Asia-Pacific Model E-port Network Visualisation of Sea Freight Logistics

Phase 1 – Findings & Recommendations

Part Ⅱ

3. Project Overview

Project Methodology & Approach

The methodology adopted for the project was aligned to enable both shippers and logistics operators to share information and documents with operators and administrators of other ports and be aware of the events and incidents/delays taking place elsewhere, to obtain visibility of traffic flows "end-to-end".

| Confirm Sea Freight Import and Export Process | Identify and agree on key events | Develop draft GS1 Global Data Standards | Pilot draft GS1 Global Data Standards | Develop final GS1 Global Data Standard and processes | Pilot outcomes & recommendations report |

Project Objectives

- Develop comprehensive GS1 Global Data Standards to support the exchange of critical Sea Freight data between ports and other key process stakeholders including Freight Forwarders, Cargo Owners, Transport and Logistics providers and Government Agencies;

- Test these GS1 Global Data Standards using a purpose-built testing platform – GS1 Hong Kong's ezTrack;

- Deliver all project activities to project timelines;

- Based on successful pilot outcomes, develop recommendations for APMEN regarding the use and implementation of GS1 Global Data Standards for e-Port Visibility; and

- End of pilot report including process, gaps, and final GS1 Global Data Standards. Based on successful pilot outcomes, the report will include recommendations for APMEN regarding the use and implementation of GS1 Global Data Standards for e-port visibility.

High Level Scope

In Scope

- Develop global data standards for ePort data exchange based on GS1 Global Data Standards

- Leverage existing standards (where possible) already in use

- Identification of critical import and export events that would trigger data exchange between ports

- Manual capture of event data (no back end integration)

- A single platform to capture and share event data for all 3 ports (ezTrack)

- Seven (7) week data capture period to capture event data for 46 containers between participating ports ensuring that there is sufficient data to test the hypothesis

- Identification of potential benefits and constraints

- Development of recommendations for future phases

- Project management

Out of scope

- Project participants outside the 3 participating ports and GS1 teams

- Automatic Data capture technology for physical supply chain movements (i.e. barcodes, RFID, etc)

- Modifications to the ezTrack to deliver additional query, display, report and integration functionality.

- Build of a production EPCIS platform / solution to deliver similar capability as defined during this project

- Changes to participant processes or system capabilities

- System integration for event data

- Quantification of economic benefits beyond high level observation.

Project Tasks

The following tasks were completed during the set-up and execution of the Phase 1 pilot:

- Configure the GS1 EPCIS Sandpit and set-up user accounts

- Conduct the proof of concept pilot and manage stakeholder contributions

- Track project progress

- Provide project updates and feedback

- Contribute to the interim report

- Propose recommendations at the end of Phase 1

- Write-up and submit the interim report.

Timelines

Following a design phase that was completed between the months of March to June in 2018, the project then moved into a testing phase which began early September. This pilot phase was then run over a three-month period from September to November 2018.

Pilot Planning Sept	→	Data Capture Sept 10 to Oct 29	→	Report preparation November
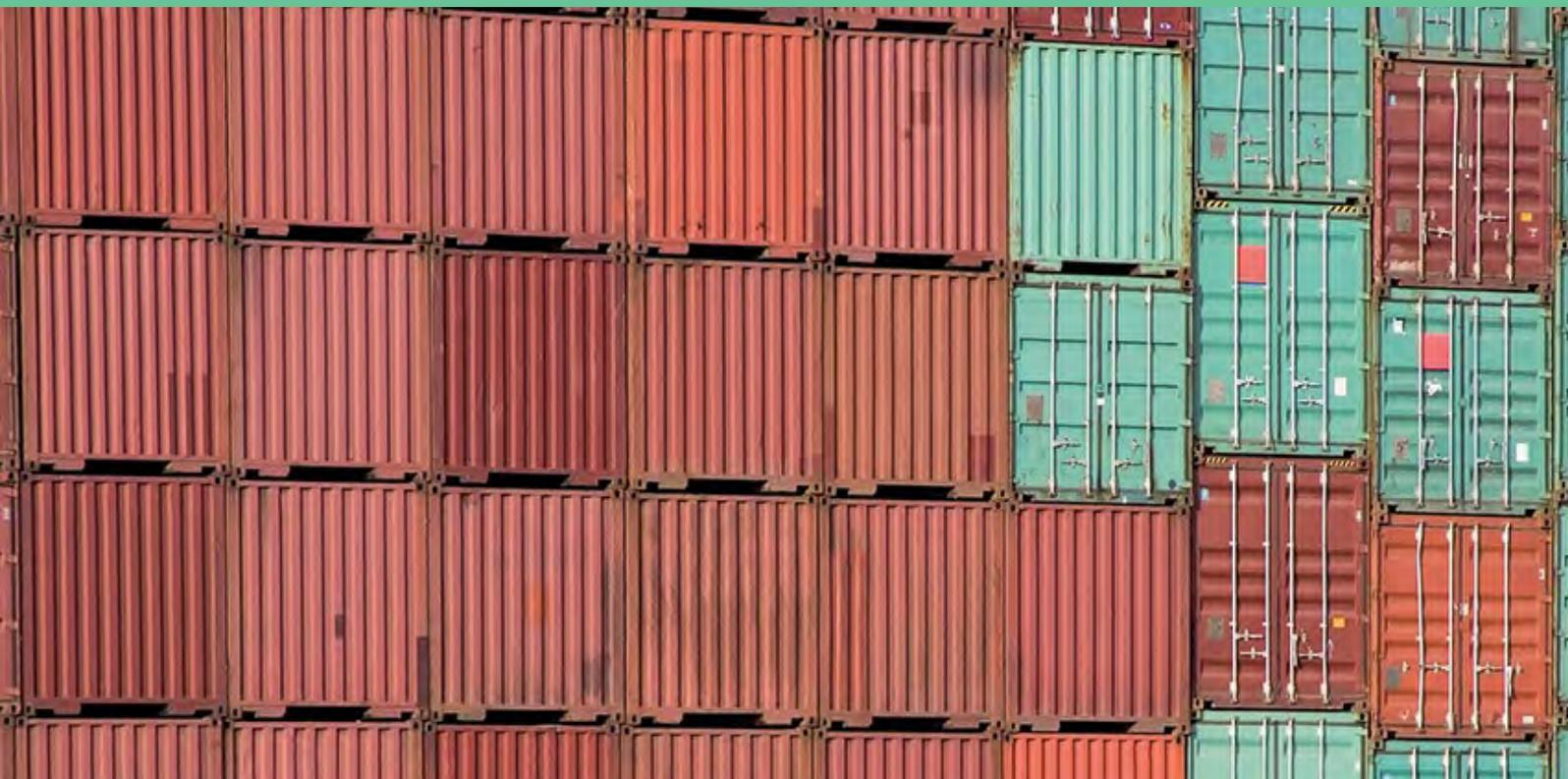
Process Flows

The project implemented a basic process flow that enabled participants to capture four export and four import events and record these in the GS1 EPCIS Sandpit. For specific details please refer to Appendix A: Events&Data Definitions.

Data Capture & Queries

Phase 1 required the manual data capture of sea freight export and import events into the GS1 EPCIS Sandpit, and the sharing of vessel and container movement data between ports and other key process stakeholders, via reporting queries.

Specific containers were identified to be travelling between the three ports and these container ID's were shared with group.

Three simple data queries were configured and made available to participants. These were used mainly to identify missing information or to highlight where event data had not been captured.

Acknowledgments

This APMEN Visualisation of Sea Freight Logistics Phase I Pilot would not have successfully met its objectives without the positive engagement and contribution from the following stakeholder organisations working well together:

- APMEN Operational Centre
- NSW Ports
- DP World
- Shanghai E-port
- Xiamen E-port
- GS1 Australia
- GS1 China
- GS1 Hong Kong

We would further like to acknowledge the support of GS1 Hong Kong who provided the underlying technology platform of the EPCIS Sandpit – GS1HK ezTrack.

4. Findings and Observations

Issues

Several issues were encountered during the pilot, such as:

a. Lack of resource availability during the period of the pilot in and around the China National Holiday week, which caused a slippage of about a week

b. Initial lack of skills of how to use the GS1 EPCIS Sandpit. This was subsequently overcome with the provision of a guide document to assist users and to improve competency through additional training

c. Minor enhancements to improve the sandpit's query functionality and drop-down list options were requested and subsequently addressed

d. Limitations of E-Port systems as a source of complete end-to-end vessel and container movement information, and lack of interoperability with local Customs Systems presented some delay in identifying and managing the source data for subsequent data capture

e. Variations in the export and import processes between the various ports, at the detailed levels of these processes

f. Variations in documentation, codification and terminology used at each port

g. Communication during meetings consistently required language translation between English and Mandarin.

These issues need to be considered in any further developments for cross border trade.

Observations

Participants were requested to provide feedback on a range of areas regarding the Phase 1 pilot project ranging from a review of the process steps through to future requirements and recommendations. This section provides a summary of the feedback received.

Process Steps

• The process steps were a good fit for planned container movements between the three ports. At the time of design, the group did not want to include events for trans-shipments, however these did occur and provision for these should be included in the next phase of the project.

• Tracking of empty containers was not in scope but was raised as a potential benefit.

• An additional Customs clearance status was added mid-way through the pilot period to identify Containers where the Customs status was not known.

• Customs related events relied on information being available to the ports. For future phases, direct input from Customs Agencies should be considered for engagement in this process.

• Information of what is packed and shipped in the container would be of great value to the receiving customer/port however information about products and customers would require rigorous security controls which were not in scope for this phase of the pilot.

• During the pilot all activities were data captured manually by the individual port's data capture teams, directly into the EPCIS ezTrack Sandpit over the internet. This was time-consuming, inefficient and also prone to data entry errors. The captured data could then be assessed by the data capture teams to ensure that all processes were performed appropriately at each stage.

Data and definitions

- Field validations were not available on the basic trial ezTrack application, however would be of value to ensure consistent data capture.

- Not all fields were set as "Mandatory". Although this did not cause issues during the pilot phase, it will be critical for future phases and implementations to ensure the correct level of requirement is set.

- Manual data entry of events allowed for events to be entered out of sequence. In an integrated environment this would not be an issue.

Suitability of Data Standards

- The use of the GS1 EPCIS Sandpit encompassing GS1 Global Data Standards has demonstrated, through its "out of the box" functionality and vocabulary, the capability to capture, display, query, retrieve and report on container movements between the ports across the duration of the pilot.

Summary of recommendations to APMEN

Ongoing Collaboration

- The success of the project relied on the cooperation and collaboration of the three major ports with the support of APMEN and the relevant GS1 organisations. This is seen as a critical component for future phases of implementations.

Automated Data Capture

- The Phase 1 pilot project demonstrated that common data standards and event definitions can be applied to capture movements of vessels and containers through major sea ports and this information shared with the participants. The pilot utilised manual data capture for a defined set of container movements and relied on information being made available to the three ports. Whilst this approach was acceptable for the pilot, it would not be a viable option for future phases and live implementations of similar systems.

Recommendations

- The majority of participants recommended to proceed with Phase 2, which would involve with the automated capture of events in distributed-layout system solution.

- Involve more supply chain Stakeholders/Participants such as manufacturer, traders, shipping companies, logistics carriers, terminal operators, supervision authorities at the ports of NSW, Shanghai, Xiamen, etc.

- Additional data attributes and events need to be defined to ensure that all planned and unplanned movements of vessels and containers are captured.

- Explore, via the use of pre-defined queries and detailed analysis, the potential for improving early warning systems, vessel tracking at sea, improved track and trace and the strengthening of regulatory and operational effectiveness.

- The project team also identified that Phase 2 should include a review of security settings and explore how specific attributes can be shared across a wider group and which ones should not be shared.

Roll-Out to other Economies

- The results of the pilot highlight the potential to roll-out a sea freight visibility solution across APEC Economies whereby collaboration and standardisation between governments, industry and private enterprises, can contribute to regional trade facilitation, supply chain connectivity and improved regional trade.

5. Conclusion

The Phase 1 pilot project has successfully demonstrated that common data standards and event definitions can be applied to the capture of vessels and container movements through major sea ports and that this information can be shared effectively between participants.

The project successfully captured movements for both containers and vessels between the ports of NSW, Shanghai and Xiamen in a central database configured for the pilot. Select containers were identified and data manually captured by each Port.

The success of the project relied on the cooperation and collaboration of the three major ports with the support of APMEN and the relevant GS1 organisations. This is seen as a critical component for future phases of implementations.

Whilst this approach was acceptable for the pilot, it would not be a viable option for future phases and live implementations of similar systems.

Project participants provided insights into potential benefits, and particularly that the sharing of data and events would deliver:

• Implementation of early warning systems

• Visibility of vessel location and status

• Improved track and trace

• Strengthening regulatory and operational effectiveness

The project team also identified that additional data attributes and events need to be defined to ensure that all planned and unplanned movements of vessels and containers is captured. A review of security settings and how specific attributes are to be shared across a wider group and which ones should not be shared should also be considered.

Furthermore, a strategy for system implementation is needed, one which is based on the required data standards and considerations regarding the development and implementation of secure data exchanges in a cross-border supply chain environment.

The major recommendations of this reports for continuing for phase 2 of this project:

• Due to the data sovereignty and security concern, the events capturing will be designed in automated configuration and with distributed-layout repository solution.

• Involve more supply chain Stakeholders/Participants such as manufacturer, traders, shipping companies, logistics carriers, terminal operators, supervision authorities at the ports of NSW, Shanghai, Xiamen, etc.

About APMEN

Asia-Pacific Model E-Port Network (APMEN) was launched at the 22nd APEC Economic Leaders Meeting (AELM) in November 2014, as a regional cooperation initiative to promote trade facilitation and supply chain connectivity. In August 2015, APMEN Operational Center (AOC) was set up in Shanghai. So far, APMEN has 19 members from 11 APEC economies. Since its establishment, APMEN has been endeavoring to establish an information sharing network and cooperation platform with public and private stakeholders, with a view to catalyzing trade facilitation and supply chain connectivity.

For more information about APMEN please visit **www.apmenet.org**

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About GS1 Australia

GS1 is a neutral, not-for-profit organisation that develops and maintains the most widely used global standards for efficient business communication. We are best known for the barcode, named by the BBC as one of "the 50 things that made the world economy". GS1 standards and services improve the efficiency, safety and visibility of supply chains across physical and digital channels in 25 sectors. With local Member Organisations in 112 countries, 1.5 million user companies and 6 billion transactions every day, GS1 standards create a common language that supports systems and processes across the globe.

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