



JIT Port Call Data Definitions 1.1

November 2021

Purpose

This document provides the DCSA roadmap and proposed approach towards standardised port calls in container shipping. It includes standards for the port call inbound, alongside and shifting, and outbound processes. It includes timestamps, interface standards and open-source API specifications for collaboration between the key stakeholders in a port call with the aim of providing operational transparency for mutual gain.

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Acronyms, and abbreviations

Table 1: Acronyms and abbreviations

The definitions of terms used in this document can be found in the Glossary of Terms available on the DCSA website.

Preface

DCSA envisions a digitally interconnected container shipping industry. Our mission is to be the de facto standards body for the industry, setting the technological foundation for interoperable IT solutions. Together with our member carriers, DCSA creates vendor-neutral, technology-agnostic standards for IT and non-competitive business practices. By working towards the widespread adoption of these standards, our aim is to move the industry forward in terms of customer experience, efficiency, collaboration, innovation, and respect for the environment.

Please refer to the DCSA website, <https://dcsa.org/about/> for more information.

To achieve “just-in-time” (JIT) port calls in container shipping it is necessary to improve predictability and operational transparency between all stakeholders in the port call ecosystem. This will reduce idle time and waste because it will enable better resource planning, which will lead to increased efficiency, reduced emissions. Increased safety and an improved customer experience for exporters and importers.

These ambitions can only be achieved via a change in mindset favouring closer collaboration and more operational transparency between participants in the port call ecosystem. The global GHG (greenhouse gas) emission savings cannot be achieved if each stakeholder works only on optimising their own processes in isolation.

The proposed port call framework can be adopted in other parts of the shipping industry such as car carriers and wet/dry bulk shipping.

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1 Introduction

1.1 Scope of this publication

The initial set of timestamp definitions (17) to enable JIT port calls was published in November 2020 and followed up by interface standards and API specifications in July 2021. The November 2021 publication is intended to complete the JIT port call framework by including all timestamps (50) required to execute a port call transparently between all stakeholders.

The timestamp definitions (shown in chapter 3.2) have been aligned with DCSA carrier members, 8 of the top 10 global terminal operators, and other standardisation organisations to ensure that the framework is adoptable by all parties. An updated information model, interface definitions and API specifications (published on Swagger hub), as well as a reference implementation (published on GitHub), are included.

2 Port call process

To support the implementation of port call timestamps in everyday operations and support systems, we propose the adoption of a standardised port call process in the container shipping industry. The process is based on the IMO FAL principles published in the JIT arrival guide¹ and can largely be copied by other sectors in the shipping industry.

2.1 End-to-end port call process

To improve transparency, we have chosen to split the port call process into 6 main parts as follows:

1. Berth arrival planning
2. Pilot boarding place arrival and services planning
3. Pilot boarding place and berth arrival execution
4. Start cargo operations and services
5. Services and port departure planning
6. Port departure execution

The high-level steps of the end-to-end port call process are described in the figure below.

¹ IMO – MEPC 75 INF.22 Just in Time Arrival Guide – published Jan 24th, 2020

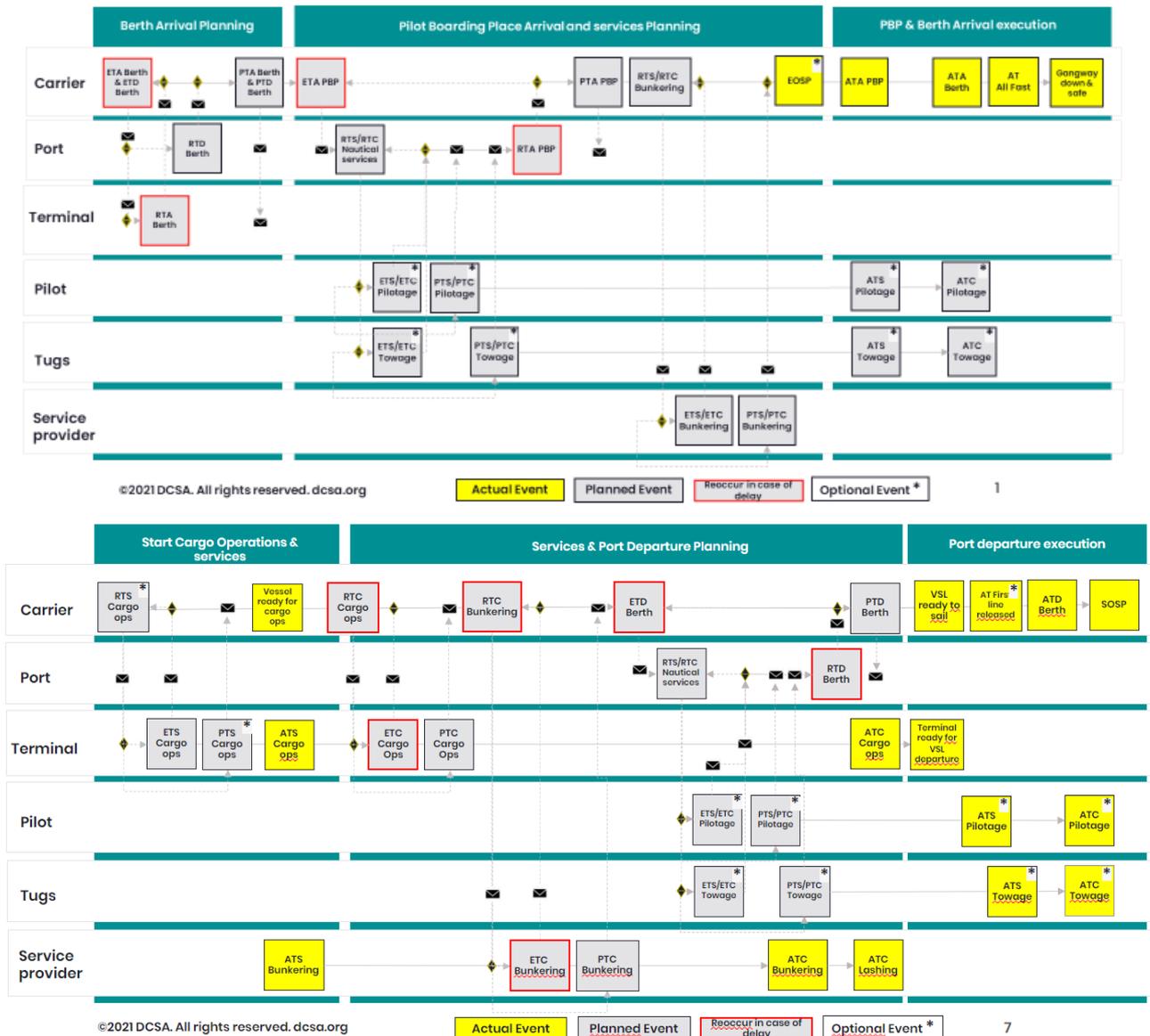


Figure 1: End to end port call process

The detailed port call process maps are freely available from the DCSA website.

Introducing standardised port call timestamps will assist in alleviating supply chain bottlenecks and port congestion, and will assist in creating operational transparency that will allow stakeholders to achieve benefits in the following areas:

- Improved port call planning through advance notification of arrival/departure and berth availability will enable vessels to adjust speed ahead of arrival and reduce fuel consumption (in times of congestion).
- Transparency of berth (and yard) planning in terminals (between appropriate stakeholders) will allow service providers to better plan gangs and assets to improve overall utilisation and reduce waiting time.

- By measuring the same timestamps in all ports, it will be possible to compare best practices for the benefit of all, not least of which are end customers who should see marked improvement in cargo delivery and release processes.

The benefits to the industry can ultimately be quantified in reduced GHG emissions from a reduction of bunker consumption. A study by DCSA estimates that more than 4 Mn Tons of CO₂ can be saved per year by improving port call efficiency. This is equal to 2% of the total emissions of the container shipping industry² and comparable to the total annual CO₂ emission of a smaller country in the EU.

3 The port call process and key data definitions

The foundation for creating operational transparency is to use a common language and definitions for expressing timestamps. As such, the definitions for the 50 timestamps outlined below are aligned with IMO and IHO terminology. For context, the high-level port call negotiation process is described below.

- **Estimated:** When an entity expects to arrive, depart, commence, or complete a service or operation. For example: a carrier provides the terminal operator with an estimate of when it will arrive at berth.
- **Requested:** When the receiving party requests a service to take place at a specific time. For example: a terminal operator requests a carrier to change its Time of Arrival due to a delay at berth of a previous vessel.
- **Planned:** The confirmation of the requested time by the sending entity. For example: when a carrier confirms the Requested Time of Arrival at berth from the terminal.
- **Actual:** The actual execution of the planned event. For example: arrival Pilot Boarding Place.

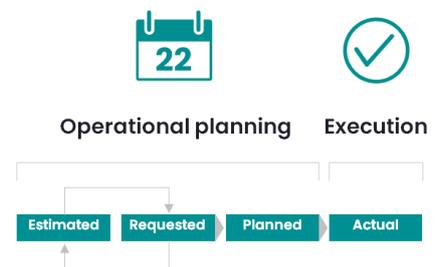


Figure 5: Planning and execution

The planning and execution of an event always follows this same sequence, in which several instances of the estimated, requested, and planned times can occur if a new estimated or requested time is given after the initially planned time. It is understood that some timestamps do not need the E/R/P/A sequence, as they are informative timestamps and reflect actuals only, e.g., vessel readiness for cargo operations.

3.1 Data definitions of the timestamps

DCSA created data definitions for 29 planning events and 21 actual event timestamps. Each data definition consists of the following data elements:

Element	Explanation
[Date/Time]	- A date/time indicator for the arrival/departure or the start/completion of a service. For example: estimated, requested, planned, actual, and start or completion

² Source: 4th IMO GHG emission study 2020

[Facility/Service]	- A location specifying the arrival, departure or type of service. For example: Pilot Boarding Place or Pilotage
[Data owner]	- The entity that owns and is accountable for data related to a planning or execution event. For example: carrier, terminal, or port authority.
[Port call phase]	- The different phases of a port call. For example: the inbound phase, the alongside phase, the shifting phase and the outbound phase.
[Timing measurement]	- A trigger event for a measurement. For example: 48 hours upfront for the first ETA Berth, and 'first line ashore' for the arrival at berth.

3.2 Port call timestamp definitions

These data elements combined with the data owners and definitions comprise following overview.

#	Timestamp [Date/Time & Facility/Service]	Data Owner	Port call phase	Data definition	Timing measurement
1	Estimated Time of Arrival Berth (ETA Berth)	Carrier	Inbound	The date/time a vessel estimates it will arrive at berth	Whenever ETA Berth is communicated, starting at departure of the previous berth
2	Requested Time of Arrival Berth (RTA Berth)	Terminal operator	Inbound	The date/time a vessel is requested to arrive at berth	Whenever RTA Berth is communicated
3	Planned Time of Arrival Berth (PTA Berth)	Carrier	Inbound	The date/time a vessel confirms the planned arrival at berth	Whenever PTA Berth is communicated
4	Estimated Time of Arrival Pilot Boarding Place (ETA PBP)	Carrier	Inbound	The date/time a vessel estimates it will arrive at Pilot Boarding Place	Whenever ETA PBP is communicated, starting after PTA Berth is received
5	Requested Time Towage service (RTS Towage)	Port Authority	Inbound	The date and time a Port Authority requests a towage service provider to attend to the vessel	Whenever RTS Towage is communicated

#	Timestamp [Date/Time & Facility/Service]	Data Owner	Port call phase	Data definition	Timing measurement
6	Planned Time Start Towage service (PTS Towage)	Tugs	Inbound	The date/time a towage service provider confirms to attend to the vessel	Whenever PTS Towage is communicated
7	Requested Time Start Pilotage service (RTS Pilotage)	Port Authority	Inbound	The date/time a carrier requests a pilotage service provider to attend to the vessel	Whenever RTS Pilotage is communicated
8	Planned Time Start Pilotage service (PTS Pilotage)	Pilot	Inbound	The date/time a pilotage service provider confirms to attend to the vessel	Whenever PTS Pilotage is communicated
9	Requested Time of Arrival Pilot Boarding Place (RTA PBP)	Port authority	Inbound	The date/time a vessel is requested to arrive at Pilot Boarding Place	Whenever RTA PBP is communicated
10	Planned Time of Arrival Pilot Boarding Place (PTA PBP)	Carrier	Inbound	The date/time a vessel confirms arrival at Pilot Boarding Place	Whenever PTA PBP is communicated
11	End Of Sea Passage EOSP	Carrier	Inbound	The date/time and location the vessel declares the voyage (sea passage) has ended or reached the restricted navigation area within the outer port limits as locally defined and declares readiness to proceed to the port.	When the captain declares EOSP. Vessel position/coordinates required
12	Actual Time of Arrival Pilot Boarding Place (ATA PBP)	Carrier	Inbound	The date/time a vessel arrives at Pilot Boarding Place	Arrival Pilot Boarding Place
13	Actual Time Start Pilotage service (ATS Pilotage)	Pilot	Inbound	The date/time a pilotage service provider starts attendance to the vessel	When the pilot boards the vessel upon arrival at the pilot boarding place
14	Actual Time Start Towage service (ATS Towage)	Tugs	Inbound	The date/time a towage service provider starts attendance to the vessel	First Tug connected or standing by the vessel
15	Actual Time Completion Towage service (ATC Towage)	Tugs	Inbound	The date/time when the last tug has been released from the vessel	Last Tug disconnected or released by the vessel
16	Actual Time of Arrival Berth (ATA Berth)	Carrier	Alongside	The date/time a vessel arrives at berth	First Line Ashore

#	Timestamp [Date/Time & Facility/Service]	Data Owner	Port call phase	Data definition	Timing measurement
17	Actual Time All Fast (AT All fast)	Carrier	Alongside	Actual time the last line on bollard, mooring is completed, and the vessel is completely tied to the dock	Last line and the vessel are tied to the dock
18	Gangway Down and Safe	Carrier	Alongside	Actual time gangway is resting on the quay with the safety net fully rigged	Gangway resting on quay and safety net rigged
19	Estimated Time Start Cargo operations (ETS Cargo ops)	Terminal	Alongside	The date/time the terminal operator estimates to start cargo operations	Whenever ETS cargo ops is communicated
20	Requested Time Start Cargo operations (RTS Cargo ops)	Carrier	Alongside	The date/time a carrier requests a terminal operator to start Cargo Operations	Whenever RTS cargo ops is communicated
21	Planned Time Start Cargo operations (PTS Cargo ops)	Terminal	Alongside	The date/time when a terminal operator confirms to start Cargo Operations	Whenever PTS cargo ops is communicated
22	Vessel Readiness for Cargo operations	Carrier	Alongside	Readiness for cargo operations as reported by the vessel to the terminal according to local regulations	Whenever vessel readiness for cargo ops is communicated
23	Actual Time of Start Cargo operations (ATS cargo ops)	Terminal	Alongside	The actual date/time when a terminal starts cargo operations	First commercial lift
24	Estimated Time of Cargo operations Completion (ETC cargo ops)	Terminal	Alongside	The date/time a terminal operator estimates cargo operations will be completed/last commercial lift	Whenever ETC cargo ops is communicated. At minimum 12, 6 and 3 hours before vessel departure
25	Requested Time of Cargo operations Completion (RTC cargo ops)	Carrier	Alongside	The date/time the carrier is requesting to complete cargo operations/last commercial lift	Whenever RTC cargo ops is communicated
26	Planned Time of Cargo operations Completion (PTC cargo ops)	Terminal	Alongside	The date/time the terminal operator plans to complete cargo operations/last commercial lift	Whenever PTC cargo ops is confirmed. First PTC cargo ops shall be communicated at minimum 12 hours before vessel departure

#	Timestamp [Date/Time & Facility/Service]	Data Owner	Port call phase	Data definition	Timing measurement
27	Estimated Time Start Bunkering service (ETS Bunkering)	Service Provider/ Bunkering	Alongside	The date/time a service provider estimates to start bunkering	Whenever ETS Bunkering is communicated
28	Requested Time Start Bunkering service (RTS Bunkering)	Carrier	Alongside	The date/time a ship requests a service provider to start bunkering	Whenever RTS Bunkering is communicated
29	Planned Time Start Bunkering service (PTS Bunkering)	Service Provider/ Bunkering	Alongside	The date/time a service provider confirms to start bunkering	Whenever PTS Bunkering is communicated
30	Estimated Time Completion Bunkering service (ETC Bunkering)	Service Provider/ Bunkering	Alongside	The date and time a service provider estimates bunkering will be completed	Whenever ETC Bunkering is communicated
31	Requested Time Completion Bunkering service (RTC Bunkering)	Carrier	Alongside	The date/time a ship requests a service provider to complete bunkering	Whenever RTC Bunkering is communicated
32	Planned Time Completion Bunkering service (PTC Bunkering)	Service Provider/ Bunkering	Alongside	The date/time a service provider confirms to complete bunkering	Whenever PTC Bunkering is communicated
33	Actual Time Start Bunkering service (ATS Bunkering)	Service Provider/ Bunkering	Alongside	The date/time a service provider starts bunkering	Bunkering hose is connected
34	Estimated Time of Departure Berth (ETD Berth)	Carrier	Alongside	The date/time when a vessel estimates it will depart from berth	Whenever ETD Berth is communicated
35	Requested Time of Departure Berth (RTD Berth)	Port authority	Alongside	The date/time when a vessel is requested to depart from berth	Whenever an RTD Berth is communicated
36	Planned Time of Departure Berth (PTD Berth)	Carrier	Alongside	The date/time when a vessel confirms to depart from berth	Whenever PTD Berth is communicated
37	Requested Time Towage service (RTS Towage)	Port authority	Outbound /Shifting	The date/time a Port Authority requests a towage service provider to attend to the vessel	Whenever RTS Towage is communicated
38	Planned Time Start Towage service (PTS Towage)	Tugs	Outbound /Shifting	The date/time a towage service provider confirms to attend to the vessel	Whenever PTS Towage outbound is communicated

#	Timestamp [Date/Time & Facility/Service]	Data Owner	Port call phase	Data definition	Timing measurement
39	Requested Time Start Pilotage service (RTS Pilotage)	Port authority	Outbound /Shifting	The date/time a Port Authority requests a pilotage service provider to attend to the vessel (pilot on board)	Whenever RTS Pilotage outbound is communicated
40	Planned Time Start Pilotage service (PTS Pilotage)	Pilot	Outbound /Shifting	The date/time a pilotage service provider confirms to attend to the vessel	Whenever PTS Towage outbound is communicated
41	Actual Time Completion Bunkering service (ATC Bunkering)	Service Provider/ Bunkering	Alongside	The date/time a service provider completes bunkering	Bunkering hose is disconnected
42	Actual Time of Completion Cargo operations (ATC cargo ops)	Terminal	Alongside	The actual date/time the terminal operator completes cargo operations	Last commercial lift
43	Terminal ready for vessel departure	Terminal	Alongside	1.) Actual time the quay cranes are in the correct position for the ship to sail and terminal is ready for the safe departure of the vessel and 2.) Actual time the terminal is ready to unberth vessel in a safe manner and there are no obstacles remaining at the quay	Whenever Terminal ready for vessel departure is communicated
44	Actual Time Completion Lashing service (ATC Lashing)	Service Provider/ Lashing	Alongside	The date/time a service provider completes lashing	Last lineman disembarks the vessel
45	Vessel ready to sail	Carrier	Alongside	Vessel readiness for safe departure as reported by the vessel	Whenever Vessel ready to sail is communicated
46	Actual Time Start Pilotage service (ATS Pilotage)	Pilot	Outbound /Shifting	The date/time a pilotage service provider starts attendance to the vessel	When the pilot boards the vessel before departure berth
47	Actual Time Start Towage service (ATS Towage)	Tugs	Outbound /Shifting	The date/time a towage service provider starts attendance to the vessel by connecting or standing by the vessel	First Tug connected or standing by the vessel for departure
48	Actual Time of Departure Berth (ATD berth)	Carrier	Outbound	The date/time a vessel departs from berth	Last mooring line has been released

#	Timestamp [Date/Time & Facility/Service]	Data Owner	Port call phase	Data definition	Timing measurement
49	Actual Time Completion Pilotage service (ATC Pilotage)	Pilot	Outbound / Shifting	The date/time a pilotage service provider completes attendance to the vessel and a pilot is safely disembarked	When the pilot disembarks the vessel after departure
50	Start Of Sea Passage (SOSP)	Carrier	Outbound	The time and the location when the vessel declares the voyage has begun (sea passage) or left the restricted navigation area within the outer port limits as locally defined	When the captain declares SOSP. Vessel position/coordinates required

3.3 Information model, Interface standards & API specifications

The third building block of the port call framework consists of four elements that enable the data standards:

- DCSA Information model, as part of DCSA IM 3.2, describes new data attributes and how they relate to other operational data.
- DCSA JIT Timestamp Interface standards outline the relevant data attributes of each timestamp and explain, in a technology-agnostic manner how (and in what sequence) timestamps should be reported (technically).
- DCSA JIT Timestamp API specifications.
- DCSA JIT Timestamp reference implementation.

The DCSA Information Model and the Interface Standards can be found on [DCSA.org](https://dcsa.org). The API specifications can be found on Swagger Hub and the reference implementation is freely available on GitHub.

4 The continued journey towards JIT port calls

The initial work on definitions and processes to create a port call framework that enables JIT port calls in container shipping is now completed.

DCSA intends to continue to collaborate with key industry stakeholders to drive adoption of JIT port call standards. We have an active and ongoing dialogue with a number of stakeholders and will continue to contribute to the broader industry forums where deemed mutually beneficial.

4.1 Stakeholders

DCSA is collaborating with various stakeholders on topics regarding port call standardisation that are relevant to them, as follows:

1. **Port Authorities and associations** to ensure:
 - Adoption by pilots, tugs, and linesmen as well as other service providers
 - Implementation in relevant local Port community systems
 - Agreement on standardised system integration design where possible

2. **Global Terminal Operators** to ensure:
 - Timestamps are reported as intended and, as such, deliver transparency, benchmarking capabilities, and shared benefits to all parties.
 - Standardised integration with Terminal operating systems (TOS) where possible

3. **IT solution providers that support port calls** to ensure:
 - Standards are incorporated into solution offerings, interoperability is supported natively, and integration is as cost-effective as possible (preferably using open-source standards).

4. **Industry standardisation bodies** such as (not exhaustive):
 - IMO (including IHO and IALA)
 - ITPCO
 - TIC 4.0
 - IPCSA
 - IAPH
 - BIMCO

The aim is to drive Semantic interoperability i.e., alignment on terms and definitions and technical interoperability and alignment of information/reference data models.

4.2 Call to action

Having a common language is the foundation for enabling the standardisation of message exchange globally while taking local contexts into consideration. Standardised data measurement is the key to enabling continuous collaboration to achieve operational

transparency and JIT port calls with the ultimate aim of reducing emissions for the benefit of our planet.

DCSA invites all stakeholders to participate in the JIT port call journey by signing up to our project via [DCSA.org/contact](https://dcsa.org/contact). We also encourage feedback from all industry stakeholders already working on port call optimisation or those who have ideas about digitalising and standardising port calls with the aim of achieving operational transparency for the benefit of all stakeholders.