IoT Standards – Release 1, Gateway Connectivity Interfaces

DCSA webinar for container shipping

June 2020
Henning Schleyerbach
COO of DCSA
Agenda

- Welcome (3 min)
- Industry trends towards IoT - Release 1 scope (15 min)
- Use Cases & Gateway Connectivity Interface Standards (15 min)
- Coming Releases, Q&A (10 min)
Digital Container Shipping Association at a glance

Founded in 2019, HQ in Amsterdam

To enable system interoperability through open source standards

Vendor neutral

Non-profit

Members represent 70% of global container trade
Marcel van de Pol
Program Director of DCSA
Container shipping needs standardised end-to-end information flows

IoT is key to improve E2E visibility on containers

Interoperability between IoT solutions is lacking, hindering adoption

Industry wide adoption of IoT requires digital standards
Objectives of DCSA’s IoT digital standards

- Seamless digital interoperability through standards
- Simplify data sharing across the industry throughout the container’s journey
- Enable evolving/expanding use cases based on standards
- Reduce risk of investments in IoT
Key terms and scope

**IoT Gateway**
Physical device that is deployed on a specific area and acts as a connectivity intermediary between multiple IoT devices, IoT internet platforms and/or local systems.

**Container IoT device**
Device installed on the container that establishes communication between the container, internet, gateways, other IoT devices and/or sensors placed in the perimeter or inside of the container.
Release 1 of IoT standards

Use Cases & Gateway connectivity interfaces standards
IoT use case groups

1. Reefer container sensor & other data monitoring, tracking and remote control

2. Dry container sensor data monitoring and tracking

3. Automatic electronic container registration
UC 1&2 – gateways in the container journey

1. Reefer container sensor & other data monitoring, tracking and remote control

2. Dry container sensor data monitoring and tracking

GWs on vessels: GW that enables smart containers’ connectivity on the vessel

GWs on land locations: GW that enables smart containers’ connectivity in static and moving environments (e.g. barge, trains, trucks) on land
UC 3 – gateways in the container journey

3. Automatic Electronic Container Registration

GWs at event location: GW that enables the automatic ID registration of containers passing through key locations

Handheld GWs: GW that enables automatic ID registration of containers by operational teams using mobile handheld devices
## Standards interfaces summary

<table>
<thead>
<tr>
<th>Use case groups</th>
<th>Where</th>
<th>Functionality</th>
<th>Gateways types</th>
<th>Internal radio interface(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group 1</strong></td>
<td>At sea</td>
<td>On vessel connectivity</td>
<td>Gateways on vessels</td>
<td>• Cellular (2G, 4G, LTE-M, NB-IoT)</td>
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<tr>
<td>Reefer container sensor &amp; other data monitoring, tracking and remote control</td>
<td>On land</td>
<td>On land connectivity</td>
<td>Gateways on land locations</td>
<td>• LoRaWAN (sub-GHz ISM bands)</td>
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<tr>
<td><strong>Group 2</strong></td>
<td></td>
<td></td>
<td></td>
<td>• Bluetooth (2,4 GHz ISM band)</td>
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<tr>
<td>Dry container sensor data monitoring and tracking</td>
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<td></td>
<td>• LoRaWAN (sub-GHz ISM bands)</td>
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<td>• Bluetooth (2,4 GHz ISM band)</td>
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<tr>
<td><strong>Group 3</strong></td>
<td></td>
<td>Event based connectivity</td>
<td>Gateways at event locations</td>
<td>• RFID (UHF ISM bands)</td>
</tr>
<tr>
<td>Automatic electronic container registration</td>
<td></td>
<td>Operational support</td>
<td>Handheld gateways</td>
<td>• NFC (13,56 MHz ISM band)</td>
</tr>
</tbody>
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Planned releases for DCSA IoT stream

Release 1
Q2 2020
Gateway connectivity interfaces standards

Release 2
Q4 2020
Extend communication protocol layers, data structure and handling requirements

Release 3
Q2 2021
Physical and software security minimum requirements for IoT devices
We’d love to get your feedback!

How can you contribute & engage?

**Publications**
On our website (DCSA.org) you will find the publications under ‘initiatives’

**Feedback**
Reviewing the materials allows you to give feedback through the ‘Usersnap’ feature

**Survey**
We will follow up with you on this webinar with a survey on the publication
We hope you will take a few minutes to share your feedback

**Engage**
The survey lets you register for our reference user group. Your ongoing collaboration with DCSA ensures we focus on the right work
Thank you