

Distance Support for Ready Response Center (RRC)

United States Navy

The Challenge

The United States Navy has hundreds of ships — each containing myriad systems and equipment that require maintenance and repair to operate optimally — deployed on a regular basis. The U.S. Navy was seeking to better manage the overwhelming logistics associated with keeping such a vast number of systems and equipment running properly.

Because the number of spare parts that can be brought aboard ships is limited, effectively anticipating what problems would occur and then carrying those parts needed to perform the most frequently needed repairs is critical. Remote access to repair expertise was also limited and needed to be improved to ensure maintenance could be performed in a timely manner.

The Solution

3eTI developed a custom solution — nicknamed PIR² — that utilized the U.S. Navy's historical logistics and maintenance records to help predict the likelihood of future problems. Two years of detailed information was placed into a central database that provides on-demand analysis and reports for reviewing all equipment and component failures for ships managed by NAVSEA. These reports were used to help predict the types of system and equipment failures that were most likely to occur and which parts would be needed to repair the problem. To keep the information up to date, the database was refreshed quarterly.

PIR² allows sailors to go to a secure Web site to generate reports. The user picks a class of ship and the type of environment into which the ship will be deployed, such as the Persian Gulf or Atlantic Ocean. Based upon the specific input criteria, the PIR² solution mines the database and generates a report for the top 10 problems that historically had occurred for that class of ship deployed in a similar environment. The report specifies the parts needed to correct the problem down to the component level. The reports also include narratives by the sailors who encountered and resolved the problems, as well as documentation of how long a problem would take to fix.

An additional dimension of the solution was the development of a portable sensor kit used by sailors to monitor performance and rapidly identify problems with the most vulnerable equipment. If a malfunction with a piece of equipment is

Products Used

- Ready Response Center
- Portable Sensor Kit

DDG-87 NVR Information DDG-87 NavySite Information

PIR² Analysis Results for DDG 87, USS Mason
for the Period 02/2001 to 02/2003

WGRE ESWBS EIC APL NIINs Information

EIC Results for All EIC's with CASREPs

Distinct EIC's (in table below): 24 Max Rank: 0 ☒ CASREPs Only

Rank	EIC	Nomenclature	Score	Related APLs	Related NIINs	Related JCNs
1	5512310	AM-7150/SPY-1B, AMPLIFIER, RADIO FREQUENCY, D/PD	0.64633	2	3	22
2	5545100	T-1348/SPG, TRANSMITTER, RADAR	0.57378	2	14	15
3	5512340	PP-8068/SPY-1D, POWER SUPPLY	0.49389	2	2	6
4	3108000	GENERATOR SET, 60HZ, GAS TURBINE DRIVEN	0.44407	21	79	88
5	5512320	AM-7159/SPY-1B, AMPLIFIER, RADIO FREQUENCY, FPA	0.44014	2	31	72
6	5512000	WEAPON SYSTEMS, CLOSE-IN, MK 15 MODS 11-14 (PHALANX)	0.33459	8	53	47
7	00CL000	AM-7519(V)2/URC, AMPLIFIER, RADIO FREQUENCY	0.31941	1	3	1
8	0890000	AN/SQ-32A(V)3, COUNTERMEASURE SET	0.31111	12	24	26
9	2081100	INTERFACE PROCESSOR UD 801	0.31082	1	1	2
10	N930000	AN/SRS-1(V)SERIES, SIGNAL DETECTION-DIRECTION FINDING SETS	0.30996	1	2	3
11	5AV0000	LAUNCHING SYSTEM, VERTICAL, MK 41 MODS ALL	0.30980	3	8	9
12	LD00000	TRACER, DEAD RECKONING, MK 6 MOD 4D	0.30849	1	8	5
13	2D23200	AN/UHQ-65, DATA PROCESSING AND DISPLAY SET UD 270	0.30635	1	5	7
14	2P14000	OE-82C/WSC-1(V), ANTENNA GROUP	0.29871	4	6	5
15	0290000	CU-2475AU, COUPLER, ANTENNA	0.28668	1	8	2
16	5564400	PT-563/UJO, PROJECTION PLOTTING UNIT	0.27805	1	16	8
17	TT01000	PADEYES, SLIDING	0.22974	2	3	2
18	3510000	TURBINE ASSEMBLY, GAS, SSPU (GARRETT ME831)	0.21062	5	12	11
19	7405000	CONDITIONING SYS, AIR (R-114 CHILLED WATER PLANT)	0.20938	25	44	47
20	6550000	AN/UPX-28(V)2, TRANSPONDER SET	0.20739	2	4	4
21	1801000	GALLEY EQUIPMENT (COMMISSARY SPACES)	0.20447	16	31	38
22	1630000	OE-273A(V)URN, ANTENNA GROUP	0.20431	1	5	4
23	4103000	SWITCHBOARD, SHIPS SERVICE, 400HZ	0.17882	2	3	5

The PIR² data slice is specific to each ship. This example is for the USS Mason DDG 87, containing data pertinent to the ship's class / flight.

suspected, the crew can sensorize the equipment and monitor it for breakage. Or, the crew can determine pieces of equipment to monitor during the deployment and utilize the sensor data to anticipate problems or remotely troubleshoot a problem.

The Benefits

The PIR² solution helps the U.S. Navy save time and money by providing a proactive versus a reactive approach to equipment and system maintenance management. It is a valuable planning tool that allows the U.S. Navy to prepare in advance for the most common maintenance problems it will likely encounter and to have the proper tools and components on-hand to fix the problem. This results in enabled readiness and less down time, and requires the ship to inventory only those parts that are most likely to be needed in the event of a common equipment failure. The reports — based upon historical data — reduce the reliance on guesswork and help sailors prepare more cost-effectively for each deployment. The quarterly updates ensure the reports are reliable and accurate. PIR² is a completely secure and dynamic solution.