





Creating Baseline Analytics and Automated Reporting for Improved Decision Making in the Maritime Transportation System

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Better visibility leads to better business decisions.



About PortVision

- AIRSIS founded in 1995
- Maritime technology company
- Core competence in software development and remote asset management
 - Satellite-based tracking and reporting
 - We manage assets for: vessels, barges, buoys, trucks, railcars, generators, radio towers
 - Environmental monitoring for Ports
 - Offshore platform management
 - Modular AIRSIS Vision[™] platform
- Launched PortVision in 2006
- 2011 Plimsoll Award Recipient
- PortVision Patent: April 2011 (System and method for harvesting business intelligence from maritime communications)







AIS Broadcast Signal Information

AIS unit broadcasts while underway:

Every 2-10 seconds

- MMSI number
- Navigation status
- Rate of turn
- Speed over ground
- Position accuracy
- Longitude
- Course over ground
- True heading
- Time stamp

Every 6 minutes

- MMSI number
- IMO number
- Radio call sign
- Name of ship
- Type of ship/cargo
- Dimensions of ship
- Location on ship
- Type of position
- Draught of ship
- Destination
- Estimated time of arrival at destination





Underlying Technology - AIS



Network of AIS receivers







Data Source: October 2011, NASA-Space Station Keeps Watch on World's Sea Traffic

pertvision



How and Who uses AIS data

- How: Law enforcement, fishery control campaigns, maritime border control, maritime safety and security issues, marine pollution, search and rescue and anti-piracy
- Data and web-based service used in the USA by USCG, USACE, DHS, MARAD, port authorities, maritime organizations /committees, marine service companies, and all major oil companies
- Maritime enterprise systems based on realtime reporting
 - Business Intelligence
 - Terminals and Dock Management System
 - Fleet Management System
- Industry support with incident response, litigation avoidance, and data-based analysis
- Global coverage....

pertvisi	on							(713) 337-37
		Ves	sel Positio	n Report				into@portvision.co
		Position records for MR EARL - Call sign: VIDAD	2229 beginning 2011	1-10-29 08:50:00 end	ing 2011-10-29 (9:50:00 in loce	i time	
Position Date	Position Time	Position Label	Speed	True Heading	COG Heading	Latitude	Longitude	Event Name
2011-10-29	08:50.09 CDT	1 miles E of Bayport Land Cut	7.1 knots	NIA	84.1 [E]	29.61341	-94.97706	
2011-10-29	08:50:59 CDT	0.92 miles VV of Bayport entrance channel	6.8 knots	NIA	89 (E)	29.61348	-94.97524	
2011-10-29	DB 51;49 CDT	0.83 miles W of Bayport entrance channel	6.8 knots	NA	89.7 (E)	29,61349	-94.97344	
2011-10-29	08 52:39 CDT	0.73 miles W of Bayport entrance channel	6.7 knots	NIA	90.1 (E)	29.61351	-94.97161	
2011-10-29	08:53:19 CDT	0.55 miles W of Bayport entrance channel	6.9 knots	NIA	89.1 [E]	29.61352	-94.97016	
2011-10-29	08:54:09 CDT	0.55 miles W of Bayport entrance channel	6.8 knots	NA	90.4 (E)	29.61354	-94.96835	
2011-10-29	08:54:49 CDT	0.49 miles W of Bayport entrance channel	6.8 knots	NA	86.3 (E)	29.61363	-94.96689	
2011-10-29	08:55:30 CDT	0.41 miles W of Bayport entrance channel	7 knots	NIA	86 (E)	29.61375	-94.96544	
2011-10-29	08:56:19 CDT	At Bayport entrance channel	4.6 knots	NIA	91.1 [E]	29.61381	-94.96393	Passed Bayport entrance channe
2011-10-29	08:57:09 CDT	At Bayport entrance channel	3.5 knots	NIA	96.4 (E)	29.61370	-94.96287	
2011-10-29	08:57:48 CDT	At Bayport entrance channel	3.1 knots	NIA	98.3 (E)	29.61362	-94.96216	
2011-10-29	08 58:29 CDT	At Bayport entrance channel	2.9 knots	N/A	100.4 (E)	29.61354	-94.96154	
2011-10-29	08:59:19 CDT	At Bayport entrance channel	2.8 knots	N/A	98.2 IEI	29.61336	-94.96079	
2011-10-29	09:00:08 CDT	At Bayport entrance channel	3.5 knots	NIA	109.1 IET	29.61322	-94,96009	
2011-10-29	09:00:49 CDT	At Bayport entrance channel	5.1 knots	N/A	99.2 IE1	29.61307	-94 95913	
2011-10-29	09-01-30 CDT	At Bayport entrance channel	4.3 knots	NGA	130.9 (SE)	29.61287	-94 95819	
2011-10-29	09:02:19 CDT	At Bayport entrance channel	5.9 knots	NIA	148.9 [SE]	29.61191	-94.95733	
2011-10-29	09:03:08 CDT	0.3 miles S of Bayport entrance channel	5.4 knote	NIA	151.1 (SE)	29.61077	-94 95657	
2011-10-29	09:02:48 CDT	0.36 miles S of Bayport entrance channel	5.1 knots	NGA	128.9 (SE)	29.60998	-94 95596	
2011-10-29	09.04 S0 CDT	0.4 miles S of Reynort entrance channel	5.9 knote	NIA	140 1 (SEI	29 60934	.04 05524	
2011-10-29	091310 CDT	0.35 miles S of Bayport extrance changel	2.1 knote	NGA	3.1.00	29.61009	-94 95622	
2011-10-29	09-29-17 CDT	2.92 miles SE of Bayport entrance channel	7.2 knots	NIA	144.6 [SE]	29.57437	-94.92843	Departed Port
3011.10.29	00 40 07 CDT	3.02 miles SE of Baunort entrance channel	7 3 knote	NULA	146 3 (SE)	29 57295	.94 92735	reasons, reasons
2011-10-29	094057 CDT	3.12 miles SE of Bayport entrance channel	7 2 knots	NOA	149.4 (SE)	29.57152	-94 92635	
2011-10-29	09 41 47 CDT	3.22 miles SE of Baunort entrance channel	7 knots	N/A	152.6 (SEI	29 57010	.94 92549	
2011-10-29	09 42 37 CDT	3.31 miles SE of Bayport extrance channel	6 9 knots	N/A	148.2 (SF)	29.56869	.94.92461	
2011-10-29	0943-17 CDT	3.39 miles SE of Bauport entrance channel	6.7 knots	NZA	148 2 (SE)	29 55759	94 92389	
2011-10-29	09 43 57 CDT	3.47 miles SE of Bayport enhance channel	6.8 knots	NUA	143 3/SEI	29.56652	-94 92307	
2011.10.20	00 44 47 CDT	3.40 miles MM of Reditish Island	6 G Eroche	Patrix	147 (CE)	30 60636	94 92306	
2011-10-20	09 45 37 CDT	3.30 miles MV of Redish Island	7 knots	Police.	146 A (SE)	29 58 398	-94 92107	
2011.10.20	00 46 17 CDT	2.21 miles MM of Restlict biand	7 knots	Parts.	140 310E	20 662770	64 02024	
2011-10-29	DO 48 57 CDT	2.23 mias MV of Redish Island	E B knots	PACE	140.5 [SE]	20.00270	-94 91943	
3044 40 30	00.43.47.007	2.15 miles MM of Redick bland	C longing	8.014	440 7 1001	20.00100	0101043	
2011-10-29	DD 40 CDT	2.05 miles MA of Reditab Island	6 d knots	Page 1	140.7 [SE]	22.56046	-34.3105/	
2011-10-23	00 40 17 CDT	2 do mes nev or reansh loand	5.4 Kricts	and a	144.5[35]	28.33957	-34.31/92	
2011-10-20	00.49.57 CD1	2.02 miles MM of Reditish Island	0 / Knots	Page 1	134 31 (32)	28.55861	-94.91683	





Business Intelligence

- Business perspective rather than vessel perspective
- Interpreting data to identify events and activities
- Comprehensive data warehousing for playback, fact discovery, and operational analysis

pertv	ision" •	essel Position Report							
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Ves	sel STOLT O	CELOT - Call sign: A8YA2	From Da	te/Time 2012	2-06-05		12:00 Inter	val Show All 👻	
			To Da	te/Time 2013	2.06.07		16:45		
Time Zo	ne 🥥 Local	© gmt		2011				Display Report	
14 4 1	of 5 🕨	Select a format 🔻 E	export						
pertvisi	on							www.portvision.com (713) 337-3737	
	Peri	Vess	el Position	Report	onding 2012 08	07 18-45-00 in	local time	in ogportvision.com	
Position Date	Position Time	Porition Label	Spood	True Heading	COG Heading	Latitude	Longitude	Event Name	
2012-08-05	13:18:28 CDT	49.13 miles E of Key West Marker	11.7 knots	249 [W]	247 [SW]	24.30118	-80.88512	Event Name	
2012-08-05	15:00:27 CDT	29.54 miles E of Key West Marker	12.3 knots	249 [W]	248 [W]	24.17235	-81.23250		
2012-08-05	19:27:17 CDT	25.39 miles W of Key West Marker 199.87 miles SE of Gulf Platform SP.924	12.9 knots 15.5 knots	272 [W]	270 [W]	24.12795	-82.23108		
2012-08-08	22:07:32 CDT	130.28 miles SE of GUI FMEX2 RZ	15.2 knots	200 [W] 290 [W]	293 [NW]	26 36993	-88.96325		
2012-08-08	23:10:13 CDT	114.89 miles SE of GULFMEX2 RZ	15.4 knots	293 INWI	294 [NW]	26,48213	-89.23288		
2012-06-07	01:28:32 CDT	At Gulfmex #2 Lightering	15 knots	295 [NW]	293 [NW]	26.72390	-89.82400	Passed Gulfmex	
2012-08-07	02:51:20 CDT	At Gulfmex #2 Lightering	15.1 knots	296 [NW]	294 [NW]	26.87318	-90.17325	#2 Lightening	
2012-08-07	02:52:20 CDT	At Gulfmex #2 Lightering	15.1 knots	296 [NW]	293 [NW]	26.87488	-90.17747		
2012-08-07	02:53:37 CDT	At Gulfmex #2 Lightering	15.1 knots	296 [NW]	294 [NW]	26.87717	-90.18295		
2012-08-07	02:54:37 CDT	At Gulfmex #2 Lightering	15.1 knots	296 [NW]	294 [NW]	26.87893	-90.18730		
2012-06-07	02:55:26 CDT	At Gulfmex #2 Lightering	15 knots	296 [NW]	294 [NW]	26.88033	-90.19072		
2012-06-07	02:50:07 CDT	At Gulfmex #2 Lightering	15.1 knots	290 [NW]	294 [NVV]	20.88103	-90.19303		
2012-08-07	02:57:44 CDT	At Gulfmex #2 Lightering	15 knots	296 [NW]	294 [NW]	26.88435	-90.20055		
2012-08-07	02:58:32 CDT	At Gulfmex #2 Lightering	15 knots	296 [NW]	294 [NW]	26.88575	-90.20397		
2012-08-07	02:59:14 CDT	At Gulfmex #2 Lightering	15 knots	296 [NW]	294 [NW]	26.88698	-90.20703		
2012-08-07	03:00:02 CDT	At Gulfmex #2 Lightering	15.1 knots	295 [NW]	293 [NW]	26.88832	-90.21040		
2012-06-07	03:00:49 CDT	At Gulfmex #2 Lightering	15.1 knots	295 [NW]	293 [NW]	26.88965	-90.21387		
2012-06-07	03:01:31 CDT	At Gulfmex #2 Lightering	15.1 knots	295 [NW]	293 [NW]	20.89080	-90.21090		
2012-08-07	03:03:25 CDT	At Gulfmex #2 Lightering	15.1 knots	295 INWI	293 INWI	26.89400	-90.22503		
2012-06-07	03:04:10 CDT	At Gulfmex #2 Lightering	15.1 knots	295 [NW]	293 [NW]	26.89523	-90.22812		
2012-06-07	03:04:55 CDT	At Gulfmex #2 Lightering	15.1 knots	295 [NW]	293 [NW]	26.89657	-90.23157		
2012-06-07	03:05:38 CDT	At Gulfmex #2 Lightering	15.1 knots	295 [NW]	293 [NW]	26.89777	-90.23458		
2012-06-07	03:00:25 CDT	At Gulfmax #2 Lightering	15.2 Knots	295 [NW]	293 [NW]	20.89907	-90.23798		
2012-08-07	03:08:02 CDT	At Gulfmex #2 Lightering	15.1 knots	295 [NW]	293 [NW]	26.90177	-90.24502		
2012-08-07	03:08:43 CDT	At Gulfmex #2 Lightering	15.1 knots	295 [NW]	293 [NW]	26.90293	-90.24797		
2012-06-07	03:09:32 CDT	At Gulfmex #2 Lightering	15.2 knots	295 [NW]	293 [NW]	26.90425	-90.25152		
2012-06-07	03:10:13 CDT	At Gulfmex #2 Lightering	15.1 knots	295 [NW]	293 [NW]	26.90540	-90.25457		
2012-06-07	03:11:50 CDT	At Gulfmex #2 Lightering	15.2 knots	295 [NW]	293 [NW]	26.90812	-90.26158		
2012-06-07	03:12:37 CDT	At Gulfmex #2 Lightering	15.2 knots	295 [NW] 295 [NW]	293 [NW] 293 [NW]	20.90942	-90.28500		
2012-08-07	03:21:56 CDT	At Gulfmex #2 Lightering	15.2 knots	295 [NW]	292 [W]	26.92508	-90.30530		
2012-08-07	03:24:08 CDT	At Gulfmex #2 Lightering	15.2 knots	295 [NW]	292 W	26.92875	-90.31502		
2012-08-07	03:26:38 CDT	At Gulfmex #2 Lightering	15.2 knots	295 [NW]	292 [W]	26.93287	-90.32588		
2012-06-07	03:28:38 CDT	At Gulfmex #2 Lightering	15.2 knots	295 [NW]	292 [W]	26.93625	-90.33460		
2012_08_07	03-30-43 CDT	At Gulfmay #7 Linktoring	15.2 knote	295 INIMI	293 IN/MI	28 93977	-90 34372		





Ports

- Automate revenue capture (transits, docking, lay berth)
- Increase revenue (identify lost tariff opportunities)
- Dock scheduling, labor assignment
- Compliance, law enforcement, and MDA
- Incident management
- Training
- Negotiation/arbitration/ litigation







Port of New Orleans

Need

- Needed real-time ETA and vessel schedules
- Compliance
- Capture Revenue of missed vessel passings

Results

- AIS provides real-time visibility of vessels for better dock planning eliminating two vessels arriving at the same time
- AIS historical data provides replay of vessel movements and locations any time
- AIS data provides AIS enabled vessels passing points, times of arrival/departures and length of dockings. Vessels that stopped for anchorage and refueling before traveling to a terminal could now be assessed a harbor fee.







Port of San Diego-Green Port



Need

- Port of San Diego launched a Clean Air Program which voluntary asked vessels entering or leaving the Port to observe the set speed limits within a 20 nautical mile from specific point (VSR zone) to reduce emissions.
- Needed a system to track vessels and speed.

Results

- While in the VSR zone, a vessel's maximum speed is recorded using an AIS Web-based vessel tracking service to determine VSR program participation.
- Vessel operators who achieve 90 percent compliance are recognized for their participation each quarter.
- Program received a 2011 Winner for Comprehensive Environmental Management Plan-WorkBoat Environmental Awards





Port of Morgan City



Need

- A system to increase efficiency by providing visibility of vessel type, name, origination/destination and commodity onboard.
- Collect tonnage data to acquire dredging monies and ranking in the USACE NDC Waterborne Commerce Statistics Fact Card.

Solution

- AIS data service provided real-time and historical information for all commercial vessel traffic in POMC waterways.
- It captured ship name, call sign, IMO/MMSI numbers, length/beam, ship type, draft, destination and estimated time of arrival.
- AIS reports were accepted by USACE.
 POMC was ranked #98 in the USACE Top list for 2009.





Marine Organizations & Committees

- Efficient management of marine areas
- Safety reporting
- Traffic patterns & trends
- Emergency response
- Historical and analytic reporting



Traffic Density Map





Houston Galveston Harbor Safety Committee



Need

- Needed intelligence of vessel movements, locations, dock usage for analytics and to set guidance
- Better management for utilization of anchorages

Results

- Better data for historical information and analytics
- Improved safety and usage of docks/anchorage areas





Gulf Intracoastal Canal Association (GICA)

Need

- Support data to show how repairs affect vessel traffic in the waterways
- Federal Funding for major lock repairs and replacements for a better and stronger lock system

Results

- AIS analytics "geo-fencing" of certain areas showed how a lock closed for repairs affected vessel traffic
 - Geo-fencing provided intelligence to show much longer it took a vessel to detour
 - How many vessels had to pass through an alternate route
 - Real costs to the industry



gica.portvision.com





Terminals

- Remote monitoring of traffic
- Create "Vessel Zones" for placements of spoils, etc.
- Historical data for analysis
- Incident management
- Training
- Negotiation/arbitration/litig ation







Terminal-Bayport

- Schedule resources based on real-time data
- Better interaction with vendors
- Reduce demurrage
- Incident management
- Training
- Negotiation/arbitration/ litigation

Terminal / POI LB	C-3 Houston, Te	exas	From Date 3	2012-06-01	Vessels	All Vessels 👻
Time Zone OLocal GMT			To Date 2012-06-08		Displa	ay Report
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ertvision.		elect a format	export			www.portvision.com
CVISION		12		all Demos		(713) 337-3737
		Teri	ninal / POI Det	all Repor	t	integrorivision.com
	Arr	ivals and departures from LBC-:	3 Houston, Texas beginning	1g 2012-06-01 er	nding 2012-06-08 in local time	
essel Name 💲	Type ‡	Arrived \$	Departed \$	Hours \$	Origin 💲	Next Destination \$
IOLT FOCUS	Tanker	2012-05-31 00:11 CDT	2012-06-01 02:55 CDT	26.73	Galveston Anchorage Nort	h Stolkhaven, Houston, TX
JOR ADMIDAL	Tug	2012-06-01 02:07 CDT	2012-06-01 02:54 CDT	0.78	Bayport Container Term.	Bayport Container Term.
IO IAN WARRIOR	Vessel	2012-06-01 04,19 CDT	2012-06-01 04:46 CD1	0.45	180-2	LBC-2
ALO DURO	WIG	2012-06-01 19:49 CDT	2012-06-02 06:20 CDT	10.52	Kirby Staging Houston, TX	LBC-3
RITISH EMISSARY	Tanker	2012-06-02 03:06 CDT	2012-06-02 20:47 CDT	17.68	GCAC	Galveston Anchorage South
/ELENA	Tug	2012-06-02 03:07 CDT	2012-06-02 03:51 CDT	0.72	Bayport Container Term.	Barbours Cut Docks 1-6
AMAR	Tug	2012-06-02 03:09 CDT	2012-06-02 03:45 CDT	0.58	Bayport Container Term.	Barbours Cut Docks 1-6
ALO DURO	WIG	2012-06-02 06:47 CDT	2012-06-02 06:54 CDT	0.12	LBC-3	LBC-3
ALO DURO	WiG	2012-06-02 07:14 CDT	2012-06-02 15:32 CDT	8.28	LBC-3	LBC-3 Vindedlesses Deceders TV
MANDA	Vessel	2012-06-02 09:09 CDT	2012-06-02 09:24 CDT 2012-06-02 13:02 CDT	0.23	OMS-San Jacinto Houston	TX LBC-3
MANDA	Vessel	2012-06-02 13:13 CDT	2012-06-02 15:02 CDT	1.8	LBC-3	LBC-3
ALO DURO	WIG	2012-06-02 15:59 CDT	2012-06-02 16:03 CDT	0.07	LBC-3	Calcasieu Lock
MANDA	Vessel	2012-06-02 16:42 CDT	2012-06-02 16:47 CDT	0.08	LBC-3	LBC-3
RUSSO	Tug	2012-06-02 18:41 CDT	2012-06-02 18:46 CDT	0.07	LBC-2	LBC-3
MANDA	Vessel	2012-06-02 18:59 CDT	2012-06-02 19:05 CDT	0.08	LBC-3	LBC-3
RUSSO	Tug	2012-06-02 19:08 CDT	2012-06-02 19:56 CDT	0.8	LBC-3 Kirbu Evel Dock Houston 3	LBC-2 X Kirbu Staning Houston TX
UNTER M	Tuo	2012-06-02 19:41 CDT	2012-06-02 19:12 COT	1.05	Baynort Container Term	Raynort Container Term
AMAR	Tug	2012-06-02 19:44 CDT	2012-06-02 20:46 CDT	1.03	Bayport Container Term.	Bayport Container Term.
MANDA	Vessel	2012-06-02 21:06 CDT	2012-06-02 21:14 CDT	0.13	LBC-3	LBC-3
MANDA	Vessel	2012-06-02 21:49 CDT	2012-06-02 23:01 CDT	1.18	LBC-3	LBC-3
CEANIC CERISE	Tanker	2012-06-02 23:27 CDT	2012-06-04 05:59 CDT	30.52	Galveston Anchorage Nort	h Galveston Anchorage North
MANDA	Verent	2012-06-02 23:26 CDT 2012-06-02 23:52 CDT	2012-06-02 23:48 CDT	0.33	Lac.3	LBC.3
MANDA	Vessel	2012-06-02 23:52 CDT 2012-06-03 01:38 CDT	2012-06-03 02:05 CDT	0.43	LBC-3	LBC-3
MANDA	Vessel	2012-06-03 02:19 CDT	2012-06-03 02:51 CDT	0.52	LBC-3	Calcasieu Refinery, LA
ARTIN ADMIRAL	Tug	2012-06-03 14:58 CDT	2012-06-03 19:49 CDT	4.83	OMS New	LBC-3
ARTIN ADMIRAL	Tug	2012-06-04 05:41 CDT	2012-06-04 08:24 CDT	2.72	LBC-3	LBC-3
ARTIN ADMIRAL	Tug	2012-06-04 09:09 CDT	2012-06-04 09:17 CDT	0.13	LBC-3	LBC-3
ARTIN ADMIRAL	Tug	2012-06-04 09:51 CDT	2012-05-04 10:00 CDT	0.15	LBC-3	LBC-3
VERSEAS MYKONOS	Tanker	2012-06-04 10:21 CDT	2012-06-04 20:22 CDT	56.6	Galveston Anchorage Nort	h N/A
LAXTON	Tug	2012-06-04 10:35 CDT	2012-06-04 11:06 CDT	0.52	Bayport Container Term	Jacintoport, Houston, TX 1 263
UNTER M	Tug	2012-06-04 10:35 CDT	2012-06-04 11:04 CDT	0.47	Bayport Container Term	Bayport Container Term.
VELENA	Tug	2012-06-06 18:40 CDT	2012-06-06 19:09 CDT	0.48	Bayport Container Term.	Bayport Container Term.
HEM PEGASUS	Tanker	2012-06-06 22:40 CDT	2012-06-07 15:31 CDT	16.83	Galveston Anchorage Nort	h N/A
AMAR	Tug	2012-06-06 22:40 CDT	2012-06-06 22:56 CDT	0.27	Bayport Container Term	Bayport Container Term.
VELENA	Tug	2012-06-06 22:40 CDT 2012-06-06 23:13 CDT	2012-06-06 22:58 CDT	0.28	Calcasieu Defineru I A	LBC.3
MDDV	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	entremping earra CU	EV12-00-07 V1.02 CU1	1.04	Vecasey Remery, LA	2000
ADDY ADDY	Tun	2012-06-07 09:04 CDT	2012-06-07 10:28 CDT	1.4	180-3	180-3





Terminal-Bayport



portvision



Incident Response-Deepwater Horizon



Need

- Effectively allocate and manage: 30,800 personnel, 5050 vessels, dozens of aircraft
- Create a command and control system and a tracking system where they could effectively utilize 2000 vessels of opportunity
- Capability to communicate
- Integrate AIS data for common operating picture





Incident Response-Deepwater Horizon

Results

- Improved safety
- Work occurred in extremely remote areas with limited communications access.
- Enabled response team to monitor thousands of personnel, deployed on hundreds of vessels, including "vessels of opportunity"
- Optimized accountability
- Enforcement of no wake zones.
- Monitoring vessels not evolved in the response
- Informed decision-making
- Enabled response team to leverage both real-time and historical vessel information to facilitate better decisions.
- Enabled response team to create/share detailed reports about activities in all 17 remote, hard-to-reach response divisions.







Better Visibility Leads to Better Decisions

- Driving growth through improved decision-making and documentation
 - Resource allocation
 - Productivity improvement
 - Competitive analysis
- Enhancing operations through better accountability
 - Demurrage billing and validation
 - Improved tariff collection
 - Forensic support for litigation or law enforcement
 - Regulatory compliance monitoring
- Protecting personnel and assets
 - Reporting for dock repairs and dredging
 - Vessel speed and wake-reduction monitoring
 - MDA support





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