Global Industry Alliance to Support Low Carbon Shipping

Summary of Discussions:
Roundtable on “Tackling operational barriers to the Just-In-Time Operation of Ships”

31 January 2019, IMO HQ
Presentation overview

- Objectives of the Global Industry Alliance to Support Low Carbon Shipping (GIA)
- First JIT roundtable: Feedback of findings
- Second JIT roundtable: Tackling operational barriers to JIT
- Next steps...
Objectives of the GIA

- Officially launched in June 2017
Objectives of the GIA

Finding solutions for low carbon shipping:
- Support tackling existing barriers towards decarbonizing the shipping sector
- Through implementation of selected projects (within scope of 5 priority areas)

- Initiate pilot projects, promote R & D
- Initiate industry fora and information exchange activities
- Showcase positive initiatives by maritime sector
- Develop capacity-building tools
Objectives of the GIA
Objectives of the GIA

- Technical expertise / data provided in-kind (GIA Task Force)
- Financial capital through a yearly membership fee (GIA Fund)
- GIA Fund: provides necessary financial resources for implementation of selected projects

GloMEEP Project Coordination Unit:
- Serves as Secretariat for the GIA
Objectives of the GIA

<table>
<thead>
<tr>
<th>No</th>
<th>Activity Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Development of E-learning course on the energy-efficient operation of ships (for seafarers and onshore personnel)</td>
</tr>
<tr>
<td>2</td>
<td>Development of a Protocol for validation of performance of energy efficiency technologies</td>
</tr>
<tr>
<td>3</td>
<td>Development of guide on alternative fuels their potential for shipping and barriers to uptake with a timeline to 2050</td>
</tr>
<tr>
<td>4</td>
<td>Idea generation workshops - Workshops to facilitate brainstorming and idea generation for effective collaboration</td>
</tr>
<tr>
<td>5</td>
<td>Development of study on Just-In-Time Operation of ships - solutions for different shipping sectors</td>
</tr>
</tbody>
</table>
First JIT roundtable: Feedback of findings

- What is JIT Arrivals?
- Why JIT Arrivals?
- Identification of barriers
- Identification of solutions
- Conclusions

Outcome of roundtable (29 June 2018) reported to MEPC 73 and can be downloaded: https://glomeep.imo.org/global-industry-alliance/gia-resources/
What is JIT Arrival?

JIT = maintaining the most efficient ship operating speed to arrive at Pilot Boarding Place when:

- Berth
- Fairway
- Nautical services (pilots, tugs, linemen)

are ready
What is JIT Arrivals?

- In-kind contribution of data and analysis by MarineTraffic
- Data timeframe: 1/7/2017 – 15/7/2018, ships ≥ 1000 GT
- Waiting time at anchorage includes only those ships that immediately afterwards called the port

<table>
<thead>
<tr>
<th></th>
<th>Time at anchorage</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTAINER</td>
<td>4.96%</td>
</tr>
<tr>
<td>DRY BULK</td>
<td>8.42%</td>
</tr>
<tr>
<td>WET BULK</td>
<td>10.34%</td>
</tr>
</tbody>
</table>
Why JIT Arrivals?

Absolute emissions reduction:

- Per voyage
- At anchorage due to reduced waiting time (at anchor ships still use auxiliary engines and boilers)
## Why JIT Arrivals?

<table>
<thead>
<tr>
<th>SHIP (CONTAINER ONLY)</th>
<th>PORT (ALL SHIPS)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CO₂ reduction due to speed reduction last 12 hrs</strong></td>
<td><strong>CO₂ reduction at anchorage due to 12 hours less anchor time</strong></td>
</tr>
<tr>
<td>4%  ↓</td>
<td>35%  ↓</td>
</tr>
<tr>
<td>134,000 tonnes/year</td>
<td>188,000 tonnes/ year</td>
</tr>
</tbody>
</table>

→ A 12 hour window can already reduce emissions

Data: Port of Rotterdam (2017-2018). Analysis: [TNO](https://www.tno.nl) Analysis based on 6663 container vessels port calls
Why JIT Arrivals?

Additional advantages:

- **Personal safety** (Improved rest hour planning of crew on-board, as per MLC)
- **Navigation safety** (Reduced traffic/risk of collision close to port entrance)
- **Ports** (Better capacity planning of nautical services and berths)
- **Shippers** (Enhanced supply chain visibility)
Identification of barriers

Port Call Optimization
Lower costs, shorter environment, more reliability and safety for shipping, terminals and ports.
Identification of barriers - contractual

- Today about 70% of all bulk carriers and tankers are contractually obliged to keep a minimum speed.
- Berthing windows may contain commercially sensitive data.

- Today 100% of all container ships can reduce speed contractually.
- Berthing windows do not contain commercially sensitive data.
Identification of barriers - operational

General
- Great number of stakeholders involved
- Lack of communication between service providers, ship, and port authorities
- Communication through ship agents can be delayed (e.g. overnight)

Port Authority
- Current port regulations do not allow ships to update departure times to port authorities (this causes delay in updates)
- Current VTS systems do no allow updates to ships outside VHF range (delay in updates)
Identification of barriers - operational

Nautical services
- Pilots/tugs are globally organized in different ways (not always under the control of port authority). Level of direct control makes it more/less easy to advise ships about exact arrival time.

Cargo services
- No frequent updates (no fixed regime) about completion time.

Vessel services
- No updates of e.g. bunker barges or waste collectors when they will arrive or when they will complete their service.
Identification of solutions

Existing solutions - examples:

- Connectivity between:
  - Ship and ship management for updates of logbook (Maersk)
  - Terminal and ship for updates of completion time of cargo (Port of Rotterdam)
  - Bunker barge and ship for updates of completion time of bunkers (Port of Rotterdam)
  - Ship and Port Authority for departure times (Port of Rotterdam)
  - Port Authority and next ship for updates of pilot boarding place time – beyond the 30 nM range (STM) by e-mail from VTS

- Forcing terminals to provide updates JIT by priority management and notifications re. ETA/ETD of bunker barges and accept RTA as a NOR as a Port Authority (Port of Newcastle)
Identification of solutions

New solutions:

Global app allowing:
- Ships to connect to each port to exchange arrival and departure times.
- Local services to connect to each ship to exchange starting and completion times, and get arrival/departure times.

Global platform allowing:
- Business to business data to remain closed.
- Business to government data to be open under conditions.
- Authorization of access.
- Cyber security.
Conclusions

- JIT - great potential to globally reduce GHG emissions from shipping.
- Additional advantages: navigation safety, crew rest hours, financial, supply chain etc.
- However, existing barriers need to be overcome!

<table>
<thead>
<tr>
<th>Contractually</th>
<th>Operationally</th>
</tr>
</thead>
<tbody>
<tr>
<td>• JIT can start today regarding contracts in certain segments</td>
<td>• JIT must be improved re. communication – even where shipping companies are terminal owners (often separate business units)</td>
</tr>
<tr>
<td>• More experience is needed in invoking contractual JIT clauses</td>
<td>• Early and frequent updates of departure time → early and frequent updates of arrival time</td>
</tr>
</tbody>
</table>
JIT Animation

https://www.youtube.com/watch?v=ioUpqZUNSlg
Focus of this roundtable?

- On those ships that can already reduce speed contractually:
  - 100% of all container shipping
  - 30% of all bulk carriers and tankers

- Technically JIT Arrivals is not a problem. But operationally unreliable/inaccurate data is a major impediment to securing a reliable berthing window.

Goal of discussions:
Which improvements/solutions allow provision of a reliable 12 hours window?

- GIA will hold separate roundtable (Spring 2019) to consider solutions for those ship segments that currently are unable to contractually reduce speed.
# GIA – timeline

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>29/06/2018</td>
<td>Roundtable – Introduction</td>
<td>Identified:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Advantages and disadvantages to JIT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Contractual and operational barriers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Potential solutions for overcoming barriers</td>
</tr>
<tr>
<td>31/01/2019</td>
<td>Roundtable Operational</td>
<td>Goals:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Review operational barriers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Identify operational solutions to enable a reliable 12 hr berthing window</td>
</tr>
<tr>
<td>April-May 2019</td>
<td>Roundtable Contractual</td>
<td>Goals:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Review contractual barriers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Identify contractual solutions to enable a reliable 12 hr berthing window</td>
</tr>
<tr>
<td>June-July 2019</td>
<td>Real JIT demonstration</td>
<td>Goals:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Testing of solutions to enable a reliable 12 hr berthing window</td>
</tr>
<tr>
<td>August – December 2019</td>
<td>Collation of all outcomes</td>
<td>▪ Collation of best practices / experience from JIT trial</td>
</tr>
<tr>
<td>February 2020</td>
<td>MEPC submission</td>
<td>▪ Submission of draft Guide to MEPC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Finalization of development of JIT Guide</td>
</tr>
</tbody>
</table>

- Identify: Advantages and disadvantages to JIT
- Contractual and operational barriers
- Potential solutions for overcoming barriers
- Review operational barriers
- Identify operational solutions to enable a reliable 12 hr berthing window
- Review contractual barriers
- Identify contractual solutions to enable a reliable 12 hr berthing window
- Testing of solutions to enable a reliable 12 hr berthing window
- In the Port of Rotterdam and with GIA members
- Collation of best practices / experience from JIT trial
- Finalization of development of JIT Guide
Second JIT roundtable: Tackling operational barriers to JIT

- Zoom into operational part of the port call business process
- Realize data quality for 12 hour notice
- Next steps to realize global uptake of JIT
Zoom into operational part of the port call business process
Realize data quality for 12 hour notice
Discussion overview

<table>
<thead>
<tr>
<th>DATA</th>
<th>Definition</th>
<th>Which data is required? → Business process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ownership</td>
<td>Who owns which data? → Business process (left-hand column)</td>
<td></td>
</tr>
<tr>
<td>Governance</td>
<td>B2B or B2gov? Is data accessible for the public?</td>
<td></td>
</tr>
<tr>
<td>Enforcement</td>
<td>How is data sharing regulated? Are there relevant codes of conducts or regulations? Otherwise best practice?</td>
<td></td>
</tr>
<tr>
<td>Accuracy</td>
<td>How reliable / accurate is the data? E.g. how much room is there between the expected time of arrival and actual time of arrival?</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>How often is data updated and exchanged?</td>
<td></td>
</tr>
<tr>
<td>Improvements</td>
<td>Are any regulatory gaps? Which solutions can improve reliability/accuracy?</td>
<td></td>
</tr>
</tbody>
</table>
Realize data quality for 12 hour notice

Focus on 6 key events - in the order of importance/priority:

**Departure times**
1. Estimated Time of Completion (ETC) - Terminal
2. Estimated Time of Completion (ETC) - Bunkers
3. Estimated Time of Departure (ETD) Berth
4. Requested Time of Departure (RTD) Berth / Nautical service planning

**Arrival times**
5. Requested Time of Arrival (RTA) Berth
6. Requested Time of Arrival (RTA) Pilot Boarding Place /Nautical service planning
Realize data quality for 12 hour notice
Realize data quality for 12 hour notice

1. Estimated Time of Completion (ETC) - Terminal
   ▪ **Definition**: Date/Time when a service provider estimates the service will be completed
   ▪ **Ownership**: Terminal
   ▪ **Receiver(s)**: Ship, ship agent
   ▪ **Governance**: B2B
   ▪ **Enforcement**: None
   ▪ **Accuracy**: up to 12 hours in advance: ±2.0, up to 9 hours: ±1.5, up to 6 hours: ±1.0, up to 3 hours: ±0.5
   ▪ **Frequency**: Every 8 hours
   ▪ **Improvements**: Narrowing down updates, enforced by COC or by port access priority management
Realize data quality for 12 hour notice

2. Estimated Time of Completion (ETC) - Bunkers

- **Definition**: Date/Time when a Bunker service provider estimates the service will be completed
- **Ownership**: Bunker barge/Bunker operator
- **Receiver(s)**: Ship, ship agent, port authority*, customs*
- **Governance**: B2B (In cases where the bunker operator has to inform the local port authority on completion, B2G)
- **Enforcement**: None for B2B, Port regulations for B2G
- **Accuracy**: No problem (if “Improvements” as set out in the slide below are properly implemented)
- **Frequency**: No guidance now on frequency. Probably closer to the completion time, the more updates will be useful
- **Improvements**: Specified delivery time in purchase contract, use of historical delivery data per vessel to predict ETC, Communication of Requested Time of Departure for planning of bunker operations, Licenses issued by port authority with minimum service requirements, e.g. minimum loading rate requirements; flow meters fitted to all bunker barges to minimize disputes/delays over delivered quantities;

*In some ports only*
Realize data quality for 12 hour notice
Realize data quality for 12 hour notice

3. Estimated Time of Departure (ETD) Berth

- **Definition**: The Date / Time when a vessel estimates it will depart from a specified location
- **Ownership**: Ship, ship agent
- **Receiver(s)**: Port authority, terminal operator*
- **Governance**: B2G
- **Enforcement**: Usually by port regulations
- **Accuracy**: Dependent on accuracy of ETC of all services, clearance by authorities (e.g. customs, immigration etc.)
- **Frequency**: May or may not be specified in port regulations
- **Improvements**: Narrowing down updates between ship and port authority; few ports have agreed with the agents to be in regular contact with the terminal, e.g. every 2 hours plus half an hour before departure. Possibly charge services who delay vessels a fee for the delay

*In some ports only*
Realize data quality for 12 hour notice
Realize data quality for 12 hour notice

4. Requested Time of Departure (RTD) Berth / Nautical service planning

- **Definition**: The Date/Time when a vessel is requested by Port Authority to depart from the Berth
- **Ownership**: Port authority (Harbour Master)
- **Receiver(s)**: Ship, ship agent, service providers, terminal operator
- **Governance**: G2B
- **Enforcement**: Mostly by national law, delegated to local authorities
- **Accuracy**: Dependent on accuracy of ETD, availability of tugs and pilots and accurate tidal and wind predictions
- **Frequency**: Today only common in port with JIT procedure or e.g. locks
- **Improvements**: Clarification and identical understanding of the RTD timestamp and how it should be communicated
Realize data quality for 12 hour notice

Arrival times
5. Requested Time of Arrival (RTA) Berth
6. Requested Time of Arrival (RTA) Pilot Boarding Place /Nautical service planning
Realize data quality for 12 hour notice
Realize data quality for 12 hour notice

5. Requested Time of Arrival (RTA) Berth

- **Definition**: The Date/Time when a vessel is requested by terminal operator to arrive at the Berth
- **Ownership**: Terminal operator
- **Receiver(s)**: Ship Captain, ship agent
- **Governance**: B2B
- **Enforcement**: No obligation of communication updates from terminal to ship (only ship to terminal)
- **Accuracy**: Accuracy of departure time should be identical to the arrival time
- **Frequency**: The update frequency of the departing ship must be linked to the updates of the next ship
- **Improvements**: Improvements of the RTA Berth can be made when the departure time from the berth will be improved. Also by increasing the update frequency to the incoming vessel.
Realize data quality for 12 hour notice
Realize data quality for 12 hour notice

6. Requested Time of Arrival (RTA) Pilot Boarding Place/Nautical service planning

- **Definition:** The Date/Time when a vessel is requested by Port Authority to arrive at the Pilot Boarding Place
- **Ownership:** Port authority/Harbour Master
- **Receiver(s):** Ship, ship agent, service providers
- **Governance:** G2B
- **Enforcement:** by national law or in local port regulations
- **Accuracy:** Influenced by berth planning by the terminal (RTA Berth) and the availability of fairway, tugs and pilots and accuracy of tidal and wind predictions
- **Frequency:** Today only common in ports with JIT procedure or e.g. locks
- **Improvements:** Improving the predictability and planning of nautical services such as pilots and tugs (e.g. communication of correct number of tugs required, consideration of weather conditions etc.)
Next steps...

GIA will:

- Hold additional roundtable to identify **contractual** solutions to allow a ship to arrive at the 12 hr berthing window.
- Extract best practices / solutions from roundtables and feed into the development of JIT Guide.
- Submit to ISWG-GHG 5 / MEPC proposal for the development of JIT Guide.

Encourage globally the implementation of real JIT Trials:

- Test identified solutions and gather experience / best practice on JIT arrivals.
- GIA to support interested ports in the selection of partners for JIT trial.