Collaboration

Business Transformation In Today's Shipping Landscape

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Cooperation

Varying Degrees of Collaboration between Container Liners









Cooperation **Collaboration Pains**





Pain points arising from multi-communications threads & duplicated functions





Cooperation

A Cooperative & Collaborative IT Platform





With full integrated end to end cooperation process between container liners







CARA 2.0 The Value Unit Exchanged via CARA 2.0

CARA will continue to provide more collaboration between partner lines

CARA 2.0 Key Process & Architecture

Key ROI **One-stop and Smooth Process from Contract to Settlement**

Simplified process and supportive features in CARA enable reduced manual works and traceability/validation in one place

window for cooperation

8

Key ROI Interface with Liner Legacy System

Seamless interface with scheduling, slot allocation settlement module for efficient operation and improved accounting data with partner lines

System connection between partners & liner's legacy system modules via CARA

Key ROI Handling Load List (as a the evidence of loading)

95% of Sample Files were parsed successfully. 5% of load-list files unusable because: Missing VVD,/POL/Weight/Void Slot, double entries in PDF format

- **1. Target** Parsing loading data from loading list which a backup data for settlement
- 2. Handling Process

3. Technology

- Matching Pattern
- Image / Language Model ML

Parsing loading data from loading list which is provided by terminal / partner lines to be used as

Key ROI Handling Baplie Files

Keep improving the accuracy of baplie file through compounded code conversion rules. Baplie Handling (2018~): The ratio of success is being increased to 91.7% in 2019

17% 16% 15% 14% 13% 12% 11% 10% 9% 8% 7% 6% 5% 4% 3% 2% 1% 0%

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Key ROI **Benefits of Carrier Orchestra**

Sharing

A

Policy, Contract, Regulation, Instruction

Efficient process – reduced by 39%

No ambiguity

Consensus

Process

Expandability

Supply Chain & Maritime eco-System

Roadmap Roadmap CARA

CARA X More Collaboration in Container Shipping CARA 3.0 C₂T Service **2020 CARA 3.0** Provide collaboration service between carriers and terminals Extend to C2T 2019 **O** CARA 2.0 C₂C Service **O** 2018 **CARA 2.0** Provide cooperation service between carriers and enhance C2C ecosystem CARA 1.5 2017 • VOPC 1.0 C2C System **CARA 1.0 O** 2016 Providing basic service with 'Schedule, IMDG, and OOG'

Extend ecosystem to C2T for the more values between carrier and terminal

Building up structure for carriers' cooperation through experience in field

Roadmap

Degrees of Collaboration

CARA 3.0 Approach to Terminal Productivity

Initiatives for better operation as well as cost reduction through deeper understanding and cooperation with terminal operation. CARA can support the liner's initiative via value creation.

CARA 3.0 **Target Solutions**

Through the planned functionalities in CARA these synergetic features to be realized in 2019.

CARA 3.0 Target Solutions

Collaborative berth planning connected with dynamic schedule management & advanced stowage viewer

Data An Λ Curre

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Vessel Info							
Arrival Berth	201	19-07-28 07:40		Departure Berth	2019-07-29 09:55		
Working Hour	AT	D-ATB(Unberth-Berth)		Last Crane Complete-		Sum of all crane los	st time
Gross Working Hours		026:15	Net Working Hours	Pirst Crane Commence	Lost Time by Crane	000:00	
Gross Crane Hours		129:07	Net Crane Hours	129:07			
Handling Moves	Su ho	m of all crane working urs		Sum of all crane working Sum of all crane lost time	hours-		
Handling Hatch Cover		45	Gear Box	0	Total Handling Moves	3,674	
Productivity							
Terminal	Total Gros	I Handling Moves / s Working Hours		Per Crane	Total Handling Moves / Gross Crane Hours		
Crane Info erminal Working Time 2019	-07-28 08:11 20	Total Handling Mo 19-07-29 09:53 Net Working Hour	ves / s	Number of Used Crane 6	Total H Average Nur Net Cr	Handling Moves / ane Hours	
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4	POC711	2019-07-28 08:30	2019-07-29 09:06	024-36		740	_

Data Analytics Application – TPFREP Receiving TPFREP from Terminals

by Terminal

							Departure	Berth					
			20	18					2019				
		Q2		Q4			Q1			Q2		Q3	
Port	Terminal name	June	October	November	December	January	February	March	April	Мау	June	July	August
AUADL	FLINDERS PORTS											25.90	
BEANR	PSA - NOORDZEETERMIN							35.37	35.28	38.05	32.18	30.70	31.
CAHAL	2025 FAIRVIEW COVE CO							28.10	30.62				
CAVAN	3891 DELTAPORT GCT			16.70		13.20	12.16	13.51	13.80	16.10	13.40	15.71	14.
CNSHK	CCT (CHIWAN CONTAINER	24.80				21.55	22.69	22.70	21.82	21.07	22.00	22.91	22.
	SCT (SHEKOU CONTAINER					22.06	26.12	24.82	25.53	27.09	25.79	26.37	25.
CNXMN	XICT (XIAMEN INTL CONT							29.20	28.47		25.80	18.33	28
CNYTN	YICT (YANTIAN INTL CONT		28.10		31.17	29.83	31.35	30.66	31.27	31.01	29.98	29.76	30.
DEHAM	CTA (CONTAINER TERMIN				27.13	25.73	25.83	24.42	24.56	26.13	25.55	25.24	25.
	CTB (HHLA CONTAINER TE				25.80	23.32	23.57	21.33	22.13	21.68	23.05	22.50	
FRFOS	EUROFOS TERMINAL						19.20	21.00	21.22	21.26	24.40	23.83	23.
FRLEH	GMP - TERMINAL DE FRA			20.94	18.81	20.70	18.98	19.23	19.58	20.53	20.49	21.36	19.
GBLGP	DP WORLD LONDON GATE				24.60	23.98	21.51	21.45	22.96	22.76	23.49	21.32	20.
GBSOU	DP WORLD SOUTHAMPTON									26.76	30.44	31.70	27.
GRPIR	PIRAEUS CONTAINER TER			23.70	22.43	22.23	24.92	22.34	25.37	24.20	21.70	23.80	21
НКНКС	HIT (HONGKONG INTERN					19.53	16.83	16.49		18.20	29.83	29.85	22
	MODERN TERMINALS LTD								22.30	23.65			
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ITSAI	SALERNO CONTAINER TE					18.97	17.40	17.55	16.25	16.17	16.68	16.37	13
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PACTB					33.25	26.80	27.90	31.45	34.37	25.23	21.50	24.75	24.
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	WWT (WANDO WELCH TE							38.40	33.90	34.33	34.80	36.60	35
USJAX	TRAPAC JACKSONVILLE						27.70	29.75	27.55	27.55	28.45	27.23	26
USLAX	TRAPAC LOS ANGELES						14.20	25.45	19.08	19.80		17.55	18
USNYC	GCT BAYONNE						26.30	28.50	28.15	26.93	26.23	26.93	27
USOAK	TRAPAC OAKLAND					27.00		23.83	24.47	24.79	25.18	25.53	26
USSAV	GARDEN CITY TERMINAL					27.30	26.68	28.07	29.84	29.93	32.05	31.22	30.

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Data Analytics Application – TPFREP Current Performance via TPFREP

Data Analytics Application – Cascade Management

Cascade Management – Optimization with Genetic Algorithm

Genetic Representation

The more fit individuals are stochastically selected from the current population

each individual's genome is modified (recombined and possibly randomly mutated) to form a new generation

Parent Cascading

Crossover/Mutation with tuning parameters (regrouping, colonization-extinction, or migration)

average fitness will have increased

Historical Performance as a factor(s)

a maximum number of generations has been produced, or a satisfactory fitness level has been reached

Data Analytics Application – Cascade Management Simulation Run – 10 populations x 322 Generations

Generation 1 Population 7 Population 8 Population 5 Population 6 Parent Cascading

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Population 9

mutation probability 0.5

Population 6

Population 7

Population 8

x 322

Population 9

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Thank you

