and unquestionably. For example, a 4–9 month timetable for a first phase with moderate scope complexity allows the adoption of a 'crawl-walk-run' approach, bringing SAP TM to life in an evolutionary rather than revolutionary way.

The Master Plan

The Implementation Strategy is the master plan of any Business Application Implementation Project, not only for SAP TM. Its design is a major factor in project success or failure. Many dependencies need to be identified, carefully reviewed, and evaluated by the different stakeholders. Only a well thought-out implementation plan can ensure that a SAP TM project is set up for success and ultimately delivers the promised value.

IT Resource Mix

Many SAP customers have strong IT departments with SAP capabilities that enable them to manage and operate SAP deployments. At a minimum, SAP customers typically have a few IT resources to participate in a TM project, it is a question of identifying the right ones. Nevertheless, it is important

to understand that the SAP TM Development team in Walldorf took advantage of quite a few new technologies that have been introduced with the latest NetWeaver versions. For example:

- SAP PI (Process Integration) – formerly known as SAP XI, used for transactional integration of SAP ECC and SAP TM
- BOPF (Business Object Processing Framework) – the underlying object architecture that TM uses to model important master and transactional data elements in an object oriented environment
- NWBC (NetWeaver Business Client) – new User-Interface acting as role-based single point of entry to SAP business applications such as SAP GUI applications and new applications based on Web Dynpro
- FPM (Floor Plan Manager) – framework to create and configure Web Dynpro ABAP applications; adapt standard SAP TM screens without code modifications
- BRF+ (Business Rules Framework +) – see special insert in earlier chapter

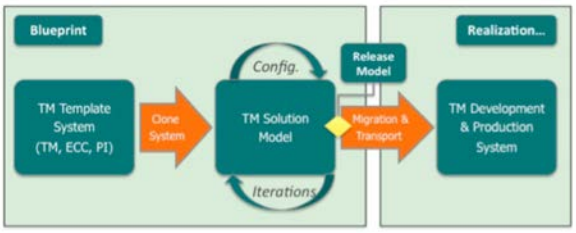
Depending on the specific project scope and the customization needed, IT resources with the above skill sets will have to be added to support the TM implementation. GOPA ITC is available to facilitate discussions regarding the required resource mix in light of available customer skills and capabilities in both IT and Business functions.

Project Methodology

SAP TM is not different from other SAP products or software in general. Software projects need thorough project planning and management – customers may pick and choose their preferred project methodology accordingly based on experience or guidance from a System Integrator. However, similar to the way software development has evolved over the last few years to adopt SCRUM based approaches, project methodologies also have progressed.

For example, as part of our SAP TM Template 'Instant TM' (see below), we have developed a methodology for accelerated, system driven Blueprint development, called '**Model Based Design**' (MBD). The model-based design methodology is embedded in the classic ASAP Methodology, however MBD accelerates the timeline by applying a hands-on approach to classic Blueprint activities that typically are paper-based – the preconfigured system content acts as a facilitator.

Model-Based Design – Pre-configured content applies hands-on approach to Blueprint activities



The obvious advantage is that users see TM in action very early on and can envision how their work will transform with the adoption of SAP TM, avoiding negative surprises during and after testing. The idea is to manipulate pre-configured scenarios in a number of iterations to come to an agreed-upon Release Model, which at the conclusion of Blueprint will be migrated to the true development system for the realization phase of the ASAP driven implementation process. Customers who are willing and able to stay as close to SAP TM standard functionality as possible benefit most.

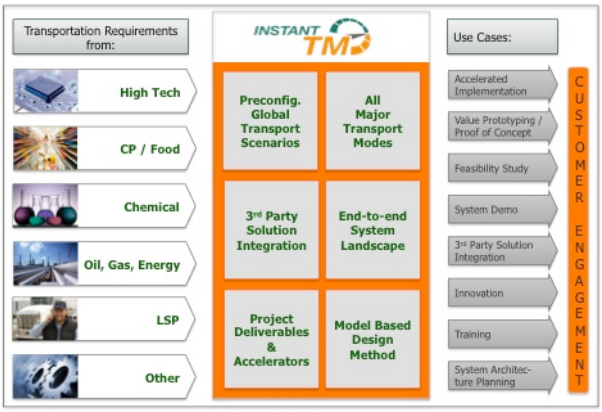
INSTANT TM

Leveraging Tools and Templates – "Instant TM"

When a customer installs a SAP TM System in his own environment, it is blank without data or configuration and needs to be built from the ground up. **A template-supported implementation project with pre-seeded configuration and data is a great way to accelerate the time to value and deliver additional customer benefits while reducing implementation cost and risk.**

GOPA ITC has spent significant effort to develop '**Instant TM**', a pre-configured, flexible SAP TM template solution. Instant TM combines pre-configured transportation scenarios, system set-up, documentation, project accelerators, training content, 3rd party solution extensions, and our model-based implementation methodology in a single package. Release 1 of Instant TM based on SAP TM 8.0 was developed in a joint effort with SAP Value Prototyping. In the meantime, GOPA ITC has extended the scope for Release 2, based on SAP TM 8.1. TM engagements with **over 25 globally operating companies** from different

industries are reflected in the various content elements of Instant TM. Based on these requirements we have built various major end-to-end global and domestic scenarios across all modes. Instant TM accelerates the customer-specific content build-up and configuration process dramatically. Please contact us about this implementation option if you would like to learn more.



SAP TM Roadmap Considerations

SAP continues to extend the functional coverage of TM in coming releases TM 9.0 and beyond. Therefore, understanding the roadmap is a critical input in defining the rollout strategy. The question about the release level comes up quickly. Should customers just go with the current TM release in 'Generally Available' (GA) status, or consider becoming a ramp-up customer for an upcoming TM Release? Of course that would depend on the individual requirements and how they could be covered over time in the phased approach. If not participating in a ramp-up, SAP TM customers should build an upgrade path that includes SAP TM 9.0 and higher into a phased deployment approach.

Summary

The word is out: SAP TM is here. And as seen in various implementations to date, it works. The application is not only going to stay, it will evolve further. The announcement of SAP TM 8.0 in 'Generally Available' status has triggered significant interest in the market.

This white paper is a continuation of our 2011 SAP TM white paper in which we reviewed SAP's Transportation Management evolution and strategic direction with SAP TM. In this white paper we focus on how to extract the most value out of a SAP TM initiative. Multiple factors need to be combined effectively to deliver the expected transportation benefits and satisfy the business case expectations.

The software is enormously powerful, however, it depends on the approach taken by the organization, from software selection to post production operations. Success here requires understanding the different value drivers between quantitative and qualitative benefits, then mapping them carefully to the organization's needs and priorities. With this understanding a customer can, with some external help, focus on matching specific requirements with functional capabilities of SAP TM, embedded in the end-to-end solution on a fully integrated, flexible, and open SCM Platform.

While the overall solution's design is being architected, the approach to transformation needs to be developed. The level of change impact on People, Processes, and Systems drives the TM Implementation Strategy. Functional priorities, system dependencies, risk-tolerance, internal change adaption capabilities, and budget are critical considerations when deciding on the Implementation approach. Only close alignment ensures the best compromise between lowest risk, lowest cost, and shortest time to value when implementing SAP TM. A template supported project, such as GOPA ITC's 'Instant TM' with the Model-Based Design Blueprint approach can further accelerate the time to value and deliver additional customer benefits.

The Journey Has Just Begun

The initial Go-Live is just the beginning of a journey on the new SAP TM Platform. Once up and running, typically a myriad of additional opportunities to extract more value open up if the customer is well prepared to take advantage of them. Incremental sets of additional functionalities can be added fairly easily. And while customers are busy taking advantage of the rich functionality that is available today, SAP and the ECO System Partners are busy pushing out new solutions and innovations based on TM 9.0 and beyond.

As a key partner to SAP and to our customers in the area of SAP Transportation Management, GOPA IT Consultants is very committed and deeply focused on this interesting space. We will continue to invest in implementation solutions and innovations that deliver tangible customer benefits faster and more cost effectively. Please do not hesitate to contact us for a discussion how we can take this journey together.

About the Authors

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With his over 24 years of dedicated SAP leadership experience and many industry connections, he is truly an SAP authority, now shaping the positioning and go-to-market of GOPA ITC in the Americas. Joerg has held SAP practice leadership positions at various leading professional services organizations such as Price Waterhouse, Cognizant Technology and CIBER. He has covered a large variety of roles from hands-on configuration over extensive program management, to large scale, global SAP business transformation strategy development for leading global organizations.

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While working 12 years for SAP - 10 of those in North America - Bjorn held a variety of SCM leadership positions in Product Development, Strategic Sales and, most recently, Solution Management. As part of the early design team he supported SAP's TM evolution from its inception all the way to market launch and therefore brings a unique perspective to discussions with customers interested in SAP Transportation Management. Bjorn leads the Go-to-Market, Delivery and Business Development efforts while establishing GOPA ITC as the leading mid-size consulting firm for SAP TM services.

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About GOPA IT Consultants

GOPA ITC is an international consulting services organization dedicated to SAP products and solutions, focusing on SAP Supply Chain Execution and Transportation Management. GOPA ITC's history with SAP TM dates back to the inception of the application at SAP AG. Since then, we have gained leading competencies with the product and its implementation in various projects for global customers in close collaboration with SAP. GOPA ITC's continued investment in our SAP TM practice has resulted in the most extensive portfolio of SAP Transportation Management services and solutions, delivering deeper and faster benefits to our customers.

Learn More

For more information about how GOPA IT Consultants can help your transportation organization transform and integrate SAP TM into your IT system environment, call us or go to:

http://www.gopa–itc.com

http://blog.gopa–itc.com

http://www.gopa–itc.com/services/sap-transportation-management.html

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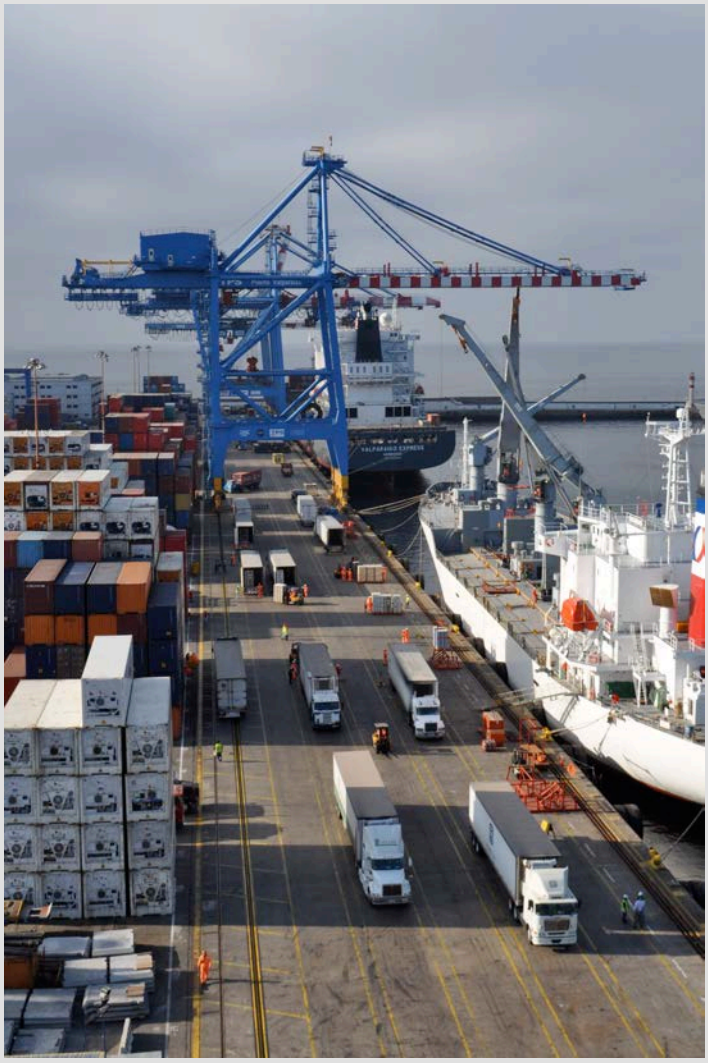

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