

raft

Introduction to Freight Forwarding

An educational overview on the nomenclature and workflows for Freight Forwarders (FF) that provide ocean and/or air services.



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Introduction

Total Addressable Market

The total addressable market is expressed in different metrics for Air and Ocean.

TOTAL ADDRESSABLE MARKET

IN MILLIONS	AP	AMERICAS	MEA/AFRICA	EUROPE	OTHER	GLOBAL
AIR TONS in percent of total	9.4 42%	5.4 24%	1 4%	5.9 26%	0.8 4%	22.5 100%
OFR TEU in percent of total	37.1 64%	8 14%	4.5 8%	7.1 12%	1 2%	57.7 100%

Note: A TEU is the primary standard unit of measure when describing ocean freight volumes. FEUs are also frequently used when describing processes as it's a very common equipment type.

TEU = Twenty Foot Equivalent Unit > a 20-foot ocean container (short, stubby containers)

FEU = Forty Foot Equivalent Unit > a 40-foot ocean container (closer to the size of most truck trailers)

What is a shipment?

A shipment is a consignment of goods from one place to another. The FF provide services in managing these shipments and the roles and responsibilities are determined by services and the incoterms (see section below).

Type of services

There are 4 types services:

- “door-to-door” (DTD)
- “door-to-port” (DTP)
- “port-to-port” (PTP)
- “port-to-door” (PTD)

These services are defined by the agreed “incoterms” which is a set of 11 internationally recognised rules that define the responsibilities of buyers and sellers in international transactions.

The International Chamber of Commerce (ICC) created Incoterms in 1936 to facilitate international trade and periodically updates them to reflect changes in the global trade environment. ([more on Incoterms here](#))

Door-to-Door (DTD) is a type of transportation in which the "Doors" are warehouses, factories, or other points specified by the shipper (seller) and consignee (buyer).

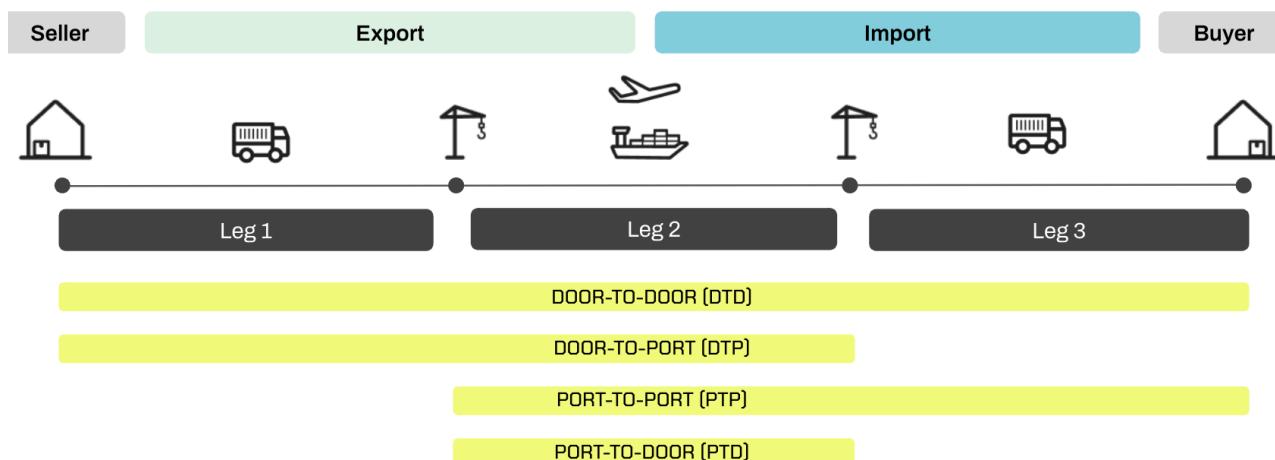
DTD transportation is carried out between points that are within the field of responsibility and coverage of the carrier or freight forwarder.

When referring to "Port" this indicates seaport or ocean ports.

Shipment legs

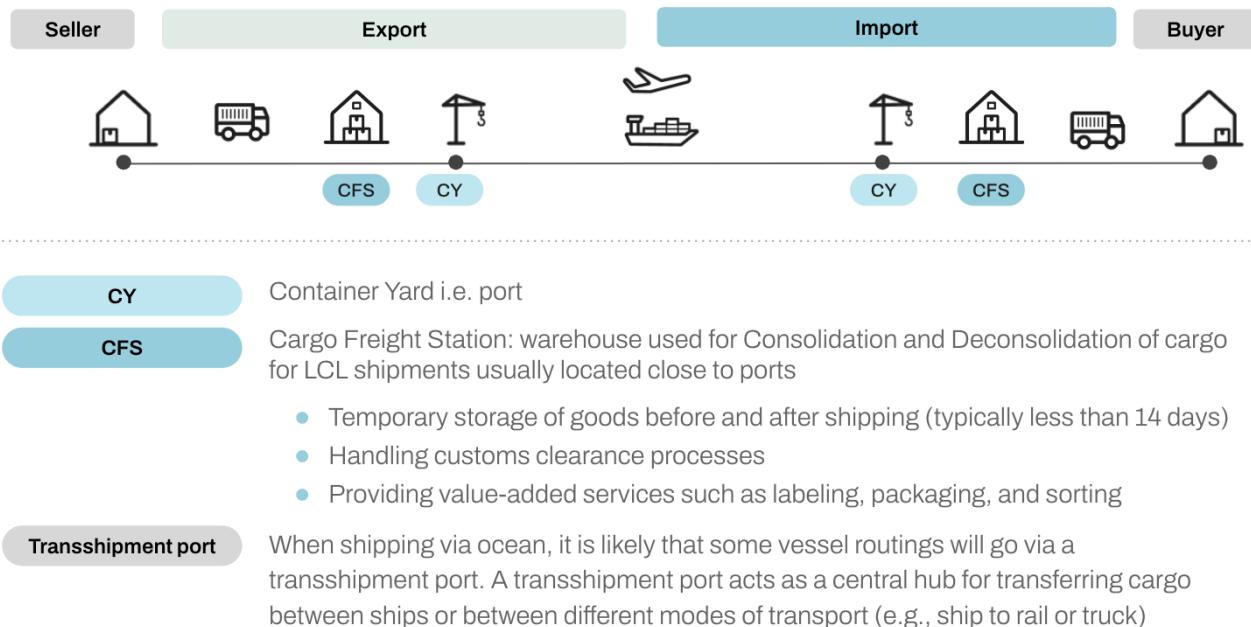
Shipments are often broken down in different legs. Take the example of a DTD shipment:

1. The first leg would be the trucking (haulage) from the origin place of pick up to the export port;
2. The second leg would be the ocean (air) shipments between seaports or airports; and
3. The third leg is the trucking (haulage) from the import port to the final destination.



For FFs it is imperative to try and offer the most competitive rates but also optimize each leg of a shipment ensuring competitive end-to-end lead times to optimize their overall margins.

Introduction of CY and CFS



The Role of Incoterms

Incoterms are standardised trade terms that define the responsibilities of buyers and sellers in international transactions. This is important to define as incoterms determine which party pays for sections of a shipment. The most commonly used Incoterms for both ocean and air freight are:

- EXW (Ex Works):** The seller's responsibility is to make the goods available for pickup at the warehouse or factory. From that point forward, the buyer assumes responsibility for all costs and risks. For most importers and exporters, this means working with a freight forwarder that arranges the entire shipment, starting at pickup from the factory.
- FOB (Free on Board):** Seller (factory at origin) is responsible until goods are loaded onto the vessel.
- CFR (Cost and Freight):** Seller pays for freight charges to the destination port.
- CIF (Cost, Insurance, and Freight):** Seller pays for freight and insurance to the destination port.



Modes of Transport

Shipment volumes determine the mode of transport. Volume is either expressed in cubic meter, i.e. CBM or weight. Globally, 90% of cargo volume is transported via Sea instead of Air because of the cost. However, high value, lightweight commodities such as electronics and pharmaceuticals are typically transported via Air.

Within Ocean freight there are 2 major ship modes FCL and LCL, but we will also explain a buyers' consolidation:

1. Full Container Load (FCL)

FCL refers to a shipment that only has one consignee (buyer) who is moving goods in a single container and is not being shared with other buyers. The container will be loaded directly by the shipper at their factory and then the laden container will be delivered directly to the port of export. The laden container needs to be delivered to the port before the cutoff time and date in order to be loaded onboard the vessel in time for sailing. The SI and CY closing dates are communicated by the ocean carrier.

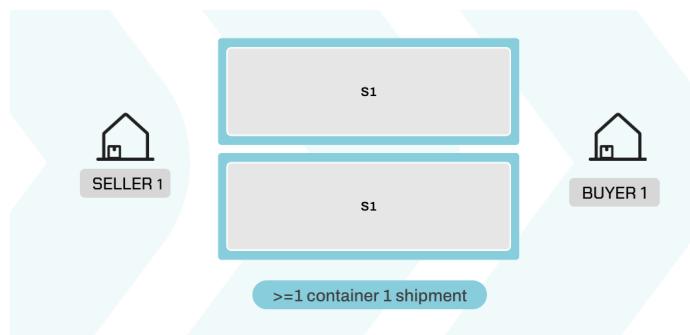
Container sizes vary; assuming ALL the space in the container is completely filled up (which is only possible if loose cartons are loaded) see below:

- **20' standard container:** 33 cbm, max weight 21,700 kgs
- **40' standard container:** 67 cbm, max weight 26,500 kgs
- **40' high cube container:** 76 cbm, max weight 26,500 kgs
- **45' high cube container:** 85 cbm, max weight 27,600 kgs

Note: palletised cargo, or cargo that is packed on slip sheets impacts the loading criteria of a container. More information on type of containers and their ISO standard can be found in [the appendix page 53](#)

FCL DIAGRAM

When shipping FCL this is often referred to as **CY:CY**



2. Less than Container Load (LCL)

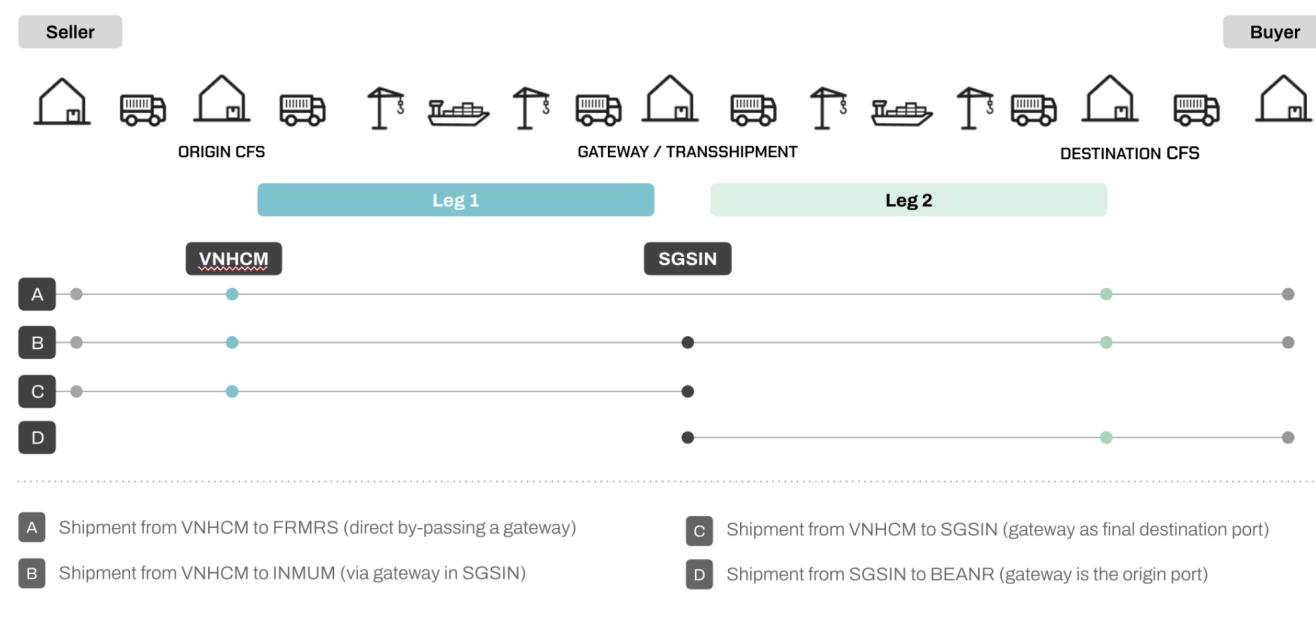
FFs often combine multiple shipments of multiple buyers with the same port pair e.g. Shanghai to Frankfurt into a full container - this is referred to as an LCL shipment. In this case, the goods must arrive at the consolidation point, typically known as a CFS (container freight station or warehouse), before the cargo cutoff date. This is usually (but not always) a bonded warehouse that receives the cargo. Delivery must be completed with plenty of time to spare to give the FF time to load full outbound containers.

Following consolidation, the laden container is trucked out of the CFS and transferred to the port of export. The load must arrive at the port before the cutoff time and date in order to be loaded onboard the vessel in time for sailing. The cargo may be offloaded at an intermediate point and transferred to a different form of shipping before it continues on to its final destination. This is known as the transhipment point or a gateway.

On arrival at the port of discharge, the container will be drayed (trucked) to the destination CFS and deconsolidated. This is the process of unloading all of the individual cargo and holding them for pickup. In some cases, the freight forwarder may arrange final mile trucking to the recipient's door. The majority of the shipment process is now complete, and each customer's cargo can now be delivered to their final destination.

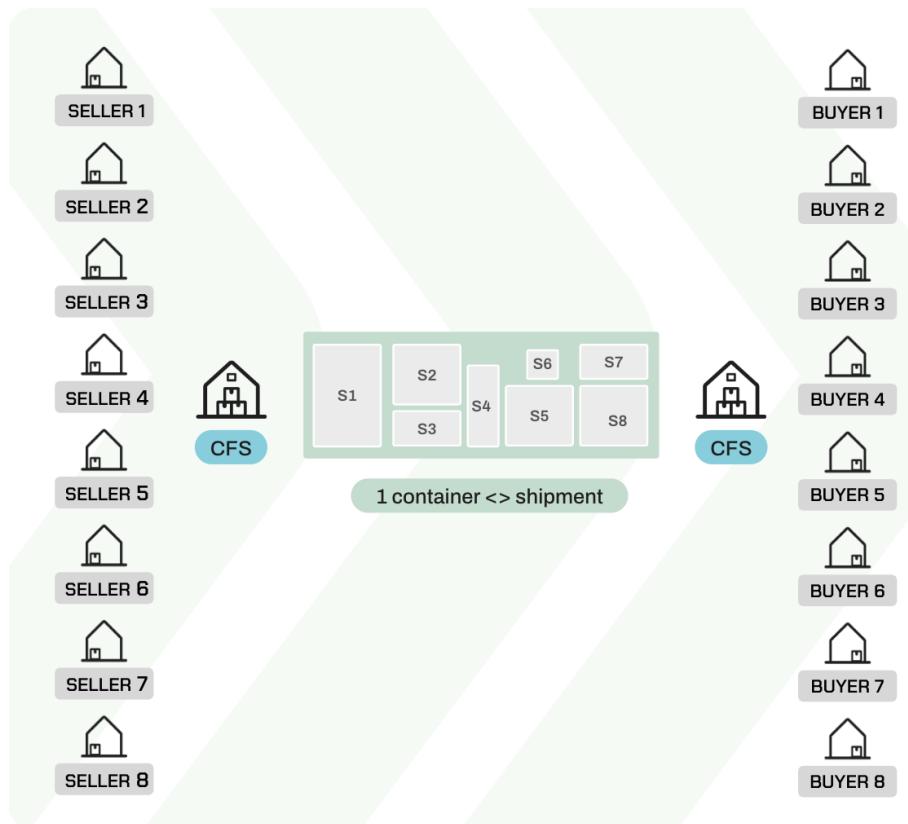
To depict the different flows within **LCL** see below the infographic:

LCL FLOW



LCL DIAGRAM

When shipping LCL this is often referred to as **CFS:CFS**



→ DIFFERENCES BETWEEN FCL AND LCL

Cost: The FCL option will be more cost effective for the buyer for shipments with a larger volume and the quotation process is less complicated as there are less touch-points. LCL is more cost effective on smaller shipments. FFs who offer LCL can generate high margins if the routing and the overall container loadability of each leg are well managed as shown in the above illustration. LCL quotations are more complicated to compile depending on the routing and the number of touch-points.

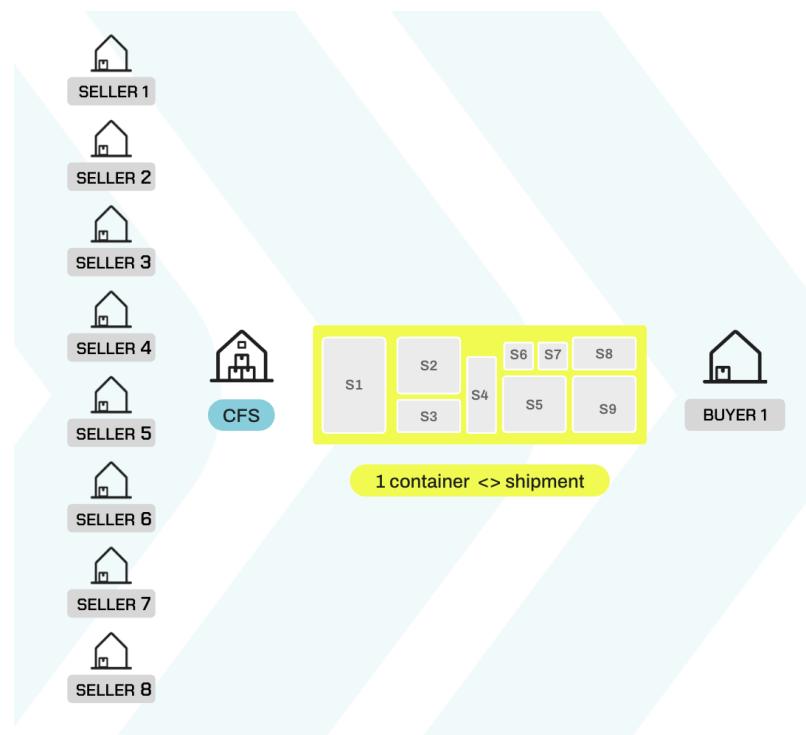
Shipping time: The FCL option is likely to be completed more quickly, simply because there are fewer intermediary points along the way. This assumes all else is equal such as cargo availability at time of loading for both LCL and FCL.

3. Buyer consolidation

Buyer's Consolidation is a shipping method where multiple smaller shipments from different suppliers are combined into a single larger shipment, typically resulting in a Full Container Load (FCL) for the same buyer or consignee. This method aims to reduce costs, improve efficiency, and minimize the risk of damage compared to handling multiple Less than Container Load (LCL) shipments individually.

BUYER'S CONSOL DIAGRAM

When shipping buyers consol this is often referred to as **CFS:CY**



➔ DIFFERENCE BETWEEN A LCL AND BUYERS CONSOL

LCL involves consolidating shipments from different shippers to different consignees.

Buyer's Consolidation combines multiple shipments from different suppliers for the same buyer or consignee.

Buyer's Consolidation shipments are usually delivered as a full container load (FCL) to the final destination, eliminating the need for deconsolidation at destination and therefore results in faster transit times due to reduced handling.

A Look at the General Workflows and Technical Implications

Process Overview

There are several key FF tasks that are mostly operated in different systems:

1. Quotes, Booking and Rates

Provide accurate quotes and manage rates across transportation modes and routes.

2. Shipment Management

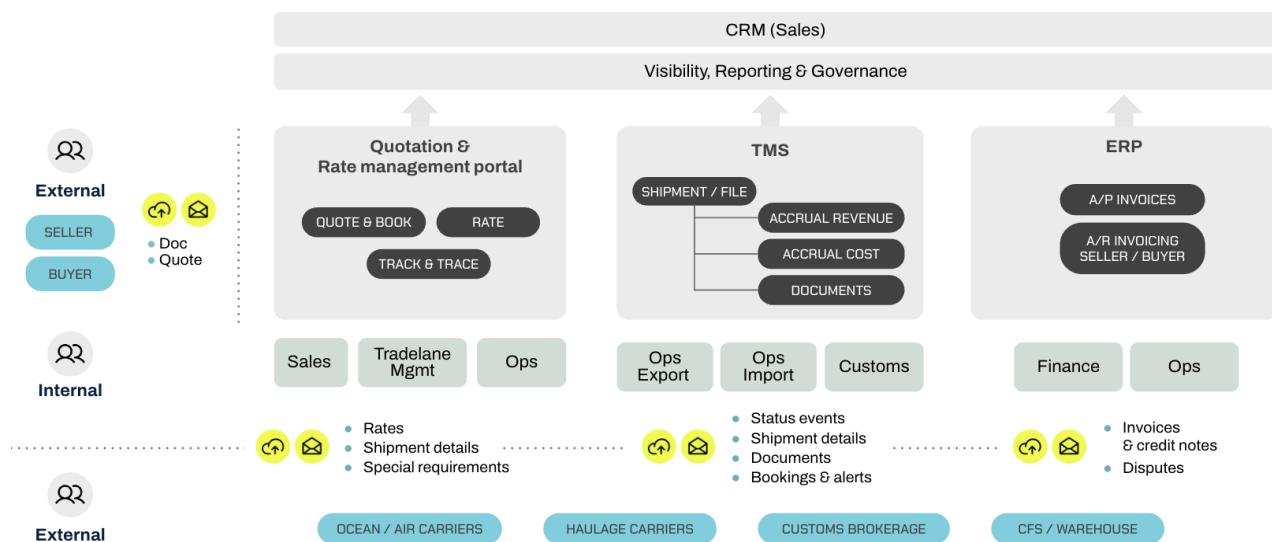
Coordinate the physical movement of goods, including pickup, consolidation, customs clearance, and final delivery to the consignee.

3. Accounts Payable and Receivable

Manage invoices and payments to carriers and vendors. Collect payments from customers for services rendered.

4. Visibility and Reporting

Provide real-time visibility into shipment status, generate reports for customers and internal stakeholders.



→ CHALLENGES

The complexity of the FF process stems from the numerous parties involved and the lack of standardized, high-quality data across these entities.

→ PARTIES

A FF deals with a multitude of parties to manage a shipment:

1. **Shippers/Exporters:** The companies or individuals initiating the transportation of goods and engaging the freight forwarder's services – these are the FF's customers.
2. **Suppliers and Vendors:** Providers of goods, materials, or components being shipped.
3. **Consignees/Customers:** The recipients of the shipped goods at the final destination.
4. **Carriers:** Airlines, shipping lines, trucking companies, and rail operators responsible for physically transporting the cargo.
5. **Warehousing and CFS:** Facilities where goods are stored, consolidated, and distributed.
6. **Logistics Partners:** Third-party logistics (3PL) providers, trucking companies, and other subcontracted service providers.
7. **Customs Brokers:** Parties that assist with customs clearance, documentation, and ensuring compliance with regulations.
8. **Insurance Providers:** Companies offering coverage for goods during transportation.
9. **Regulatory Authorities:** Government entities enforcing transportation and trade regulations.
10. **Technology Providers:** Suppliers of software, systems, and platforms for logistics operations.

→ DATA FLOW AND SYSTEMS

FFs face significant challenges in integrating data from multiple sources due to the lack of standardization across the logistics industry. They deal with various parties, each with their own data formats and systems. Consolidating this diverse data into a single, unified system is a complex task for several reasons:

1. **Disparate data formats:** Each stakeholder generates data in different formats, such as EDI, XML, CSV, or proprietary formats, making it difficult to integrate seamlessly.
2. **Lack of standardization:** The absence of industry-wide data standards exacerbates the challenge of data integration, as each party follows its own conventions and protocols.

3. **Real-time data processing:** The dynamic nature of logistics operations demands real-time data processing, but integrating data from multiple sources in real-time can be a significant hurdle.
4. **Data quality and accuracy:** Ensuring the quality and accuracy of integrated data is crucial, as errors or inaccuracies can lead to operational mishaps, such as missed delivery deadlines or inventory discrepancies.
5. **Scalability:** As FFs expand their operations, their data integration frameworks must evolve, necessitating scalable solutions that can accommodate growing data volumes and complexity.
6. **Security and compliance:** Maintaining the security and compliance of integrated data is paramount, especially in the logistics industry, which is subject to stringent regulations.

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As a result, many freight forwarders find themselves heavily reliant on manual data entry tasks and spreadsheet-based workflows. The lack of seamless system integration across their operations creates inefficiencies and potential for errors when data needs to be manually transferred between siloed applications and databases.

This dependence on manual processes not only slows down operations but also increases the risk of human error, which can lead to costly mistakes and dissatisfied customers. Freight Forwarders grappling with this challenge must prioritize streamlining their systems and automating data flows to enhance operational efficiency, accuracy, and customer satisfaction.

The Rates, Quotes, and Customer Booking

→ RATES PROCESS

Ocean and Air Rates (Buying Rates)

FF negotiates rates and contracts with various carriers (airlines, shipping lines, trucking companies, etc.) to secure transportation capacity at competitive prices. They leverage their buying power and volume to obtain discounted rates, known as:

- **NAC (Named Account):** A NAC is a specific customer that has a contractual agreement with a FF or a carrier for a period, typically a year, with a volume commitment.
- **FAK (Freight All Kinds):** FAK is a pricing agreement between the carriers, for a specific period with a volume commitment, which allows the FF to offer this agreed base rate across a multitude of customers with a margin.

Generally these rates are lower than ad-hoc spot market rates in exchange for committed cargo volumes from the forwarder.

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Specifically for air:

Air FFs procure air cargo capacity from airlines through a few key methods:

- **Negotiated Contracts:** NAC and FAK contracts.
- **Spot Market Bidding:** When additional capacity is needed beyond contracted volumes, FFs bids for space on specific flights through spot bidding platforms or directly with airlines. This allows them to secure last-minute capacity at market rates.
- **Airline Allotments:** Some airlines allocate a fixed amount of cargo space to select FFs at predetermined rates, providing a guaranteed capacity commitment.



Freight Procurement Challenges

Procuring freight upfront through contracts or tenders presents several challenges:

- **Inaccurate Volume Forecasting:** Customers often struggle to accurately forecast future freight volumes, especially for new lanes or products. Overestimating volumes leads to excess committed capacity, while underestimating results in capacity shortages and higher spot market rates.
- **Lack of Flexibility:** Long-term contracts lock customers into fixed rates and capacity commitments, making it difficult to adapt to changing market conditions, demand fluctuations, or new opportunities.
- **Ghost Lanes:** Customers sometimes include "ghost lanes" (lanes with no expected volume) in their tenders to ensure coverage, but this inflates the procurement process and ties up carrier capacity unnecessarily.
- **Lengthy Negotiation Process:** The traditional freight procurement process involving RFPs, bid evaluations, and contract negotiations can be time-consuming and resource-intensive.
- **Limited Carrier Options:** Customers may have to settle for sub-optimal carriers or rates due to a limited pool of contracted carriers, especially on volatile or low-volume lanes.
- **Lack of Transparency:** Traditional procurement methods often lack transparency into real-time market rates, capacity availability, and carrier performance, making it difficult to secure the best rates and service levels.

Local Charges

Local charges refer to the fees and costs incurred by the FF at the origin and destination locations for services like:

- Pick-up and delivery of the cargo;
- CFS handling charges also refers to warehouse handling activities;
- Terminal handling charges (Port);
- Documentation fees; and/or
- Customs clearance fees (if applicable based on the agreed incoterms).

The FF calculates and includes these local charges in the overall quote provided to the consignee. These charges may vary based on the specific origin and destination locations, as well as any additional services requested by the consignee.



Pass-through charges

Pass-through charges are fees imposed on the FF by third parties like ocean carriers, port authorities, or other entities over which the FF has no control. These charges can include:

- General Rate Increases (GRIs) from ocean carriers
- Terminal or port charges
- Canal tolls or taxes
- Document fees

The key aspect of pass-through charges is that the FF is allowed to pass on these charges directly to the consignee/shipper without any markup or discount. The FF invoices the consignee/shipper for the exact amount they are charged by the third party.

To facilitate this, NVOCC¹s can include a clause in their Negotiated Rate Arrangements (NRAs) or tariffs stating that third-party pass-through charges will be passed on to the customer at cost. They may also reference the ocean carrier's tariff for specific pass-through charges, rather than listing them individually.

By separating local charges and pass-through charges, FFs can provide transparent quotes to consignees, clearly outlining the costs they control (local charges) and the costs passed on from third parties without markup (pass-through charges).

It's important to note that the specific charges and markups can vary among FFs, and their pricing strategies may differ based on factors like trade lanes, competition, and negotiated rates with carriers and customers.

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¹NVOCC (Non-Vessel Operating Common Carrier) is a company that provides ocean freight transportation services without owning or operating vessels.

The Importance of File Level Profitability

It's imperative to look at the shipment profitability instead of only on the country related activities. FF that have a strong country P&L tend to favour their country P&L instead of looking at the true profitability of the entire shipment.

FF typically make money on the following charges:

- **Markup on Ocean/Air Freight Rates:** FF negotiate discounted freight rates with ocean carriers or airlines by committing to provide a certain volume of cargo. They then resell this space to shippers at a markup, which is their primary source of revenue.

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- **Local Charges:** FFs charge fees for services like pickup/delivery, terminal handling, documentation, and customs clearance at the origin and destination ports. These local charges are marked up from the actual costs incurred by the FF.
- **Additional Service Fees:** FFs can generate revenue by charging fees for additional services like cargo insurance, special handling, container stuffing/unstuffing, etc.
- **Pass-through Charges with Markup:** While some charges from ocean carriers (like terminal fees or canal tolls) may be passed through to shippers at cost, FFs can potentially add a markup to these pass-through charges as well.
- **Bill of Lading (BL) Fees:** FF issue their own House Bill of Lading and can charge shippers a fee for this documentation.

→ QUOTES AND CUSTOMER BOOKING PROCESS

There are 2 types of quotes: **spot rates** and **RFQ** (Request for Quotation) -- a longer term commitment with guaranteed volume.

→ RFQ or Tenders

Typically when a customer asks for a RFQ or a tender this entails a list of port-pairs, estimated volume, pick-up locations, destination locations, transit times, including incoterms would be submitted via a portal or via email. Once the RFQ has been submitted a pricing team would gather all the necessary information from the different stakeholders including the procurement team who negotiate directly with carriers preferential rates for this customer (NAC/FAK) (see ocean freight rates).

→ Spot rates

The process for spot rates is slightly different than the RFQ process:

1. **Customer (buyer/seller) will request a quote**, this can be via a portal or via email. In many cases customers will opt to request quotes via email.
2. **Obtain shipment details:** all necessary information from the buyer / seller, including:
 - Description of the commodity (HS code)
 - Quantity being shipped
 - Total weight and dimensions of the shipment
 - Pick-up location
 - Delivery destination
 - Requested incoterms (e.g., FOB)
 - Mode of transport (Air / Ocean)
 - Cargo ready date
3. **Determine Incoterms and responsibilities:** based on the requested incoterms, the FF identifies the responsibilities and costs they need to cover, such as:
 - Export/import clearance and documentation
 - Inland transportation at origin and destination
 - Terminal handling charges
 - Port charges
 - Ocean/air freight charges
 - Insurance (if required by the incoterm like CIF or CIP)

4. Check ocean freight allocation agreements and sailing schedules: the FF reviews their freight allocation agreements with various ocean / air carriers to determine the best rates and schedules for the shipment based on the origin-destination pair and the cargo volume/weight. The FF needs to fulfil a certain commitment to their strategic ocean/air carriers.

Depending on the market conditions prices and availability may vary and the FF will need to find the best rates to offer their customer.

5. Calculate local charges: the FF estimates the local charges at both origin and destination, including:

- Pickup/delivery charges
- CFS handling and storage charges (and other charges)
- Documentation fees
- Terminal handling charges
- Customs clearance fees (if applicable based on incoterms)

6. Prepare quote: using the information gathered, the FF prepares a quote that includes:

- Incoterms and responsibilities
- Ocean/air freight charges based on carrier agreements and best available routing optimization
- Local charges at origin and destination
- Estimated transit time and schedule
- Any additional services requested (e.g. insurance, special handling)
- Passthrough charges

7. Submit quote to customer: The FF submits the quote to the customer.

Once the quotes have been presented and agreed to by the customer, the FF can begin the process of physically moving the freight, based on the terms of the agreement. It's worth noting that not all quotes get accepted.

Export & Import Operations

The consignee's acceptance of the quote initiates the contractual agreement and sets in motion the entire shipping process, with the FF coordinating the various aspects of the shipment based on the agreed terms and incoterms. The incoterms dictate the workload allocated to a FF.

1. Booking submission: the customer submits the booking to the FF, also referred to as the **Shipper's Letter of Instruction (SLI)**, solidifying the agreed incoterms, rates, schedule, and any additional services. Bookings are typically submitted to the FF using the following methods:

- Client Portal (major functions include: quote, book and track)
- Email with FF booking form
- System integration

2. Once the booking has been confirmed this should trigger a shipment in the TMS.

3. Carrier selection: the FF selects the appropriate carrier(s) based on their freight allocation agreements and the agreed terms with the buyer are:

- NAC
- FAK
- Spot rates

Typically the TMS should support the operator in selecting the right carrier.

The selection of a suitable ocean carrier and freight allocation agreement significantly impacts the shipment's profitability. The absence of rate and capacity management tools limits the FF's profit optimization. TMS solutions generally have weak (or zero) rate and capacity management capabilities.

4. Carrier booking:



Ocean Freight

The FF submits bookings with the selected carrier, ensuring the shipment follows the correct routing to meet the agreed schedule and transit time. Bookings are submitted to the ocean carrier using the following methods:

- **EDI 300/301: This is an electronic document sent by the FF to an ocean carrier** to request the reservation of space on a vessel for cargo shipment. It contains necessary details about the shipment.

- Carrier portal
- Email

Irrespective of the method used for submitting bookings, carriers will verify space availability by dispatching a booking confirmation document to the FF via email with a significant delay. The space cannot be considered secured until the booking confirmation document has been received. In the event that primary carriers fail to confirm the space, the FF must initiate new booking submissions with alternative carriers. In the absence of suitable technology, the freight forwarder will be required to dedicate substantial human resources to monitor booking statuses. Typically this process is managed in spreadsheet as most TMS system do not allow to accommodate back-up bookings.

Generally, in the best periods only 70% of bookings are confirmed!



Air Freight

The message used to book cargo space on an airline is typically called the **Freight Booking Request** or Space Allocation Request. In the context of EDI standards, this is represented by the FFR (Freight Booking Request) message in the IATA CARGO-IMP standard.

- Content: The FFR includes details such as:
- Airline and flight number
- Date of travel
- Commodity description
- Dimensions and weight of shipment
- Requested booking status (confirmed, waitlisted, etc.)

The airline will respond with a **Booking Confirmation message**, either confirming the space allocation or providing an alternate proposal. This is done via EDI (not email as opposed to the ocean carriers)

The FFR is typically sent in advance of the planned shipping date to secure space on the desired flight.

“ Irrespective of the method used for submitting Ocean bookings, carriers will verify space availability by dispatching a booking confirmation document to the FF via email with a significant delay.”

5. **Document preparation:** The FF begins preparing the necessary documentation for the shipment, such as the House Bill of Lading (HBL) and other required documents based on the incoterms and destination country's regulations. The FF coordinates with the buyer to obtain the necessary commercial documents. In most cases the exchange of documents is done via email and PDF. Once the documents have been transferred the necessary export and import documents need to be prepared. In most cases these activities are performed by operators checking the completeness and consistency amongst the documents matching the physical cargo and the output is generated manually (manual data entry) to the customs brokerage agents (internal or external) through various systems.
6. The following are the most significant documentation when **exporting** cargo:
 - Commercial invoice
 - Packing list
 - House Bill of Lading (issued by NVOCC)
 - Master Bill of Lading (issued by Carrier)
 - Certificate of Origin
 - Letter of Credit – if applicable
 - Insurance Certificate
 - Declaration of Hazardous Cargo – if applicable
 - ISF filing (applicable to the US)
7. **Local arrangements:** The FF coordinates local arrangements at both the origin and destination, including pick-up, delivery, customs clearance, and terminal handling, as per the agreed incoterms and responsibilities.

8. **Cargo receipt and loading:** The FF receives the cargo from the shipper (via CFS or directly to the export port) and loads it onto the carrier's container or vessel, adhering to the agreed schedule.

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Generally, in the best periods only 70% of bookings are confirmed!”

9. **Cargo receipt via CFS:** This is the initial step where the freight forwarder or the ocean carrier receives the cargo from the shipper. The cargo is checked for its quantity and condition against the shipping documents provided by the shipper. Once the cargo is received, a mate's receipt is issued. The mate's receipt is a document that proves the freight forwarder has received the goods and the supplier has relinquished responsibility and liability.
10. **Cargo tracking and updates:** the FF provides the consignee with regular updates on the shipment's status, including cargo receipt at CFS, estimated time of Departure (ETD), estimated time of arrival (ETA), provide the arrival notice and any potential delays or issues that may arise during transit. The information sources are spread out among different parties involved. It is crucial for the FF to collect all relevant information to maintain the ongoing accuracy of their Transportation Management System (TMS). Some FFs have been putting in a lot of effort to digitize cargo tracking, including system integration with ocean carriers and terminals and other providers, as well as using IoT² container tracking devices. Generally, the overall timeliness and accuracy of milestones in the industry is not very high, therefore this process tends to be cumbersome and requires a high degree of manual data entry.
11. **Cargo Delivery:** Upon arrival at the destination, the FF facilitates the delivery of the cargo to the consignee's designated location, as per the agreed incoterms and responsibilities outlined in the NRA/NSA.
12. **Invoicing and payment:** Once the shipment is underway, the FF invoices the shipper and / or consignee for the agreed rates, including any additional charges or fees outlined in the NSA as per incoterms.

² Internet of Things

→ DOCUMENTATION MBL, HBL AND ASSOCIATED PARTIES

The Master Bill of Lading (MBL) and the House Bill of Lading (HBL) are critical documents in international shipping, each serving distinct purposes and involving different parties. Below is a detailed comparison of the two, including the parties involved.

⦿ Master Bill of Lading (MBL):

- **Shipper:** In this case, the shipper is usually the freight forwarder or NVOCC, acting on behalf of the actual shippers (the exporters). The MBL reflects the freight forwarder's details.
- **Consignee:** The consignee is typically the destination agent or counterpart of the freight forwarder. This could be a local agent in the destination country who will handle the delivery to the final recipient.
- **Notify Party:** Similar to the HBL, the notify party on the MBL may be the same as the consignee or another designated party who should be informed about the shipment's arrival.

“ The Master Bill of Lading (MBL) and the House Bill of Lading (HBL) are critical documents in international shipping, each serving distinct purposes and involving different parties.”

⦿ House Bill of Lading (HBL):

- **Shipper:** This is the actual exporter of the goods, who may be a manufacturer or supplier. The HBL specifies their details, including name and address.
- **Consignee:** The entity or individual receiving the goods, often the buyer or importer. Their details are also included in the HBL.
- **Notify Party:** This party is notified upon the arrival of the shipment. It can be the same as the consignee or a third party, such as a customs broker or logistics provider.

→ ROLE OF BILLS OF LADING IN THE CUSTOMS PROCESS

- **HBL:** Each HBL is used for customs clearance for individual shipments. The freight forwarder usually assists with filing the necessary documentation for customs, ensuring compliance with local regulations.
- **MBL:** The MBL simplifies the customs process for consolidated shipments. A single customs entry is filed under the MBL, covering all shipments included in the container. This streamlines the clearance process, as customs authorities deal with one document instead of multiple HBLs.

→ CUSTOMS CLEARANCE

1. Freight Forwarders handle customs clearance in various ways, depending on the structure of their teams. Some have large accounts split between multiple people, while others have brokers handling everything from A to Z.
2. The workload of the customs import entry is much higher than the export clearance. In many freight forwarding companies the export clearance is handled by the export operations team.
3. Technology in the freight forwarding world varies, with some using advanced systems and others relying on manual methods.
4. Brokers prioritize their tasks based on urgency, such as shipments about to go into storage or overdue tasks. This information is stored in various systems and has to be retrieved from various sources, including TMS, emails, Excel spreadsheets, and handwritten notes.
5. Customs get informed with Arrival Notices. When the transport is organized within the same organization the necessary Arrival Notices with shipment arrival details are typically provided through the TMS. This responsibility sits with the export team at origin. However, when transport is managed by a 3rd party, the completeness, accuracy and timeliness of the arrival notices vary. Estimated Time of Arrival (ETAs) are often missing or not updated by third parties, making it challenging to get accurate transportation information and ensure the right priorities have been set.

6. The importer or their agent must submit necessary documentation to the customs broker who validates the completeness and accuracy of the following documents retrieved via an e-doc portal or from various emails depending on the workflow:
 - Commercial Invoice
 - Packing List
 - Bill of Lading or Airway Bill
 - Certificate of Origin (if applicable)
 - Any required permits or licenses.
7. Once the documents have been collected, the customs broker will need to file a customs declaration; this is typically done through a TMS, manually entering the following information (as per documents);
 - Description of goods
 - Quantity
 - Value
 - Country of origin
 - Harmonized System (HS) classification code
 - Intended use
8. For each item on the commercial invoice a separate entry on the customs file needs to be made, indicating the HS code. This should prompt the right part numbers. Part numbers help accurately identify and classify imported goods. Customs officials may use part numbers to verify the correct tariff classification of imported items. The FF needs to update and maintain the part numbers in their TMS.
Depending on the HS code, this might flag additional information and documentation that is required to file the entry.
9. Once the entry has been submitted to Customs for the duty and tax assessment, it may happen that Customs may physically inspect the goods to verify the accuracy of the declaration and ensure compliance with regulations. Once all requirements are met and payments made, Customs will release the goods for entry into the country. Importers are required to maintain entry records for a specified period (e.g. 5 years in the US) for potential future audits.

LCL and Buyers Consol have different implications for Customs

Regarding the issuance of House Bill of Ladings (HBLs), the process differs between LCL and Buyer's Consolidation:

➔ FOR LCL SHIPMENTS:

Multiple HBLs are typically issued, one for each individual shipment within the consolidated container.

Each HBL represents a separate contract of carriage between the freight forwarder and the individual shipper.

➔ FOR BUYER'S CONSOLIDATION:

A single HBL is usually issued for the entire consolidated shipment.

This HBL covers all the goods from multiple suppliers but is consigned to a single buyer.

The consolidator (usually the freight forwarder) acts as the shipper on the HBL, while the buyer is listed as the consignee.

The use of a single HBL for Buyer's Consolidation simplifies documentation and customs clearance processes, as the entire shipment is treated as one consignment despite originating from multiple suppliers.

In some cases multiple HBL can be issued (a HBL per shipper); this is often dependent on the freight forwarder and the customer requirements.

[See appendix](#) for more information on the issuance of documents and the differences by transport mode.

→ MILESTONE VISIBILITY

The primary milestones that should be provided are:

AT ORIGIN	AT SEA	AT DESTINATION
<ul style="list-style-type: none"> ▪ CFS cargo receipt (mate's receipt) if applicable ▪ CFS Cargo on hand report if applicable ▪ CFS exception reporting related to physical cargo (mismatch of what is delivered vs. booked, damaged cargo, etc) ▪ Gate in at Inland Container Depot (ICD) if applicable ▪ CY Gate in at terminal (Container Yard) ▪ Container Loaded onto Vessel at POL (Actual Time of Departure - ATD) 	<ul style="list-style-type: none"> ▪ Vessel Arrived at Transshipment Port if applicable ▪ Container Discharged from Vessel at Transshipment Port ▪ Container Loaded onto Next Vessel at Transshipment Port with ATD 	<ul style="list-style-type: none"> ▪ Vessel Arrived at Port of Discharge (POD) (Actual Time of Arrival - ATA) ▪ Container Discharged from Vessel at POD ▪ Container Gated Out of POD Terminal ▪ Container Loaded onto Truck/Rail for Inland Transport ▪ Container Arrived at Destination Container Yard/Warehouse ▪ Empty Container Returned to Depot/Terminal

Accounts Payable and Receivables

The accrual process and billing for both the shipper and consignee involve the following steps:

→ ACCRUAL PROCESS

1. **Accrual Entry:** At the time of shipment creation in the TMS, the FF should input the estimated accruals for the different legs (also referred to as jobs). A good TMS provides the ability to store, update and maintain a cost table with all the charges (ocean, air, customs, haulage, local charges, pass-through) that enables operators to automatically allocate the right cost to each job for each selected provider.
2. **Create Shipment:** When the quotation tool is linked to the TMS, the confirmed quotation should automatically trigger the shipment creation in the TMS including the cost and revenue accruals to reflect the expected GP on a shipment file. Note that not all customers confirm a shipment through a quotation tool. Some customers have direct EDI connection with the FF to book a shipment, others have long term contracted rates and go through the FF portal to place a booking (without asking for a quote) so the booking method varies. In many cases bookings can even be made via email.

“ Best practise: at the time of shipment creation in the TMS, the FF should input the estimated accruals for the different legs”

3. **Update Accruals:** For FFs that have a TMS without the ability to maintain a cost table, the operator should still update the accruals based on quotes provided to the customer as soon as possible. However in many instances FFs updates the accrual as the shipment progresses through various stages and might be updating the accrual based on the actual invoice received from the various service providers.

→ AP INVOICE PAYMENT

1. **Invoice checking:** Invoices should be sent to the finance department. The finance department reconciles the actual invoice amount with the accruals in the TMS. Some invoices might have currency exchange issues, most systems provide a tolerance to factor in the currency exchange issue.
2. **For any other exceptions:** The finance team will need to reach out to the operations team to check and validate if the invoice is correct.
 - If the invoice amount is correct then the operator might need to check that the cost table is up to date.
 - If the invoice amount is incorrect the finance team will reach out to the service provider to dispute the invoice. Carriers might be charging the wrong amounts to the FF. Without a good accrual process in place this might not be captured.

→ BILLING TO SHIPPER

1. **Invoice preparation:** the FF prepares an invoice for the shipper based on the agreed incoterms and responsibilities per NSA. The invoice to the shipper typically includes charges for:
 - Export-related local charges (pickup, terminal handling, documentation fees)
 - Any additional charges agreed upon (e.g., insurance if CIF incoterm)
2. **Payment collection:** the FF collects payment from the shipper based on the agreed NSA.

→ BILLING TO CONSIGNEE

1. **Consignee Invoice:** If the agreed incoterms (e.g. DDP) require the consignee to pay certain charges, the NVOCC prepares a separate invoice for the consignee, which may include:
 - Ocean/air freight charges
 - Import-related local charges (delivery, terminal handling, customs clearance fees)
 - Any additional charges agreed upon based on the incoterms

2. Payment Collection: the FF collects payment from the consignee for the charges outlined in the consignee invoice, as per the agreed terms.

The accrual process ensures that the FF accurately records and recognizes the freight charges and associated costs as they are incurred, while the billing process ensures that both the shipper and consignee are invoiced for their respective responsibilities based on the agreed incoterms and contractual arrangements.

The FF's ability to provide accurate quotes relies heavily on their understanding of incoterms, carrier agreements, local charges, and the consignee's specific requirements. By following this workflow, the FF can offer a competitive and transparent quote that meets the consignee's needs.

“ The FF's ability to provide accurate quotes relies heavily on their understanding of incoterms, carrier agreements, local charges, and the consignee's specific requirements.”

Visibility and Reporting

Overview of standard industry practices between Air and Ocean.

→ IDENTIFICATION SYSTEM

Both air freight and ocean freight utilise unique identification systems to identify carriers (IATA prefixes for airlines and SCAC codes for ocean carriers), they operate under different regulatory frameworks and documentation practices.

The IATA system emphasizes standardization and real-time tracking, which is critical for the fast-paced nature of air cargo, whereas ocean freight relies on SCAC codes within a broader regulatory context.



Air Freight

IATA Prefix: Airlines are identified using a unique three-digit IATA prefix that is part of the Air Waybill (AWB) number. This prefix allows for quick identification of the airline responsible for transporting the cargo. **The AWB number consists of 11 digits**, with the first three being the IATA prefix, followed by a unique serial number.



Ocean Freight

SCAC Code: In ocean freight, carriers are identified using Standard Carrier Alpha Codes (SCAC). Each ocean carrier has a unique SCAC that is used in shipping documents, such as bills of lading. **SCAC codes are typically two to four letters long.**

→ DOCUMENTATION



Air Freight

Air Waybill: The AWB serves multiple functions, including acting as a receipt for the cargo and a contract of carriage. It includes the IATA prefix for identification.



Ocean Freight

Bill of Lading: The B/L is the primary document used in ocean freight. It serves as a receipt and a contract between the shipper and the carrier. The SCAC code is included in this document for carrier identification.

→ REGULATORY FRAMEWORK



Air Freight

IATA Regulations: The International Air Transport Association (IATA) governs the use of IATA prefixes and AWBs, ensuring standardised practices across the air freight industry.



Ocean Freight

Various Regulations: Ocean freight is regulated by multiple international organizations and agreements, such as the International Maritime Organization (IMO) and the International Chamber of Shipping (ICS), which establish guidelines for the use of SCAC codes and other documentation.

→ TRACKING AND VISIBILITY



Air Freight

Real-Time Tracking: The use of IATA prefixes in AWBs allows for efficient tracking of air cargo shipments. Airlines often provide online tracking systems that utilize the AWB number for real-time updates.



Ocean Freight

Tracking Systems: While SCAC codes are used for identification in ocean freight, tracking systems may vary by carrier. Many carriers offer online tracking, but the systems may not be as standardised as those in air freight.

→ VISIBILITY TOOLS IN FREIGHT FORWARDING

The FF's ability to provide adequate and reliable visibility will depend on the IT maturity level and the level of integration between internal systems, external service providers, avoiding manual updates, and the level of dependencies on excel spreadsheets and emails.

The typical system/IT portfolio that enables visibility includes:

- Customer Quotation Portal
- Customer Booking Portal
- Transportation Management System (TMS)
 - Integration with Ocean and Air Freight Liners
 - Customs Declaration Submission
 - Document Management System (with customer)
- Customer Relationship Management (CRM)
- Customer-facing Portal for Shipment Visibility, Invoices, and Messaging

Challenges that impact visibility are specific to unreliability of vessel schedules (at around 60%), port congestion, changes to pending bookings (cancellation and rolling of containers), delays in production from the supplier, lack of integration with the various parties such as trucking companies, CFS operators, customs etc.

The market places a high premium on visibility because the impacts of running blind can be significant. Many companies place a premium on their FF's ability to provide accurate, timely information to the status of the freight in their custody. Accurate, complete, timely data is VERY hard to get for international freight on a consistent basis.

Challenges and Opportunities

The transformative potential within the logistics division through the digitisation, standardization, and normalization of manual workflows is significant.

- By addressing the multifaceted challenges currently faced by the operators in freight forwarding, Raft can unlock remarkable value and drive significant improvements across the board.
- By explaining the challenges, it should be our goal to achieve marked productivity gains, stimulating revenue growth, and bolstering EBIT performance.
- By meticulously identifying and rectifying operational bottlenecks, eliminating workflow redundancies, and automating manual processes, we can dramatically improve operational efficiency.

This approach not only streamlines operations but also paves the way for a more agile and responsive logistics network. Our strategies should aim to unlock:

- Significantly enhanced operational efficiency;
- Substantial cost reductions;
- Markedly improved customer satisfaction; and
- Strengthened financial performance.

Quotes, booking and rates process

The way of storing and maintaining all buying rates and selling rates is imperative in responding fast to a quote both in a tender format or spot rates but more importantly to ensure the right margins are made on a shipment. Equally important is the method of communicating with customers. Quotes can be submitted via a portal or via email.

→ BUYING RATES

FFs face significant challenges in maintaining up-to-date buying rates in their TMS. This task is critical for their business but complex due to several factors:

- Rate volatility, especially in airfreight, is a major issue as rates can change rapidly, sometimes multiple times a day, making it difficult to keep information current.

- FFs must also manage diverse rate types, including both contract and spot rates, each requiring different approaches.
- Carriers utilize intricate pricing models, which often include various surcharges, fees, and conditions.
- Rates are negotiated by different teams at global, regional, and local levels, potentially leading to inconsistencies.
- Communication delays from carriers about rate changes and the variety of formats in which rate information is received (such as PDFs, emails, and spreadsheets).
- Frequent currency fluctuations are common and hard to manage.
- Specifically spot rates can change rapidly, sometimes multiple times a day, challenging FFs to maintain accuracy and validity of rates.

Many TMS platforms struggle with real-time updates and complex pricing structures, further exacerbating these challenges. To address these issues, FFs can implement several strategies:

- Automated data integration using API-based connections with TMS and third-party pricing services can enable real-time updates.
- Cloud-based platforms can be used for centralized data storage and management to improve access and ensure real-time updates across the organization.
- A centralized database to record all negotiated rates and rebates at various levels can help maintain consistency and improve decision-making.
- A system to track and manage volume commitments can also help FFs leverage negotiated rebates more effectively.

By streamlining the process of capturing and managing buying rates, FFs can significantly improve accuracy, decision-making, and financial performance. This approach allows them to respond more quickly to market changes and potentially increase their market share in the competitive freight forwarding industry.

“ By streamlining the process of capturing and managing buying rates, FF can significantly improve accuracy, decision-making, and financial performance.”

→ QUOTES

Tender process

It is crucial to distinguish between tender processes and spot rates in freight forwarding, yet both areas ultimately point to the same conclusion: the need for investment in better systems and stricter adherence to processes.

In the realm of RFQs and tenders, the absence of a dedicated quotation portal creates numerous challenges:

- The freight forwarding tender process for obtaining pricing sheets from customers is often riddled with inefficiencies and prone to errors.
- This complex and time-consuming process typically involves multiple rounds of negotiations, usually three to four, which further exacerbate the inherent challenges and inefficiencies.
- The process typically begins when customers send their lane requirements in spreadsheets, immediately introducing potential issues.
- The downloading and uploading of Excel files is not only time-consuming but also error-prone, leading to data inconsistencies and misinterpretations. This initial exchange often marks just the beginning of several iterations, as each round of negotiation necessitates updates to the pricing sheets and a repetition of the entire process.
- Upon receipt, the FF manually reviews and interprets the spreadsheet data, a labor-intensive task susceptible to human error.
- This process becomes particularly challenging when dealing with thousands of lane combinations.
- The next step involves reviewing each trade lane and forwarding them to the appropriate team members for pricing and product evaluation. This slow, manual process grows increasingly complex and error-prone as the number of lane combinations expands.
- Compiling the tender response involves gathering input from various team members and consolidating it into a cohesive document, which is time-consuming and again prone to errors.
- With each negotiation round, these steps must be repeated, often under tight deadlines, increasing pressure on the team and the likelihood of errors.

Spot Rates

A FF also faces distinct challenges in providing spot rates and managing their operations in the current volatile market.

- The airfreight market is experiencing significant fluctuations, making it difficult for FFs to maintain consistent and competitive spot rates.
- Rates can change rapidly, sometimes multiple times a day, challenging FFs to keep their quotes accurate and up-to-date.
- With shippers actively seeking to refresh their rates and take advantage of favorable market conditions, FFs are under pressure to respond quickly with competitive quotes. This requires efficient rate management systems and processes.
- Many FFs struggle with manual rate management processes, leading to delays in quoting and potential errors.

Implementing efficient rate management systems is crucial. Additionally, fluctuations in capacity, such as the increase in belly capacity due to summer leisure travel, put additional pressure on rates and make it challenging for forwarders to secure favorable rates.

In conclusion, while the specific challenges differ between tender processes and spot rate management, both areas highlight the critical need for a FF to invest in advanced systems and maintain strict adherence to streamlined processes to remain competitive and efficient in today's dynamic market.

→ SELLING RATES

It's important to note that most FFs typically rely on in-house spreadsheets to manage rates and provide quotes to customers. While familiar and accessible, this approach has significant limitations. Spreadsheets often involve manual processes prone to errors, lack real-time capabilities, struggle with complex pricing scenarios, and offer limited scalability.

“ It's important to note that most FF typically rely on in-house spreadsheets to manage rates and provide quotes to customers.”

Algorithms play a pivotal role in transforming pricing mechanisms and decision-making processes in freight forwarding, ultimately leading to increased business wins.

- By harnessing the power of **dynamic pricing optimization**, FF companies can analyze vast amounts of historical data, market trends, and real-time factors to determine optimal

pricing for each lane and service. This approach enables agile adjustments based on supply and demand fluctuations, accounting for various factors such as fuel costs, capacity constraints, and seasonal variations.

- **Predictive analytics**, powered by machine learning algorithms, predictive analytics allow freight forwarders to assess historical tender data and forecast the likelihood of winning bids at different price points. This insight facilitates strategic pricing decisions that maximize win probability and helps identify opportunities where slight price adjustments could significantly increase the chances of securing business.
- **Customer segmentation and personalized pricing strategies**, facilitated by algorithmic analysis, enable FF companies to tailor their approach to different customer segments and offer customized pricing recommendations based on individual customer behaviour and preferences. This level of personalization enhances customer relationships and increases the likelihood of winning and retaining business.

By leveraging these algorithmic approaches, a FF can make more informed pricing decisions, respond swiftly to market changes, and ultimately increase their business wins.

While spreadsheets remain a common tool for many FFs, the industry is gradually recognizing the need for more advanced rate management solutions.

→ ESTIMATED SAVINGS – QUOTE AND RATE MANAGEMENT SYSTEM

- **Operational efficiency**
 - **Error Reduction:** Manual spreadsheets are prone to errors, which can be costly. Errors in tender responses can lead to lost business opportunities or financial losses.
 - **Efficiency Gains:** Automating the tender process reduces the need for repetitive manual tasks, allowing employees to focus on higher-value activities. For example a typical conversion of a tender spreadsheet from a shipper into an internal format takes approximately 12 hours and can be reduced to 30 minutes with automation.
 - **Improved Decision-Making:** Cloud-based systems provide real-time data and analytics, enable better decision-making and faster turnaround. This can lead to more competitive pricing strategies and higher win rates for tenders. Improved decision-making increases revenue and profitability.

“

For example a typical conversion of a tender spreadsheet from a shipper into an internal format takes approx. 12 hours and can be reduced to 30 min.”



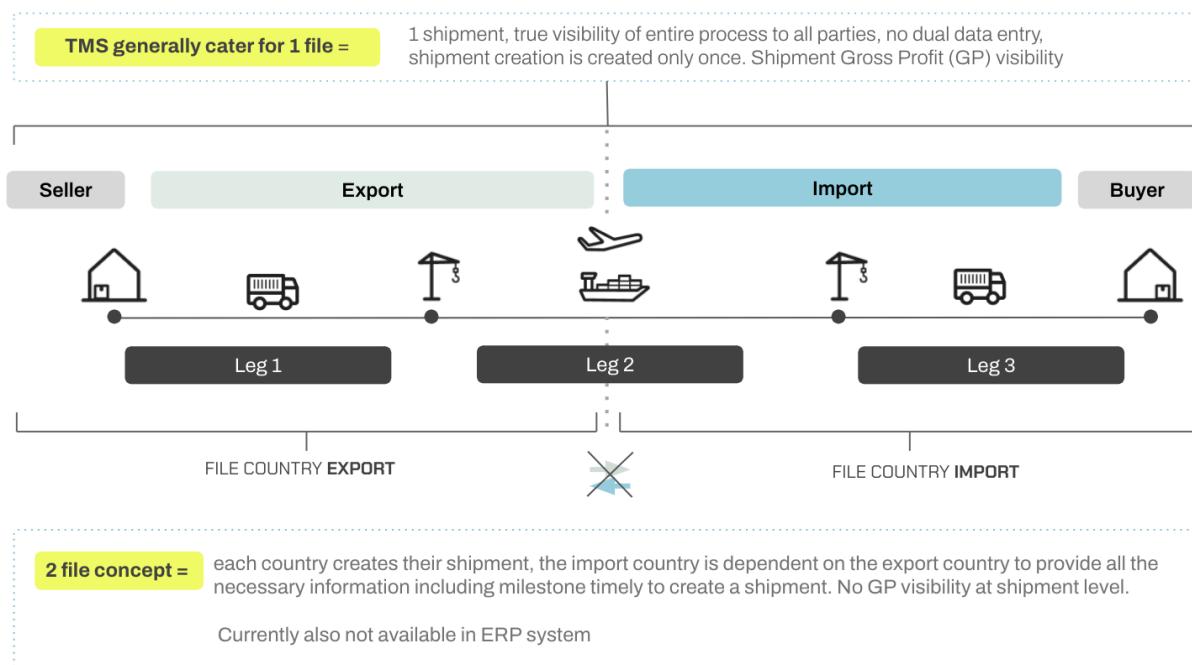
Operational Process Improvement - One vs. Two File Concept

Connecting the core TMS to quotation and booking tools eliminates the need for manual data entry when creating a shipment and the associated accruals for both revenue and cost. Creating a shipment should ensure visibility between the export and import departments, with a fair distribution of profit on the file. The TMS should be linked to the ERP system to keep both systems in sync. In this scenario, the FF operates under a **"one-file" concept**.

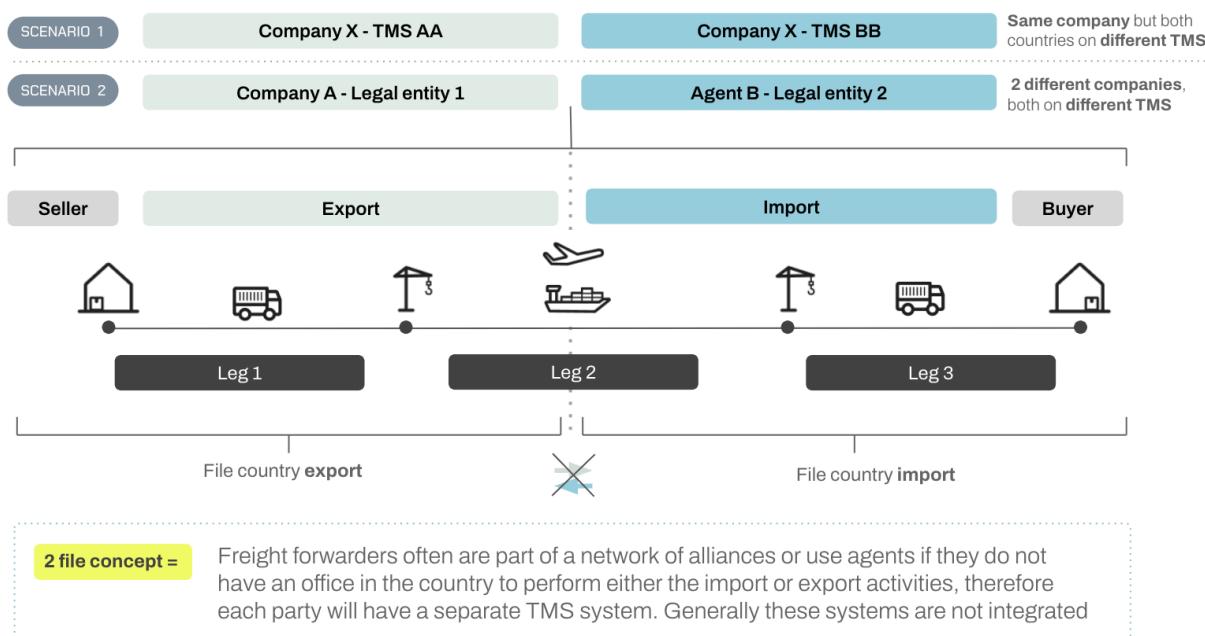
When FFs operate in different TMS systems, inefficiencies in managing a shipment arise. Both the export and import countries must create separate files in their respective TMS systems, leading to a significant lack of milestone visibility and increasing the manual work required to manage a shipment.

In this scenario, the FF operates under a **"two-file" concept**. The import country depends on the export country to provide a **"Pre-Alert"**. A pre-alert is an email containing all the relevant commercial documents to inform that a shipment is on its way, sent by the export country. The challenge is ensuring that the export country remembers to send the email.

1 FILE CONCEPT vs 2 FILE CONCEPT



2 FILE CONCEPT



→ CUSTOMS FILING

Brokers prioritize their tasks based on urgency and are time-bound based on the arrival or departure of a vessel / aircraft depending on import or export customs.

This custom entry information is stored in various systems and has to be retrieved from various sources, including TMS, emails, Excel spreadsheets, and handwritten notes.

Most brokers split their time between TMS and email, with approximately 60-70% of prioritisation done through email.

When the transport is organised within the same organisation the necessary **pre-alerts** with shipment arrival details are typically provided through the TMS. This responsibility sits with the export team at origin. However, when transport is managed by a 3rd party the completeness, accuracy and timeliness of the pre-alerts vary that provide key information such as commercial invoices, packing list and the Estimated Time of Arrival (ETA) from vessels. ETAs are often missing or not updated by third parties, making it challenging to get accurate transportation information and ensure the right priorities have been set.

“ Most brokers split their time between TMS and email, with approximately 60-70% of prioritisation done through email.”

Once the **pre-alerts** and ISF filing (applicable to US) have been received typically 5 days before vessel arrival (ETA), the import customs team prioritizes their work based on ETA and starts with gathering all necessary documents, including commercial invoices, Bills of Lading etc.

Once the documents have been collected, categorized and renamed and often manually uploaded against the shipment in the TMS (e-doc), the broker will retrieve the file in the TMS, or will create a file in the TMS if this is missing. High level information such as transportation details (shipper, consignee, etc) and commercial invoice data such as invoice number, invoice value, total quantity are manually entered into the TMS.

For each single line item on the commercial invoice an entry has to be made, manually entering the HS code, quantities, and values. This information should derive a part number in the TMS or from another database. Depending on the part number this might trigger any additional requirements or flag that requires follow up as instructed by government agency information. If there are specific rulings in place the broker will need to seek further information from the importer. Items such as food and drink, medical equipment or pharmaceutical goods require



more follow up. It is important that the customs team maintains and updates the parts database in their TMS.

A broker will typically need to have multiple screens open to be able to view the different documents, read and scan the right information to then manually enter this information into the TMS. Some brokers will print documents. Depending on the “**e-doc**” functionality of the TMS, retrieving the right type of documents can be challenging and might require scanning through various pages. Shifting from screen to screen can lead to errors in data entry and the classification of documents to the wrong file.

Not all TMS systems are fully integrated with the customs declaration system. Most large FFs have their TMS integrated with the customs declaration system for their key markets.

Other tasks include maintaining parts databases, corresponding with importers for additional information, and dealing with shipments on hold.

Filing a customs entry with 2 lines on an invoice will probably take at least 30 minutes, while filing a customs entry with 100 lines on an invoice could take several hours.

“ Filing a customs entry with 2 lines on an invoice will probably take at least 30 minutes, while filing a customs entry with 100 lines on an invoice could take several hours.”

Data entry is the most time-consuming task, involving manual entry of multiple documents and ensuring the right information is keyed in for each file.

Estimated savings – customs filing entry

Manual data entry often leads to mistakes in the process. This not only results in the loss of time, money, and resources but, more critically, can cause delays in customs clearance and potential penalties.

Operational and financial impact on AP and AR

On average each shipment should have an average of 3 to 5 invoices. The quotation is dependent on a number of assumptions, but in reality the FF might not have been able to obtain space on the vessel and schedule it as planned for. The FF might have confirmed another ocean carrier and not update the accrual with the correct carrier. Systems that are not integrated depend on manual updates from the operators.

The process of validating carrier invoices is painstaking and time-consuming, involving multiple steps and systems. But more importantly is predominantly manual.

Invoice Receipt: The process begins when the carrier sends an invoice, usually via email. An operator must monitor their email inbox for incoming invoices, which can arrive at any time and in various formats (PDF, Excel).

Locating the Shipment in TMS: The operator must then open the TMS and search for the corresponding shipment. This often involves manually entering the shipment number, Bill of Lading number, or other identifying information from the invoice into the TMS search function.

Cross-referencing Invoice Details: Once the shipment is located in the TMS, the operator must meticulously compare the information on the invoice with the data in the TMS. This includes verifying:

- Shipment dates,
- Origin and destination addresses,
- Commodity details,
- Agreed-upon rates and the agreed unit of measure by charge item, and
- Accessorial charges.

→ ACCRUAL RECONCILIATION:

The operator needs to reconcile the invoiced charges with the accruals recorded in the TMS. This involves comparing the actual charges on the invoice to the estimated charges that were previously entered into the system.

→ DISCREPANCY HANDLING:

If any discrepancies are found, there are often 2 main categories: incorrect cost accruals or incorrect charges by the carrier.

Additional communication with the carrier may be required to request clarification or corrections or in the case of the accruals being incorrect, it may be required to verify the agreed rates and check with other departments (e.g. trade lane or procurement) to resolve issues.

The invoice may need to be put on hold pending resolution, requiring additional tracking and follow-up.

→ APPROVAL AND PAYMENT PROCESSING:

Once all details are verified and any discrepancies resolved, the operator must mark the invoice for approval in the system and initiate the payment process by sending this to their finance team.

This manual process is prone to errors due to the amount of data entry and cross-referencing required. It's also highly time-consuming, with operators often needing to switch between multiple screens, systems, and documents for each invoice. The complexity increases with the volume of invoices and the variety of carriers and services used.

→ ESTIMATED SAVINGS – AP PROCESS

By implementing technology to check invoice processing against accruals in the TMS and automate the process, creating a streamlined workflow to manage exceptions. This scenario unfolds with a comprehensive system integration, ensuring that the invoice processing system is fully integrated with the TMS, allowing for real-time data synchronization between systems.

The process begins with automated invoice ingestion. A combination of OCR technology to digitize paper invoices and set up EDI for direct invoice submission from carriers. Once ingested, an automated matching process compares incoming invoices against accruals in the TMS. The system checks key data points such as shipment ID, carrier information, dates, charges both line items and totals.



Exception identification is a crucial part of this automated system. It flags discrepancies between invoice data and TMS accruals, which might include price variances, duplicate invoices, missing shipments in TMS, or incorrect charge items. These exceptions are then managed through an automated workflow.

- The exception management workflow starts with **categorization**. The system automatically categorizes exceptions based on predefined rules, such as minor discrepancies or significant variances. For small discrepancies within a certain dollar threshold, the system can auto-approve, logging these transactions for later review.
- A **notification** system is put in place to send automated alerts to relevant personnel when exceptions are assigned to them, with reminders for unresolved exceptions after a set period. To facilitate resolution, an exception resolution interface is provided. This user-friendly interface allows for reviewing and resolving exceptions, presenting all relevant information from both the invoice and TMS side-by-side, with options to approve, reject, or request more information.
- **Reporting** and **analytics** play a vital role in this automated workflow. The system generates reports on exception trends, resolution times, and cost impacts. This data is used to continually refine the automated matching process and exception rules. Furthermore, the system employs machine learning to improve its ability to predict and categorize exceptions over time.
- Finally, the workflow **integrates with payment systems**. Once exceptions are resolved, approved invoices are automatically sent to the payment system, completing the procure-to-pay cycle with minimal manual intervention.

By implementing this automated workflow, a significant reduction in costs can be achieved by reducing manual effort in invoice processing, improving accuracy, and focusing human resources on resolving complex exceptions.

Glossary of Terms and Abbreviations

Glossary

3PL: Third party provider.

Booking Portal: Web gateways to submit and manage bookings with multiple carriers.

Consignee: buyer located at destination.

CFS: Container Freight Station - A facility where goods are consolidated or deconsolidated.

CY: Container Yard (port) - An area at the port where containers are stored before being loaded onto a ship.

EDI: Data Exchange Interchange - used extensively in logistics integration environments.

FCL: Full Container Load - A shipping option where the entire container is used by one customer.

FF: Freight Forwarder - An agent who organizes shipments for individuals or corporations to get goods from the manufacturer to a market or final point of distribution.

Incoterms:

- **EXW (Ex Works):** The seller's responsibility is to make the goods available for pickup at the warehouse or factory. From that point forward, the buyer assumes responsibility for all costs and risks. For most importers and exporters, this means working with a freight forwarder that arranges the entire shipment, starting at pickup from the factory.
- **FOB (Free on Board):** Seller (factory at origin) is responsible until goods are loaded onto the vessel. The seller is responsible for packaging, pickup, and delivery of goods onto a vessel at the port of shipment. Liability transfers to the buyer once the goods are on board the vessel; the buyer is responsible for every other step of the journey.
- **CFR (Cost and Freight):** Seller pays for freight charges to the destination port.
- **CIF (Cost, Insurance, and Freight):** Seller pays for freight and insurance to the destination port.

LCL: Less than Container Load - A shipping option where multiple customers share space in the same container.

Laden container: A loaded container ready for transportation.

LSP (Logistics Service Provider): A company that offers logistic services.

NSA: NVOCC Service Arrangement

NVOCC (Non-Vessel Operating Common Carrier): A carrier that does not own the vessels but provides shipping services.

OCR (Optical Character Recognition): Technology used to convert different types of documents, such as scanned paper documents or PDFs, into editable and searchable data.

Shipper (consignor): seller factory at origin.



TMS (Transportation Management System): Software that facilitates interactions between order management systems and the warehouse/distribution center.

ERP (Enterprise Resource Planning System) - A core system of record at big enterprises,

Abbreviations

Below is a list of commonly used abbreviations in the freight forwarding industry:

3PL: Third Party Logistics provider

CFS: Container Freight Station

CY: Container Yard

EDI: Electronic Data Interchange

FCL: Full Container Load

FF: Freight Forwarder

LCL: Less than Container Load

LSP: Logistics Service Provider

NSA: NVOCC Service Arrangement

NVOCC: Non-Vessel Operating Common Carrier

OCR: Optical Character Recognition

TMS: Transportation Management System

ERP: Enterprise Resource Planning System

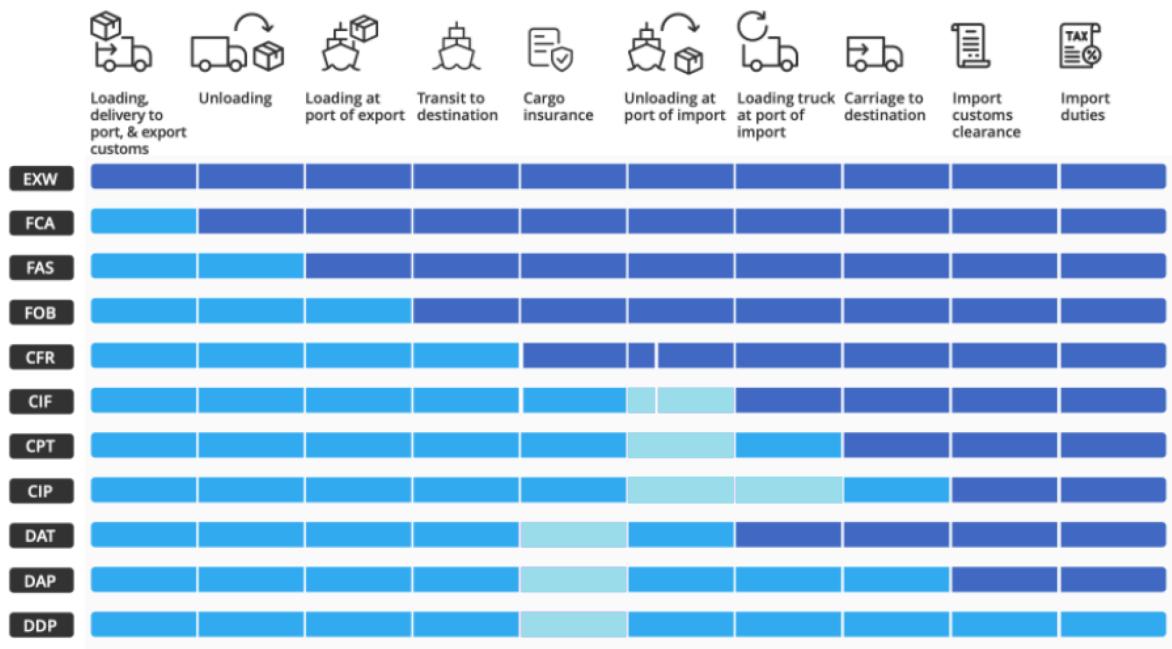
WMS: Warehouse Management System

Appendix

Incoterms

Incoterms Chart

Check this chart of Incoterms to see what the buyer and seller are responsible for at each point in the international supply chain



 Buyer  Seller  Negotiable

EXW	Ex Works
FCA	Free Carrier
FAS	Free Alongside Ship
FOB	Free On Board
CFR	Cost And Freight
CIF	Cost, Insurance, and Freight
CPT	Carriage Paid To
CIP	Carriage Insurance Paid To
DAT	Delivered at Terminal
DAP	Delivered At Place
DDP	Delivered Duty Paid

GROUP E: Most costs and risks are the responsibility of the buyer.

GROUP F: The costs and the risks of the main transport are the responsibility of the buyer.

GROUP C: The seller is responsible for all the risks and costs of the main transport.

GROUP D: The seller is responsible for all costs and risks until the arrival of the goods at the final destination.

For more information on Incoterms, visit: <https://www.trade.gov/know-your-incoterms>

Market volatility on ocean freight rates

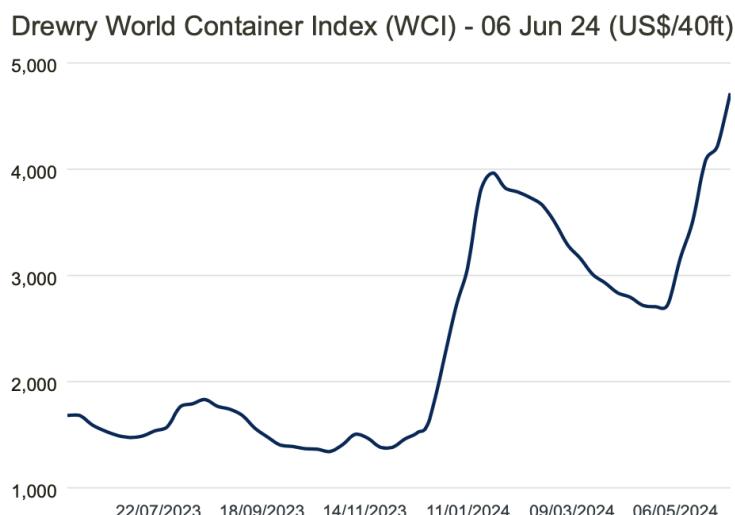
Ocean freight rates depend on a set of conditions: demand/supply, season, congestions, natural disasters or fuel price.

There are 2 main indexes that are used in the industry to monitor the ocean rates:

- Drewry World Container Index (WCI)
- Shanghai Containerised Freight Index (SCFI)- a market overview of how rates evolve

Example extract of the Drewry report June 14, 2024:

- Freight rates from Shanghai to Genoa and Rotterdam to Shanghai increased 3% to \$6,862 and \$661 per 40ft container respectively.
- Similarly, rates from Shanghai to Rotterdam and New York to Rotterdam swelled 2% to \$6,177 and \$640 per feu respectively. Likewise, rates from Shanghai to Los Angeles and Shanghai to New York surged 1% to \$6,025 and \$7,299 per 40ft box respectively. Conversely, rates from Rotterdam to New York decreased 1% or \$18 to \$2,118 per feu. Meanwhile, rates from Los Angeles to Shanghai remain stable. Drewry expects that freight rates from China will continue to rise next week due to congestion issues at Asian ports.



There are two main indexes used in the industry to monitor the air rates, these are:

- Freightos Air Index (FAX)
- Baltic Exchange Airfreight Index

The higher the index the more opportunity exists for a FF to generate higher margins.

There are different types of charges (local charges and pass-through charges) that require billing, in addition, depending on the incoterms different parties will be billed.

Documentation HBL and MBL

Aspect	House Bill of Lading (HBL)	Master Bill of Lading (MBL)
Issuer	Issued by a freight forwarder or Non-Vessel Operating Common Carrier (NVOCC)	Issued by the shipping line (carrier)
Purpose	Acts as a contract between the shipper and the freight forwarder, consolidating multiple shipments into one container	Serves as the primary contract of carriage between the carrier and the shipper for the entire container load
Parties Involved	Shipper: The actual exporter of the goods Consignee: The actual importer or receiver of the goods Notify Party: May be the same as the consignee or another party designated for notification	Shipper: Typically the freight forwarder or NVOCC Consignee: Usually the destination agent or office of the freight forwarder or NVOCC Notify Party: May be the same as the consignee
Legal Implications	Establishes obligations and liabilities between the shipper and the freight forwarder	Defines the contractual relationship between the carrier and the shipper, outlining the carrier's responsibilities
Documentation	Serves as a receipt for the goods and is essential for customs clearance	Also serves as a receipt but covers the entire consolidated shipment, detailing the total cargo

Depending on the mode the parties on the different documents change, pay attention to the MBL and the HBL for LCL and Buyer's Consol:

Aspect	FCL	LCL	Buyer's Consolidation
Shipper on HBL	Company sending the goods	Individual company sending the partial load	Individual supplier (multiple HBLs)
Consignee on HBL	Company receiving the goods	Company receiving the partial shipment	Buyer (same for all HBLs in the consolidation)
Notify Party on HBL	Usually the consignee or their customs broker	Usually the consignee or their customs broker	Usually the buyer or their customs broker
Shipper on MBL	N/A	N/A	Freight forwarder or NVOCC
Consignee on MBL	N/A	N/A	Buyer
Notify Party on MBL	N/A	N/A	Usually the buyer or their customs broker
Customs Process	Single entry for the entire container	Separate entries for each individual shipment	Single entry under the MBL for the entire consolidated shipment

High Level overview

FCL (Full Container Load):

- **Shipper on HBL:** The company sending the goods.
- **Consignee on HBL:** The company receiving the goods.
- **Notify Party on HBL:** Usually the consignee or their customs broker.
- **Customs Process:** A single customs entry is filed for the entire container.

LCL (Less than Container Load):

- **Shipper on HBL:** The individual company sending the partial load.
- **Consignee on HBL:** The company receiving the partial shipment.
- **Notify Party on HBL:** Usually the consignee or their customs broker.
- **Customs Process:** Separate customs entries are required for each individual shipment in the shared container.

Buyer's Consolidation:

- **Shipper on HBL:** Individual suppliers (multiple HBLs).
- **Consignee on HBL:** The buyer, same for all HBLs in the consolidation.
- **Notify Party on HBL:** Usually the buyer or their customs broker.
- **Shipper on MBL:** Freight forwarder or NVOCC.
- **Consignee on MBL:** The buyer.
- **Notify Party on MBL:** Usually the buyer or their customs broker.
- **Customs Process:** A single customs entry is filed under the MBL for the entire consolidated shipment, simplifying the customs clearance process.

Type of ocean containers

Below is an overview of nine common container types, together with their International Organization for Standardization (ISO) type codes.

An ISO size and type code is a **four-character code of letters and numbers**, displayed on each container, which identifies the container's length, height, and type code designation. The **first two characters are codes that represent length and height** respectively in feet and inches. Characters **three and four provide the type and other characteristics**. Lengths, heights and characteristics are represented with the letter 'X' in the descriptors below; for full codes visit <https://www.bic-code.org/size-type-code/>.

Different Types And Sizes Of Containers

Below are the common standard codes utilized by the industry. We encourage those marking containers to obtain the latest version of **ISO 6346** here:

Length	Height	Type
2 - 20 Feet	2 - 8 Feet 6 Inches	G1 - General Purpose Container
4 - 40 Feet	5 - 9 Feet 6 Inches "High Cube"	R1 - Refrigerated Container
5 - 45 Feet		U1 - Open Top Container
M - 48 Feet		P1 - Platform Container
		T1 - Tank Container

Example

- A container 22G1 is a 20 foot container, for general purpose
- A container 45R1 is a 40 foot high cube reefer container



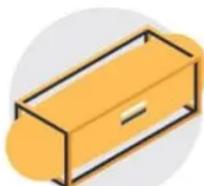
1. Dry container

This is the most common type of container. It is used to transport cargo contained within pallets, boxes, flexitanks, barrels and suchlike, when a controlled temperature isn't needed. Dry containers come in 20ft, 40ft, 48ft, 53ft and 40ft high cube (HC). A HC container is 1ft taller than a standard container. The ISO type code for a dry container is XXGX where "G" stands for "general purpose".



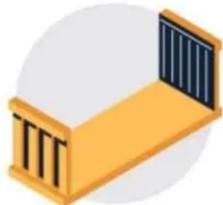
2. Reefer container

Reefer containers are refrigerated. They transport goods that must be stored at a particular temperature, such as foodstuffs and medicines. They have a temperature range of -65°C to +40°C and come in 20ft, 40ft, 40ft HC and 45ft HC. Reefer containers can be expensive because of the cost of energy to maintain temperature. The ISO type code for them is XXRX where "R" stands for "Reefer".



3. Tank container

Tank containers are cylindrical and made of anti-corrosive material to transport gasses, and liquids, including dangerous cargo. They are 20ft and 40ft in size and have an ISO type code of XXTX where "T" stands for "Tank".



4. Flat rack container

Flat rack containers typically come in 20ft and 40ft and are open on their long sides to take large cargo such as machinery, vehicles and pipes. The ISO type code for flat rack containers is XXPX where "P" stands for "Platform".



5. Open top container

Open top containers have a tarpaulin instead of a solid roof. They are ideal for cargo that can't be loaded through the door, such as machinery, as they can be loaded from above. They have a larger capacity than standard containers, come in 20ft, 40ft and 40ft HC and have an ISO type code of XXUX.





6. Open side container

An open side container is also known as a side door container, so it is not surprising to learn it has doors that open on the long side to load cargo that can't fit through the narrower end doors. These containers come in 20ft, 40ft and 40ft HC. The ISO type code for an open side container is also XXUX.



7. Half height container

Half height containers transport heavy goods that don't require the height of a standard container. They tend to be used for bulk goods and are 20ft in size. The ISO codes are typically X8UX, with the character 8 indicating "half-height".



8. Double door container

Double door containers have doors at both ends to load and unload from either. This can be convenient for transporting cargo such as cars. Double door containers come in the same dimensions as the dry containers and have the same XXGX ISO code.



9. Hard top container

Hard top containers, in 20ft, 40ft or 40ft HC, have a detachable steel roof. They transport heavy goods, such as raw materials, and tall cargo, such as large machinery, which is loaded from above. They are a variant of the open top container, hence, carry the XXUX ISO code.

BIC codes

The international register of identification codes for container owners was originated by the **Bureau International des Containers (BIC)** and has been published continually since 1970. It was subsequently adopted by the International Organization for Standardization (ISO) in 1972, forming an essential part of the ISO 6346 standard : “Freight Containers – Coding, Identification and Marking”. This standard also describes technical markings such as size and type code, country code and various operational marks.

Only ISO Alpha-codes (container prefixes) for identification of container owners registered with BIC may be used as unique identity marking of containers in all international transport and customs declaration documents.

What is a BIC / Container Code?

It is comprised of

- An owner/operator code of 3 letters;
- A fourth letter used as equipment identifier (1);
- A serial number of 6 Arabic numerals (2);
- A seventh digit (check digit) providing a means of validating the recording and/or transmission accuracy of the data.

Example (theoretical- for a container): BICU 123456 5

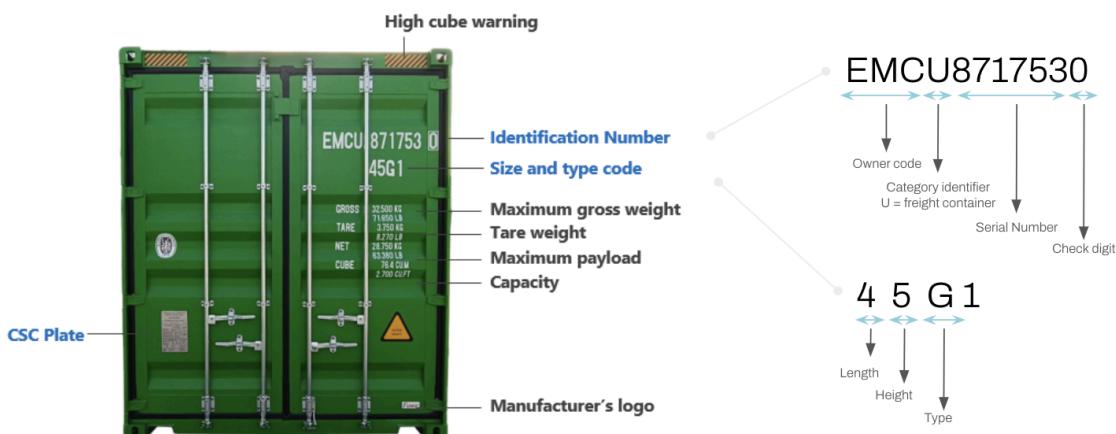
It guarantees that the identification of the container is unique.

Owner prefix	Equipment identifier	Serial number	Check digit
BICU		123456	5

Example:

The **BIC / container code “EMCU8717530”** can be found at the top right hand corner of the container door. EMC is the owner code, for “EVERGREEN MARINE CORP (TAIWAN) LTD”

The 4 digit ISO code “**45G1**” is located just below the **BIC / container code** - which indicates this is a 40 foot high cube container for “general purposes”.



SCAC codes

The Standard Carrier Alpha Code is standardised coding that represents unique units that assist in the identification of a particular transportation company.

NMFTA (**National Motor Freight Traffic Association**) developed SCAC identification codes in the mid 1960's to help road companies digitize data and records.

The Standard Carrier Alpha Code, a two-to-four letter identification, is used by the transportation industry to identify freight carriers in computer systems and shipping documents such as Bill of Lading, Freight Bill, Packing List, and Purchase Orders

The codes are regulated by the NMFTA.

List of major Ocean Carriers by SCAC code

SCAC Code	Carrier Name	Carrier Name	SCAC Code
ACLU	ACL (Atlantic Container Line)	ACL (Atlantic Container Line)	ACLU
ANNU	ANL (Australia National Line)	Alianca	ANRM
ANRM	Alianca	ANL (Australia National Line)	ANNU
APLU	APL (American President Lines)	APL (American President Lines)	APLU
ARKU	Arkas	Arkas	ARKU
CMCU	Crowley	Bahri	NSAU
CMDU	CMA CGM	CCNI (Compagnia Chilena de Navigacion)	CNIU
CNIU	CCNI (Compagnia Chilena de Navigacion)	Chipolbrok	CPIQ
COSU	COSCO	CMA CGM	CMDU
CPJQ	Chipolbrok	COSCO	COSU
DOLQ	Dole	Crowley	CMCU
EGLV	Evergreen	Dole	DOLQ
FESO	FESCO	Evergreen	EGLV
GRIU	Grimaldi	FESCO	FESO
HDMU	Hyundai Merchant Marine	Grimaldi	GRIU
HDMU	HMM (Hyundai Merchant Marine)	Hamburg Süd	SUDU
HJSC	Hanjin	Hanjin	HJSC
HLCU	Hapag Lloyd	Hapag Lloyd	HLCU
KKLU	K Line (Kawasaki Kisen Kaisha)	HMM (Hyundai Merchant Marine)	HDMU
MAEU	Maersk	Hyundai Merchant Marine	HDMU
MATS	Matson	K Line (Kawasaki Kisen Kaisha)	KKLU
MOLU	MOL (Mitsui O.S.K. Lines)	Maersk	MAEU
MSCU	MSC (Mediterranean Shipping Company)	Matson	MATS
NSAU	Bahri	MOL (Mitsui O.S.K. Lines)	MOLU
NYKS	NYK Line	MSC (Mediterranean Shipping Company)	MSCU
OOLU	OOCL (Orient Overseas Container Line)	NYK Line	NYKS
PCIU	PIL (Pacific International Lines)	OOCL (Orient Overseas Container Line)	OOLU
SMLU	Seaboard Marine	PIL (Pacific International Lines)	PCIU
SMLU	Seaboard Marine	Seaboard Marine	SMLU
SUDU	Hamburg Süd	Seaboard Marine	SMLU
TRKU	Turkon Line	Turkon Line	TRKU
UASC	UASC (United Arab Shipping Company)	UASC (United Arab Shipping Company)	UASC
WHLU	Wan Hai Lines	Wallenius Wilhelmsen Logistics	WWSU
WWSU	Wallenius Wilhelmsen Logistics	Wan Hai Lines	WHLU
YMLU	Yang Ming Line	Yang Ming Line	YMLU
ZIMU	ZIM (ZIM Integrated Shipping Services Ltd)	ZIM (ZIM Integrated Shipping Services Ltd)	ZIMU

IATA system for Air Freight

The IATA prefix system is a standardised method used to identify airlines in air freight forwarding, primarily through the use of Air Waybills (AWBs). Here's how the system works:

Structure of the IATA Prefix

The AWB number consists of 11 digits, where the first three digits represent the IATA-designated airline prefix. The remaining seven digits are a unique serial number assigned by the airline.

The prefix allows for the quick identification of the airline responsible for transporting the cargo. This is crucial for tracking shipments, managing logistics, and ensuring compliance with regulations.

Role in Air Freight Documentation

The use of IATA prefixes **standardizes** the documentation process across the air freight industry. This standardization helps ensure that all stakeholders, including freight forwarders, shippers, and customs authorities, can easily identify the carrier associated with a shipment.

Many airlines provide **online tracking systems that utilize the AWB number**, including the IATA prefix. This allows shippers and consignees to monitor the status and location of their cargo in real-time.

Compliance and Regulatory Requirements

The IATA prefix is essential for **customs documentation and compliance**. Customs authorities use the AWB number, including the prefix, to verify the carrier and ensure that all regulations are met during the import and export process.

Original AWBs generated by airlines are generally the only acceptable documents for customs purposes. The presence of a valid IATA prefix on the AWB confirms that the carrier is recognised and authorised to transport goods internationally.

Conclusion

The IATA prefix system enhances the efficiency and reliability of air freight operations by providing a standardized method for identifying airlines. This system facilitates tracking, ensures compliance with customs regulations, and streamlines the documentation process, ultimately contributing to more effective logistics management in the air cargo industry.



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