

Implementing a Computerized Plan Maintenance System :

A generic review from the end-user perspective

Case Study Details

- i. Scope
- ii. The Company: Eletson Corporation, Piraeus, Greece
- iii. The software: Spectec's AmosD & Amos M&P
presented by: Loukas Koumertas, Tech.Dpt



1. Case Study Details (1/6)

- **Presented by:** Loukas Koumertas
 - Mech. Engineer
 - 16 years with Eletson, in the Technical Dpt
 - 5 years Newbuilding experience (Japan, S.Korea, Ukraine) in company's projects
 - Been in charge of administration / implementation / operation of company's computerized Plan Maintenance system (AmosD – Amos M&P) since its inauguration in 1996



1. Case Study Details (2/6)

- **i. Scope:**

To communicate the experience and the basic rules for implementing an off-the-shelf marine software (Plan Maintenance in this case) in a Ship Operating Company.

Note: Implementation is an on-going process for continuously evolving systems like the above



1. Case Study Details (3/6)

ii. The company: Eletson Corporation (1/2)

- Historical Information – important milestones:
 - **1966:** founded
 - **1989:** takes delivery of 1st Double Hull Tanker (45,000 Dwt)
 - **1990-2004:** takes delivery of 25 Double Hull Product Carriers (between 45,000 to 105,000 Dwt)
- Currently:
 - Operates 25 Product Carriers from 45,000 to 105,000 Dwt (comprising 8 groups of sister vessels). Total 1.6 million Dwt
 - All vessels have been with the company since newbuilding
 - All vessels fly the Greek Flag
 - Trades mainly in the spot market



1. Case Study Details (4/6)

ELETSON CORPORATION

No.	NAME	FLAG CALL SIGN	BUILT CLASS	SDWT (M/T) DRAFT (m)	GRT NRT	L.O.A (m) BEAM (m)	TANK (SLOP) CAPACITY 98% M ³	BUILDER	HULL DESIGN
1	SAMOTHRAKI*	GREEK S X W A	1989 LRS	46538 12.220	27793 13451	183.20 32.20	6+4(2) 54771	KSEC S. Korea	Double Hull
2	PSARA*	GREEK S V T S	1989 LRS	46538 12.220	27793 13451	183.20 32.20	6+4(2) 54771	KSEC S. Korea	Double Hull
3	HALKI*	GREEK S V P N	1989 LRS	46538 12.220	27793 13451	183.20 32.20	6+4(2) 54771	KSEC S. Korea	Double Hull
4	SHINOUSSA*	GREEK S V Q Q	1990 LRS	46538 12.220	27793 13451	183.20 32.20	6+4(2) 54771	KSEC S. Korea	Double Hull
5	SALAMINA	GREEK S X L L	1991 LRS	45425 12.016	29506 11626	183.00 32.20	7(2) 55280	HITACHI Japan	Double Structure
6	KASTELORIZO	GREEK S W F K	1991 LRS	45425 12.016	29506 11662	183.00 32.20	7(2) 55280	HITACHI Japan	Double Structure
7	ARGIRONISSOS	GREEK S V P E	1992 LRS	45425 12.016	29506 11638	183.00 32.20	7(2) 55280	HITACHI Japan	Double Structure
8	FOLEGANDROS	GREEK S Y A L	1992 LRS	45425 12.016	29506 11650	183.00 32.20	7(2) 55280	HITACHI Japan	Double Structure
9	KANDILOUSA	GREEK S Y I F	1995 LRS	46700 12.216	28507 12161	182.76 32.20	7(2) 52750	HYUNDAI S. Korea	Double Hull
10	SERIFOPOULO	GREEK S Y N C	1995 LRS	46700 12.216	28507 12161	182.76 32.20	7(2) 52750	HYUNDAI S. Korea	Double Hull
11	SERIFOS	GREEK S X D R	1995 LRS	46700 12.216	28507 12161	182.76 32.20	7(2) 52750	HYUNDAI S. Korea	Double Hull
12	ALKYONIS	GREEK S V C O	1992 LRS	66895 13.217	39265 17954	228.00 32.20	14(2) 73424	HYUNDAI S. Korea	Double Hull
13	VELOPOULA	GREEK S W E C	1993 LRS	66895 13.217	39265 17954	228.00 32.20	14(2) 73424	HYUNDAI S. Korea	Double Hull
14	SPORADES	GREEK S X L S	1993 LRS	66895 13.217	39265 17954	228.00 32.20	14(2) 73424	HYUNDAI S. Korea	Double Hull
15	PARAPOLA	GREEK S V M W	1994 LRS	68232 13.62	38792 21279	242.80 32.20	14(2) 69701	ZALIV Ukraine	Double Hull
16	SKIROPOULA	GREEK S W V B	1995 LRS	68232 13.62	38792 21279	242.00 32.20	14(2) 69701	ZALIV Ukraine	Double Hull
17	STAVRONISI	GREEK S X F T	1996 LRS	68232 13.62	38667 21281	242.80 32.20	14(2) 69701	ZALIV Ukraine	Double Hull
18	ERIKOUSSA	GREEK S V G V	2003 LRS	70142 13.70	41679 19343	228.08 32.20	12(2) 78230	HYUNDAI S. Korea	Double Hull Full Double Hull Bunker Tanks
19	SKOPELOS	GREEK S Y H L	2003 LRS	70142 13.70	41679 19343	228.08 32.20	12(2) 78230	HYUNDAI S. Korea	Double Hull Full Double Hull Bunker Tanks
20	PELAGOS	GREEK S V P Q	1999 LRS	76020 14.017	39283 22536	213.26 37.09	10(2) 75589	HALLA S. Korea	Double Hull
21	ANGISTRIS	GREEK S Z M Q	2000 LRS	76020 14.017	39283 22536	213.26 37.09	10(2) 75589	HALLA S. Korea	Double Hull
22	AGATHONISSOS	GREEK S Y A U	2002 LRS	106149 14.90	57062 32824	243.96 42.00	12(2) 118033	HYUNDAI S. Korea	Double Hull
23	MAKRONISSOS	GREEK S W A M	2002 LRS	106149 14.90	57062 32824	243.96 42.00	12(2) 118033	HYUNDAI S. Korea	Double Hull
24	ALONISSOS	GREEK S X P G	2004 LRS	106290 14.90	57062 32824	243.96 42.00	12(2) 118033	HYUNDAI S. Korea	Double Hull Full Double Hull Bunker Tanks
25	MEGALONISSOS	GREEK S Z N O	2004 LRS	106290 14.90	57062 32824	243.96 42.00	12(2) 118033	HYUNDAI S. Korea	Double Hull Full Double Hull Bunker Tanks

*Vessel under bareboat management.

All information is solely for the purpose of providing general guidance in good faith to interested parties. For the latest information please contact Eletson.

Current as of February 2005

1. Case Study Details (5/6)

ii. The company: Eletson Corporation (2/2)

- Has placed orders in S.Korea for:
 - 6 Product Carriers (52,000 Dwt)
 - 4+2 LPG/NH3 Carriers (35,000 cbm)



1. Case Study Details (6/6)

- **iv. The Software:**
 - 1997-2004: Spectec's Amos D (DOS Based) Plan Maintenance System
 - 2004-2005: Upgrade from Amos D to Amos M&P
 - 2005-Present: Spectec's Amos M&P (part of Amos Business Suite)



2. Decision to implement a computerized Plan Maintenance System (the Historical Background)

1996: Various factors were 'pressing' for the use of a 'computerized' Plan Maintenance, such as:

- Oil Major's (our clients) comments for the unavailability of a 'works done' centralized monitoring system
- Company's realization for the lack of such a system
- Company's view for the central role computers were to play in the future and the need to 'prepare' the company and users

3. AmosD days (1/3) - Decision (the Beginning)

1996: AmosD was selected as the off-the-shelf Software to be used

Initial 'skeleton' Database and basic system configuration was created by Spectec's local representative at the time (Elkco Marine)

Beneficial decisions taken at the time:

- System's language would be English (in line with the company's SMS)
- Library Data control would be from the Head Office, for single point data entry, better control and consistent data quality
- A Position was created in the Tech.Dpt, with main responsibility the AmosD (configuration, implementation, training, requirements fulfillment etc.)



3. AmosD days (2/3) - Implementation & Use (the Learning Years)

- **1997-2003:** AmosD was implemented and used in the company's 18 vessels (at that time) and the Head Office:
- Main Facts / Achievements:
 - Abt 500 users were trained in AmosD
 - Computer network (server + three workstations) was installed by Eletson's IT dpt onboard each vessel
 - Procedures for system's onboard operation and satellite connection to Head Office were established
 - Purchasing Cycle (for Spare Parts) was created and used in the Head Office and onboard
 - Amos Database significant enhancement, with detailed description of vessel's components / maintenance jobs / spare parts and their Inventory. Necessary coding rules were developed



3. AmosD days (3/3) - Lessons Learned (the road to the future)

- But above all:
 - Company's commitment was proven with actions
 - Mentality was changed from Reactive to Proactive Maintenance, both for the Head Office and the Vessels' users
 - It was widely accepted that 'Computers' are 'additional work' but they can be useful / essential too
 - 'Computers' first rule 'Garbage in, Garbage out' was understood
 - The possibility to easily have 'unlimited' & on time historical information available in HO & onboard was appreciated
 - The sister ships & sister data concept was defined
- and the most important:
 - The Fundamental rules for Coding, Data Entry and Data Consistency / Accuracy were shaped



4. Upgrade to Amos M&P (1/5) - The decision (The Need for Change)

2003-2004: Was decided to move to the Amos M&P (Windows OS).

The main reasons:

- AmosD functionality too 'poor' for the requirements of the company (many limitations e.g. Reported history size)
- Due to the big quantity of data, was getting difficult to quickly navigate between records in the system
- Lack of sufficient 'room' for further data enhancement (coding etc).
- Very difficult to make use of the information contained in AmosD, esp. when trying to 'examine' data on a sister vessels or fleetwide point of view
- User interface (DOS based) too 'simple' and different compared to the Windows environment, 'turning off' the users onboard and in the Head Office
- The windows version of Amos was already in the market for 5 years and it had surpassed the 'child' age, having significant added features



4. Upgrade to Amos M&P (2/5) - Main Objectives (killing two birds with one stone)

- Upgrade from AmosD to Amos M&P
- Use of the added functionality / data handling available in Amos M&P concurrently with the upgrade, i.e.:
 - Migration to Centralized Database concept
 - Creation of additional data in order to use the Graphical representation of the vessel's info (Hierarchies etc.)
 - Creation of 'Richer' categorization / coding of components / spare parts etc and the added functionality deriving from this (about 12 different coding systems needed to be developed)



4. Upgrade to Amos M&P (3/5) - The Challenges (look before you leap)

- Seamless transition to Amos M&P: Each vessel is a 'living organism'. System's downtime onboard or in the Head Office should be the minimum possible
- Data contained in AmosD should be carried over to Amos M&P with the maximum accuracy and the minimum loss
- There should be 'room' allowed for future enhancements / additions due to improvement of company's procedures and associated data
- New version should be easily / happily 'accepted' by the users, esp. onboard the vessels
- All Vessels were trading in the spot market, therefore without fixed ports / schedules / voyage duration; the implementation planning was quite challenging in order to achieve time targets
- Note: Priority was given to Upgrade quality, not speed



4. Upgrade to Amos M&P (4/5) - Preparation

(A good beginning makes a good ending)

- Having the advantage of expertise and the knowledge of the involved data, was decided that the upgrade would be done in-house
- Spectec (Xantic at the time) gave us a thorough 'insight' of the Amos M&P software and the parameters involved
- Basic operating parameters & configuration were drafted
- An 'outline' of the data configuration was created
- Under our specification, Spectec (Xantic at that time) developed for us the required software 'tool'
- Data contained in AmosD was reviewed and 'cleaned' / prepared prior to upgrade



4. Upgrade to Amos M&P (5/5) - Execution & Implementation (1/2) (execute upgrade.....; commit;)

- The upgrade consisted of three parts:
 - The Amos software installation onboard each vessel
 - The Amos Database for each vessel
 - The additional training required for the users onboard vessels.
- A person from the Tech.Dpt was nominated for the onboard installation and onboard training of the users
- The software installation for each vessel was :
 - prepared in the HO, together with detailed installation instructions and Eletson's Amos instruction manual
 - was sent onboard each vessel by CD, by quick post, by the implementator or preinstalled by IT Dpt



4. Upgrade to Amos M&P (5/5) - Execution & Implementation (2/2) (execute upgrade.....; commit;)

- The Amos Database was prepared:
 - AmosD for the vessel was stopped →
 - Data was migrated to Amos M&P →
 - Data was aligned with (merged into) the Amos Centralized Database →
 - vessel's data extracted from the Centralized database in a single file
- was sent onboard by Inmarsat or the Implementator
- Installation of software and database was carried out
- Training was done for a period of 2-4 days onboard each vessel (depending on requirements & vessels itinerary)

Approx. Time for one vessel upgrade: 7-12 days, depending on the vessel's itinerary



5. Using Amos M&P - some of the benefits (harvest time)

- Due to Centralized Database, very easy to see sister vessel / sister component related information and provide fleetwide reports & statistical data
- Friendly and 'comfortable' user interface
- Almost unlimited ability to insert / link multimedia in the Data Library and the records part
- Easy interface to other systems (e.g. Sun Systems Enterprise)
- Is used in conjunction with CITRIX onboard almost all vessels
- 'Easily' satisfy the first stages of the relevant TMSA requirements
- System has been found in accordance with LRS Machinery Planned Maintenance Scheme (MPMS) requirements and certification for all vessels is in progress



6. Software & Data Relation - a real-life representation

- **Software** is a fertile piece of land you own
- **Data** is what you plant on this piece of land
- **Users** do the labor on this piece of land

Your options:

- vi. You may leave this land unused – you will have no profit but instead burden from it
- vii. You can plant it with (e.g.) rice and leave it grow on its own – you will have a poor and limited product
- viii. You can plant it with (e.g.) rice and apply proper watering and care – you will have a good and rich product



7. Indispensable Rules (1/2)

- 1. Data** is your very precious asset:
 - Decide the level of detail you want to achieve and define the rules
 - Always follow these rules – consistency is the key
 - Check twice before making changes
 - Always allow 'room' for the future
 - and finally....Treat Data as a King
- 2. Secure your company's / managers' commitment** and:
 - Make sure you have the same targets / vision
 - Try to secure the right resources (qualitative & quantitative)

7. Indispensable Rules (2/2)

1. Your success lies with your 'normal' **users**:
 - See things from their shoes too (not only from IT's)
 - Hear to what they say. It may be the tip of the iceberg for an escalating problem or a user need
 - Try to 'please' them. They are your 'customers' and your envoys
 - Convince them rather than 'force' them – but don't forget, you have to believe in it first !
 - Train their mentality first, their computer skills can come after
2. Try to use the **software upgrades**, thus:
 - Users' learning curve is kept to a minimum
 - Company can easier 'process' / 'digest' the added functionality and use it more efficiently



8. Near Future Challenges (1/2)

- **TMSA (Plan Maintenance Related):**
 - Management of change (related to Equipment replacement, documentation etc.)
 - Equipment Criticality & the relation to loss of redundancy
 - KPIs related to Outstanding Maintenance – need to define a 'uniform' calculation / comparison method ?
 - Other KPIs 'hidden' within the TMSA requirements
 - Issues related to Navigation Equipment, Mooring Equipment, Management of Change, Measurement, Analysis & Improvement, the whole TMSA in general

8. Near Future Challenges (2/2)

- **Marpol Annex VI**
 - Sufficient coverage of Identified Equipment / spare part replacement & associated information requirements
- **Various**
 - 'Merging' of vessel's software related activities to 1-2 software packages onboard vessels and the Head Office
 - Keep the software functionality closer to the end-user way of thinking and daily operation
 - Successfully use the system as 'Decision' tool instead of 'Repository' tool
- **For Spectec (Amos Software Supplier)**
 - During upgrade to Amos2, secure 'proper' migration of the Amos1 precious data
 - All the above and more, more, more ...



9. Questions



Thank You

