



# DIGITAL SHIP ATHENS 19-20 OCTOBER 2006

## USING KPI TO OPTIMISE PURCHASING AND MAINTENANCE



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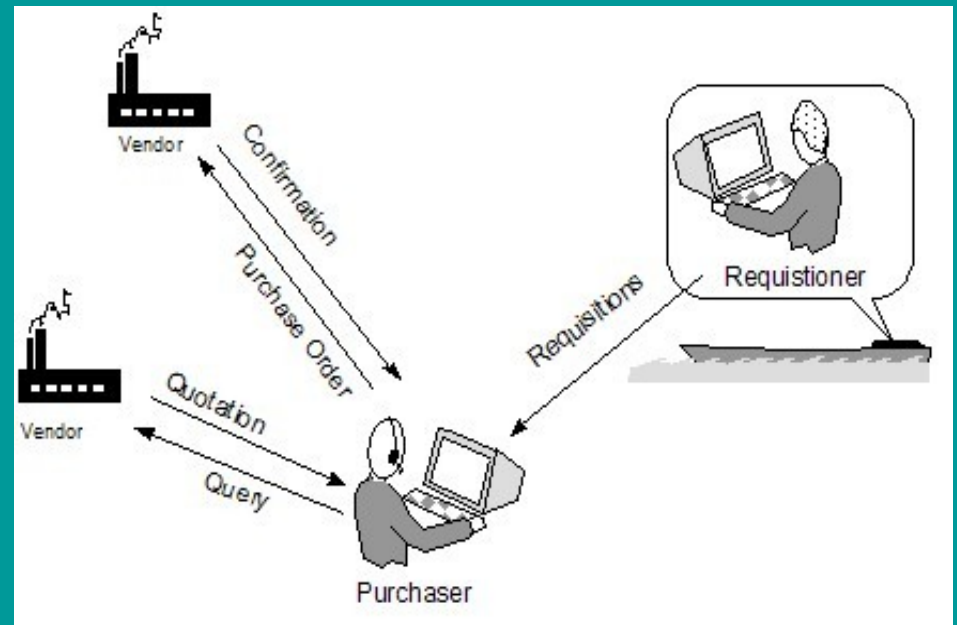
## INTRODUCTION

The dynamics of marine Maintenance and Purchasing (M&P), similarly to the general industrial processes, continues to change with new ways of doing business. Improved methods and processes together with the use of Innovation Technologies (IT) are not only the means to reduce costs and increase profits but also a way to be more efficient and effective in marine M&P. Exploiting these ways is a challenge to any Ship Owner or Ship Management Company Technical and Purchasing Department for successful ship maintenance, this presentation will give an overview of the experience of a ship Owner Company in maximizing the use of KPI (Key Performance Indicator) to monitor M&P processes, while implementing new strategies and gain further efficiency through e-commerce development.



## MARINE M&P PROCESS

What it's  
possible to do  
in order to  
improve the  
Marine M&P  
Process?





## MARINE M&P PROCESS

**Possible answers to this question are :**

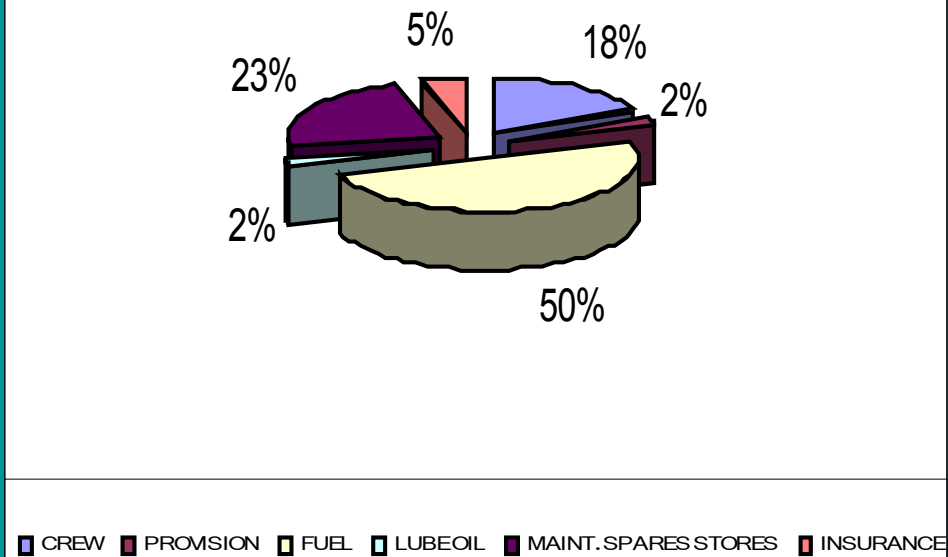
- **Application of IT to the M&P process especially when the number of ship to be managed is relevant. IT is the key to assure service levels and quality of the transport in accordance to the requirements expressed today by the market, that are not limited to a reduced transport cost but are also devoted to quality and environmental impacts ;**
- **Definition of indicators representative of the process in order to measure the results reached and monitor the continuous improvements.**



## MARINE M&P PROCESS INFLUENCE IN OPERATING COSTS

- **MSC ( Material Supply Chain) Influence= Marine Purchasing , Material Planning, Logistics.**
- **Maintenance Influence: Preventive, Predictive, Corrective**
- **M&P has a direct and powerful effect on every company bottom line**

### VESSEL OPERATING COSTS





## MARINE PURCHASING

Purchasing: a fine art

- **A marine buyer has to be sure that:**
  - **Is buying what the ship needs, at the right price, and at the right moment;**
  - **the item ordered is still not available on board forgotten in a store (history tracking of previous orders);**
  - **Is operating within the budget limits;**
  - **The item will be delivered according to the request, QA practices, in the time frame agreed, in good conditions and as it was ordered;**
  - **All transport and customs regulations are properly followed;**
  - **The relevant invoice will be paid.**



## MARINE PURCHASING

It is not enough!!!

- **Buying at the cheapest possible price is not enough, if we don't:**
  - **make sure that the cost of our purchase department is also the lowest possible.**
- **If we buy a spare quickly and at a low price, but it costs a lot to issue the order, then we look efficient, but we are not effective.**



## MARINE PURCHASING

The typical purchasing process:

- **Ship rise a Purchase Requisition;**
- **PR is transferred ashore, where it is either converted into Query, or PO, pending approval of one or more people;**
- **Query is received back, and converted into PO;**
- **PO is received on board, and relevant communication is sent ashore. Stock on board is update;**
- **Office receives invoices, matches against order and authorizes payment.**

**Two ways to afford this process manually or using computerized systems.**



## MARINE SUPPLY CHAIN COLLABORATION

The differences between manual and computerized way of doing the same process are very clear and can be summarized as follows:

- Use of the ERP tools reduce the costs of the passive cycle of purchasing;
- Optimization and integration of ERP tools between Purchasing Department and Supplier could further reduce the costs of the passive cycle of purchasing and also of active cycle of purchasing;
- Give access to a large number of KPI (Key Performance Indicators)



## MARINE SUPPLY CHAIN COLLABORATION

### The Strategies

- **The activities of Purchasing Department and Supplier have to be rendered more efficient and less costly;**
- **Innovation Technology it's necessary to make the process efficient;**
- **Co-operation between Purchasing Department / Supplier. Set up Partnership concept;**
- **Measure and monitoring of Purchasing / Supply process it's necessary.**



## SHIP MAINTENANCE

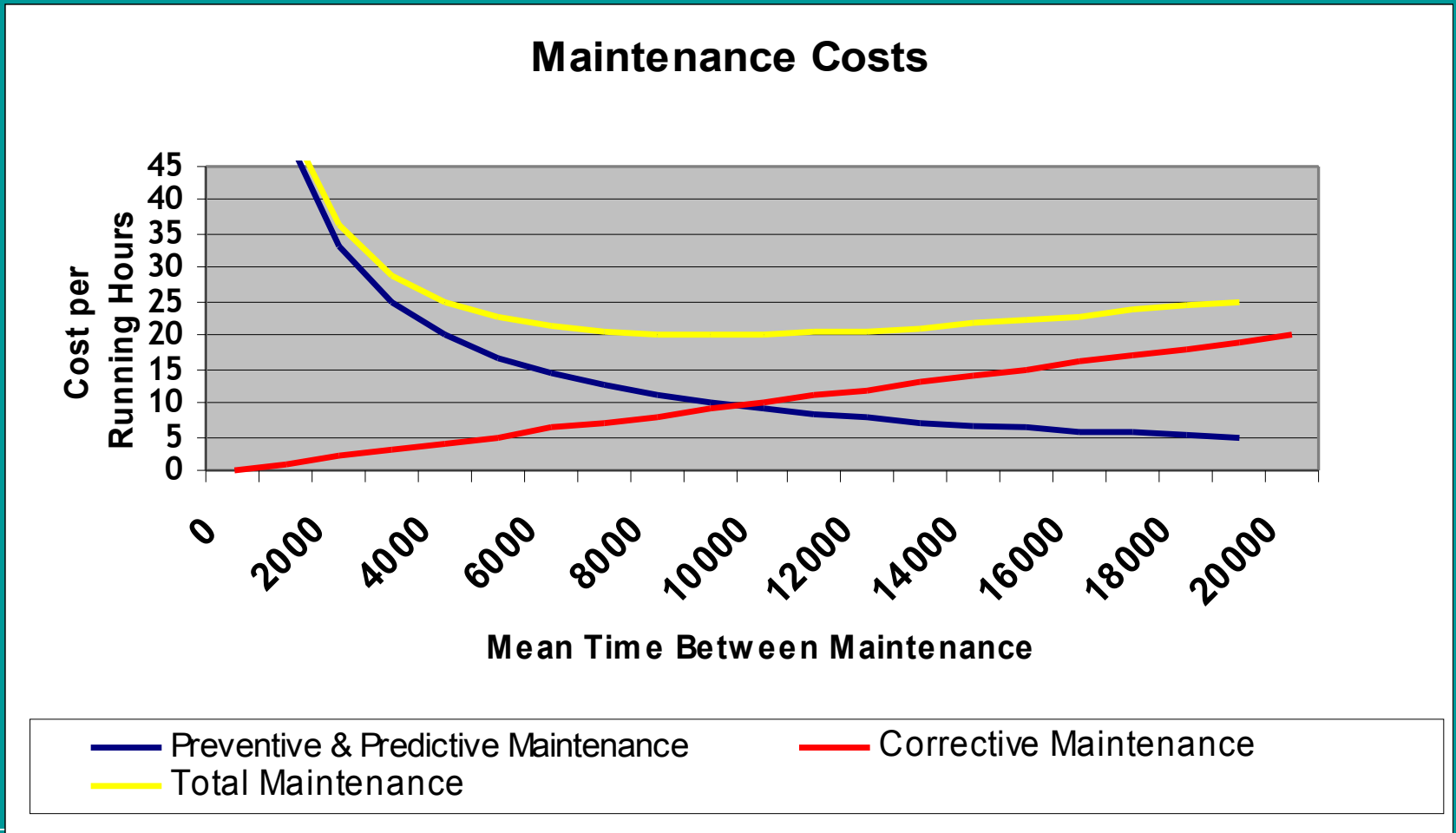
**The best result of a good maintenance implementation is given by the optimum mixing of the following maintenance concept:**

- **Preventive**
- **Predictive**
- **Corrective**

**Together with optimal service levels represented in the case of Liner like Grimaldi Group by respect of schedule in terms of technical delay or call cancellation.**



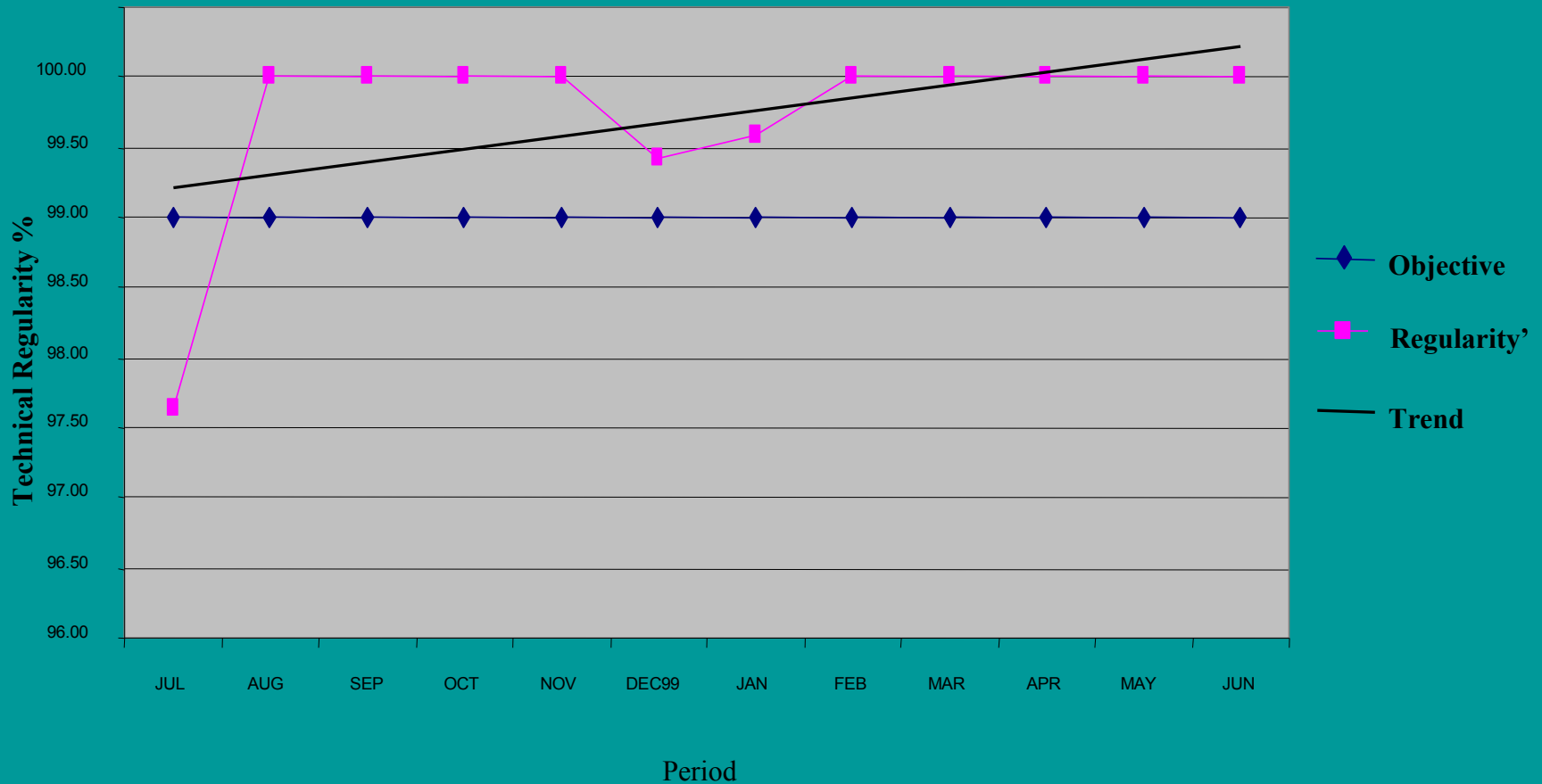
## SHIP MAINTENANCE





## SHIP MAINTENANCE

### Technical Regularity





## SHIP MAINTENANCE IMPROVEMENT

### The Strategies

- **Balance between preventive and predictive maintenance;**
- **Balance between acquisition cost and highest Reliability;**
- **Application of Risk Analysis to get the maintenance optimization;**
- **Inclusion of indirect cost in the maintenance costs optimization function.**



## POLICIES & STRATEGIES OBJECTIVE MONITORING

In order to measure and monitor the process together with the efficiency and effectiveness of the policies and strategies adopted it is necessary to set up a series of indicators describing exactly the performance under analysis that are generally known as

# Key Performance Indicators

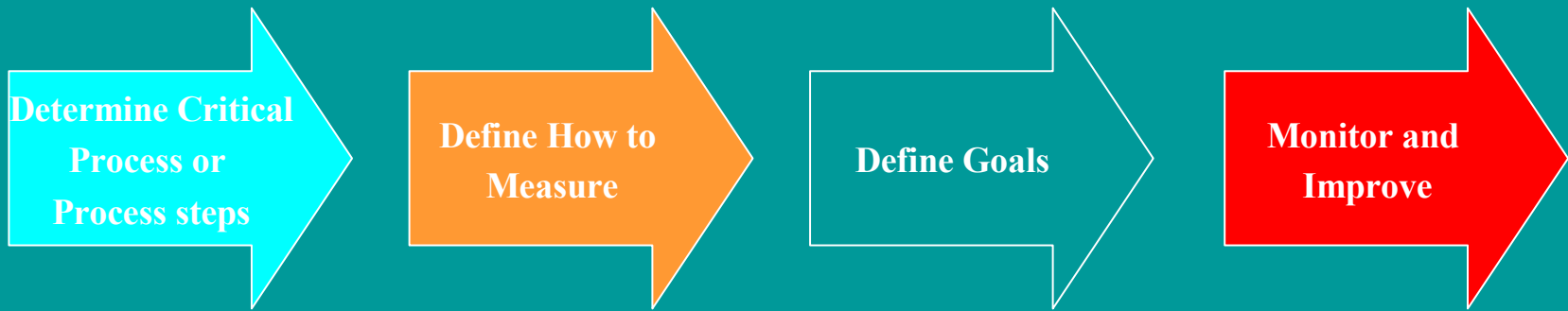


## KEY PERFORMANCE INDICATORS

- **Key Performance Indicators are quantifiable measurements, that reflect the critical success factors of a process;**
- **Whatever Key Performance Indicators are selected, they must reflect the process / organization's goals;**
- **They must be key to its success, and they must be quantifiable (measurable);**
- **Key Performance Indicators usually used for long-term considerations;**
- **The definition of what they are and how they are measured do not change often;**
- **The goals for a Key Performance Indicator may change as the organizations goals change.**



**KEY PERFORMANCE INDICATORS**



**KPI**

**A measure of business main indicators variable with the time**



**KEY PERFORMANCE INDICATORS**

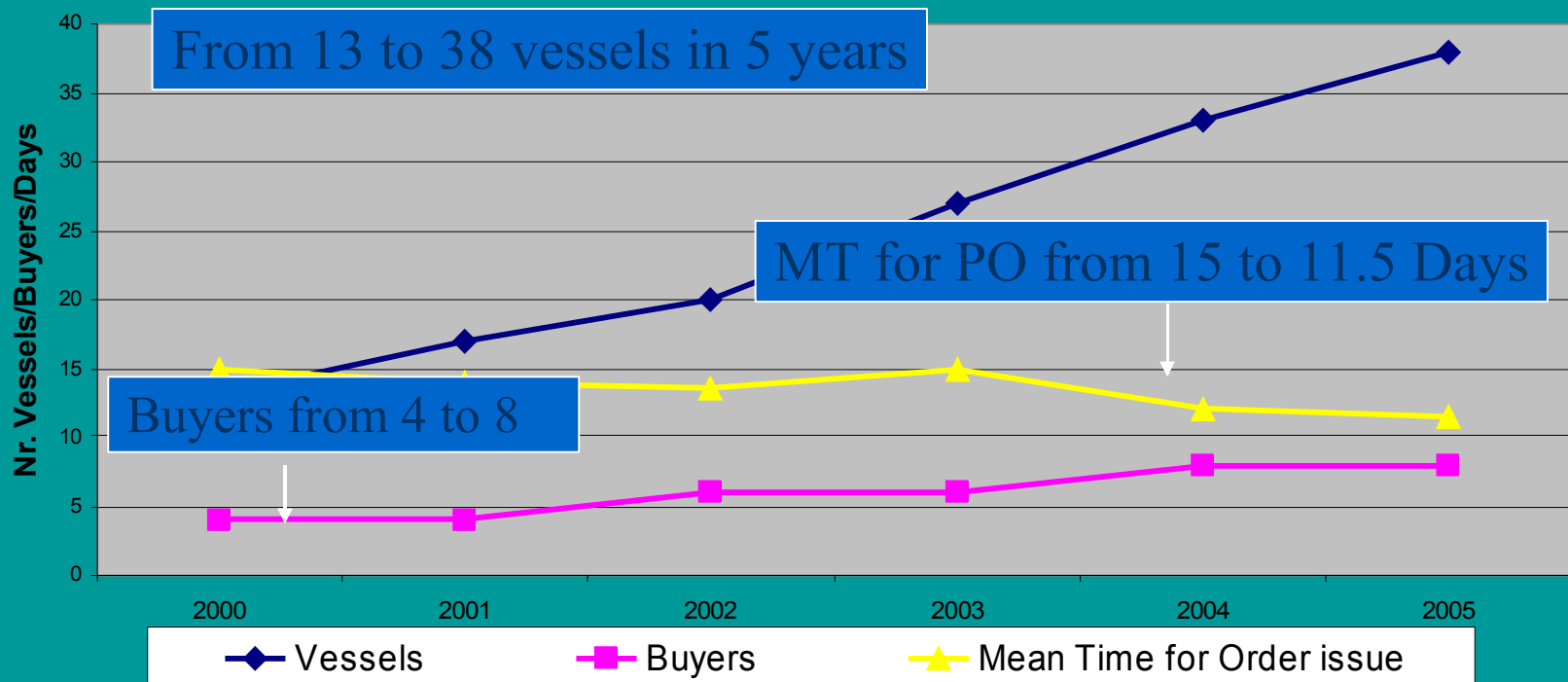
**The Following Data are from  
Grimaldi Group Naples  
CMPM System and relevant to  
a fleet of 38 vessels**

**Ro-Ro Multipurpose, Car  
Carriers and Pax Ferries**



## KEY PERFORMANCE INDICATORS

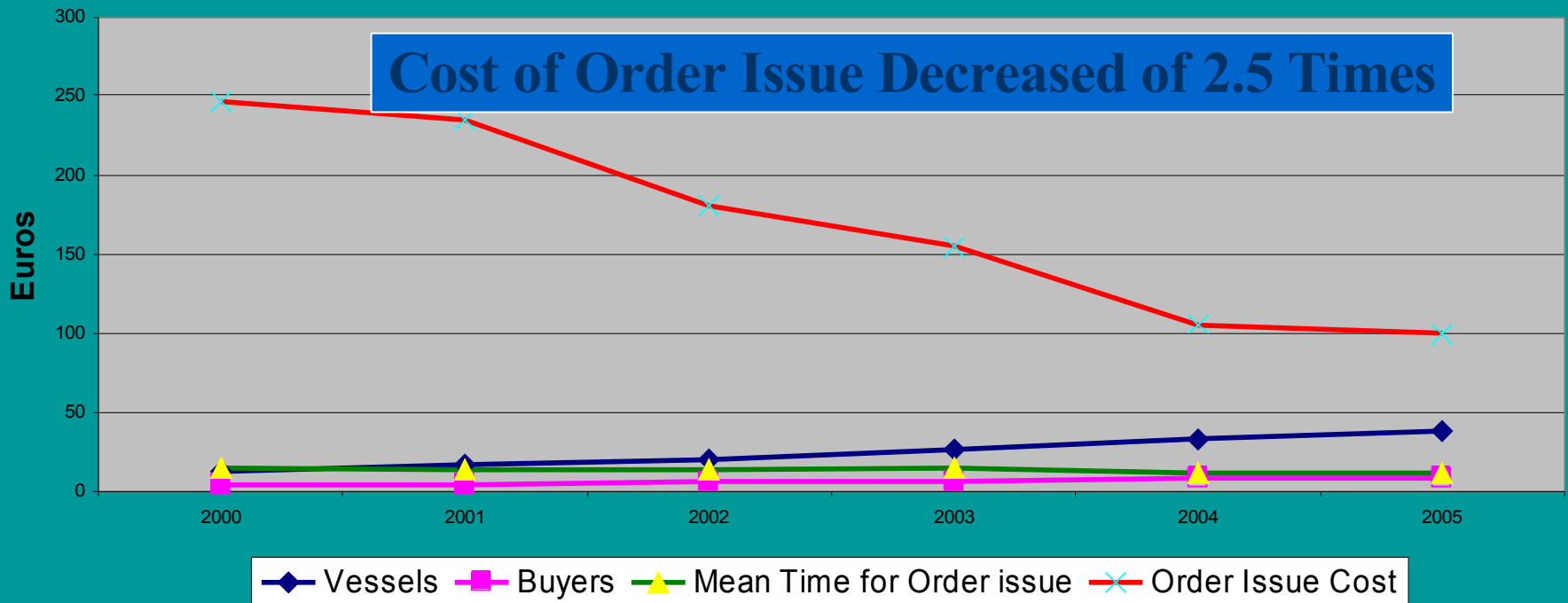
N°of Vessel, Mean Time Between Order Issue, N°of Buyers





## KEY PERFORMANCE INDICATORS

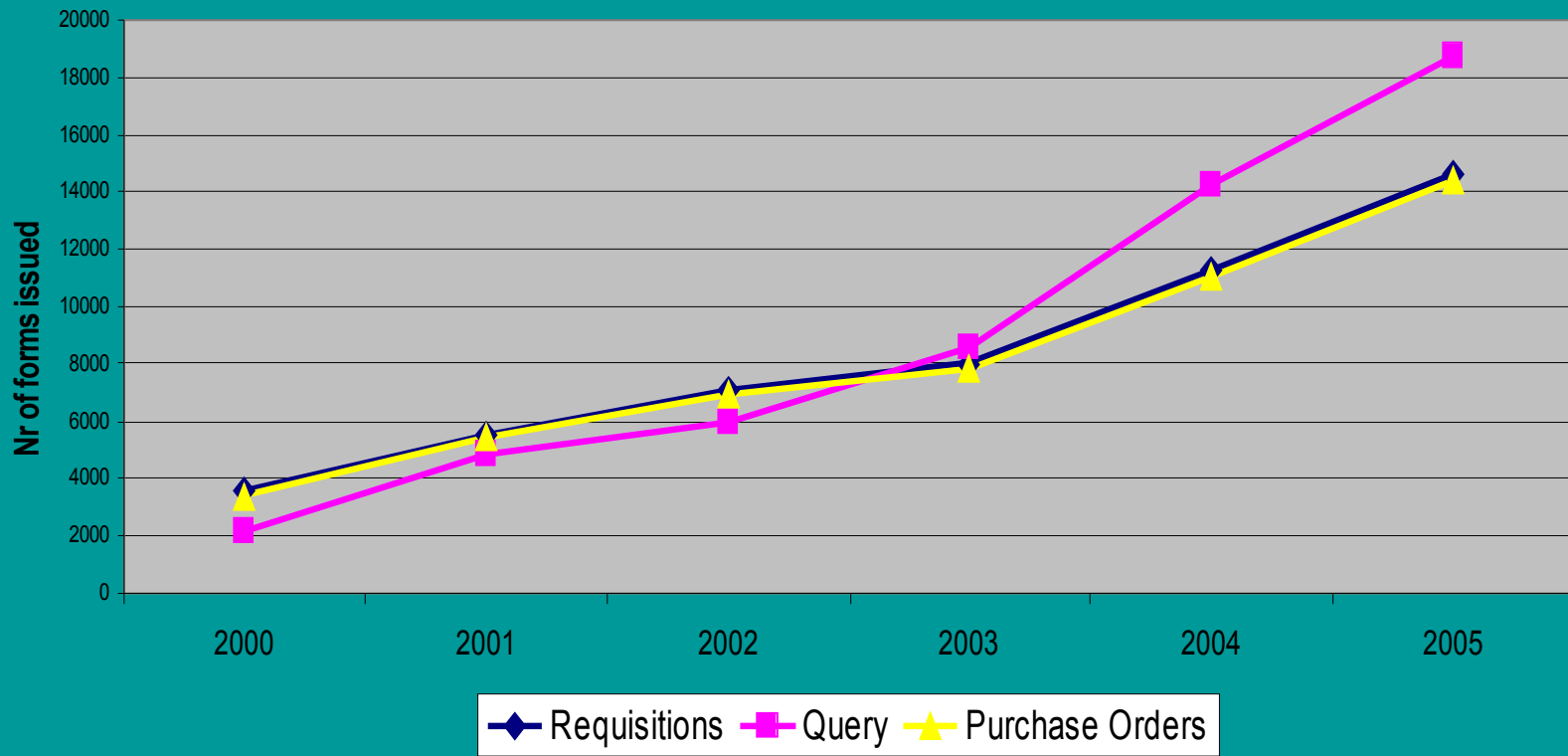
### Cost of orders - trend





## KEY PERFORMANCE INDICATORS

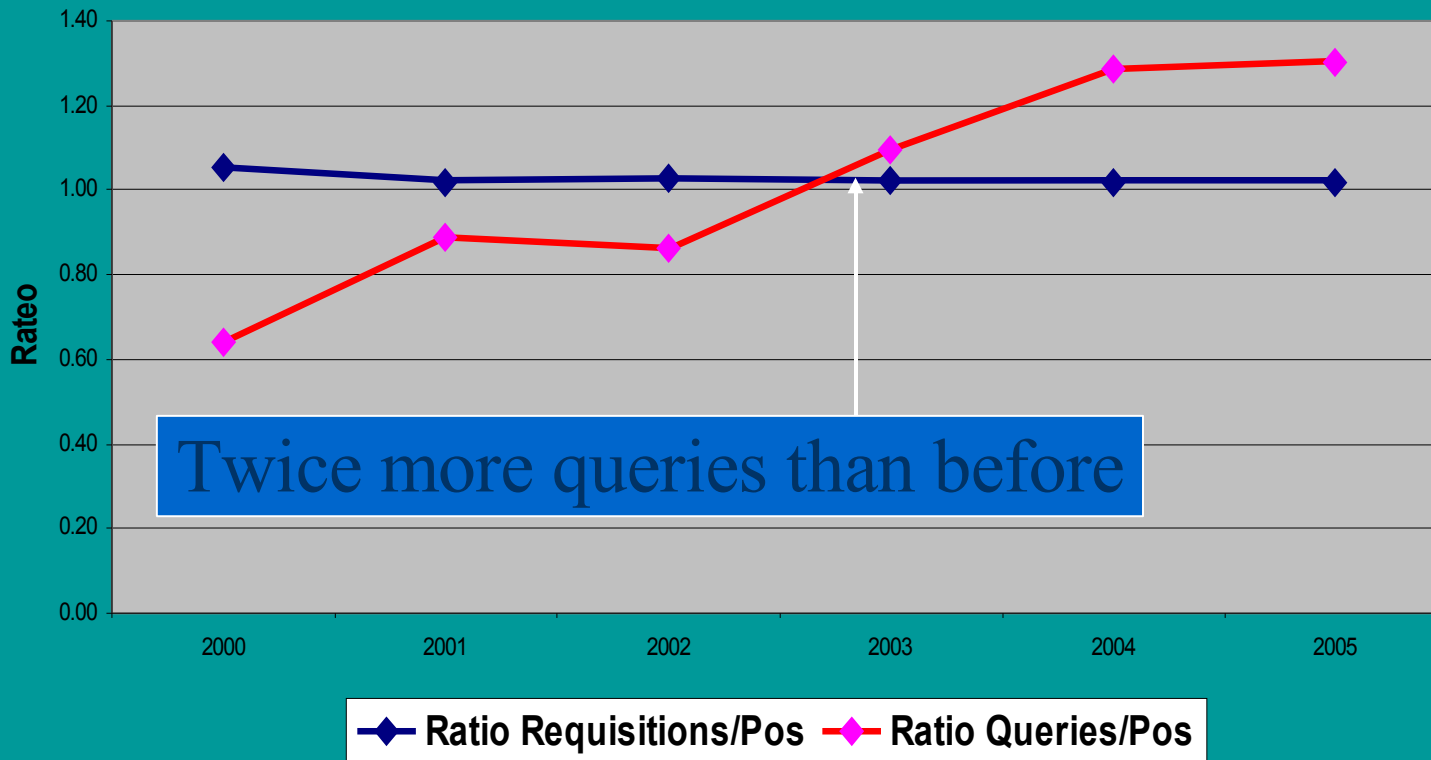
### Purchasing Forms





## KEY PERFORMANCE INDICATORS

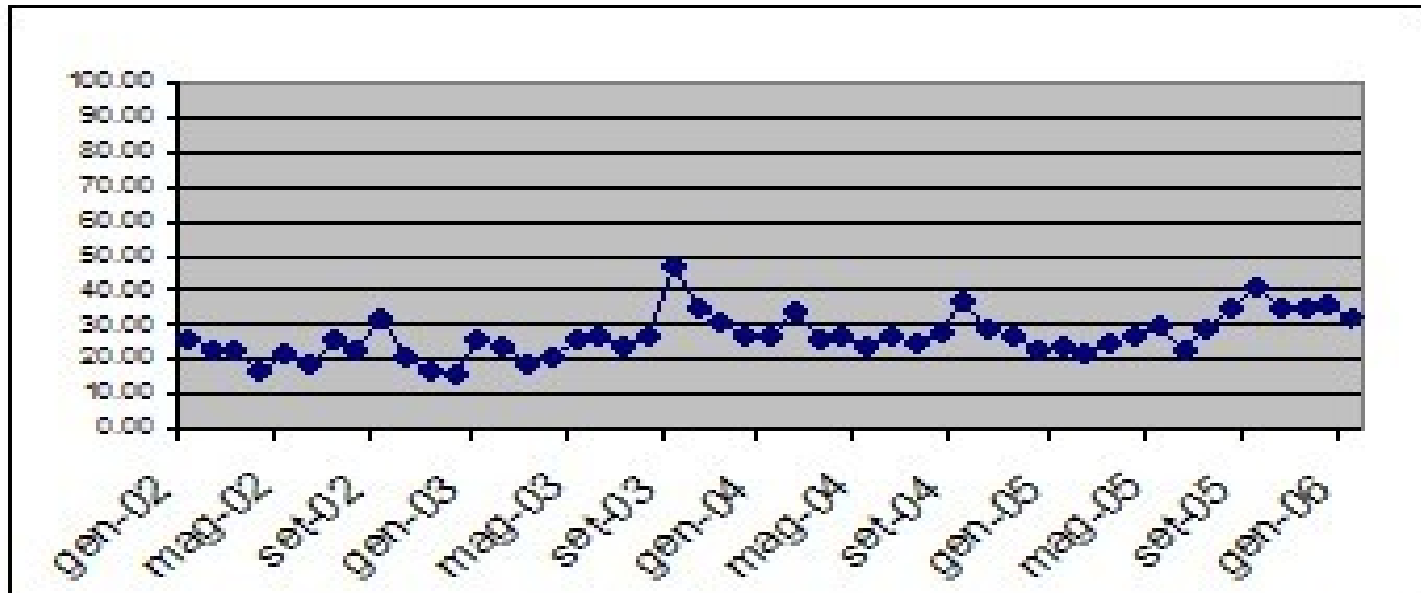
Ratios





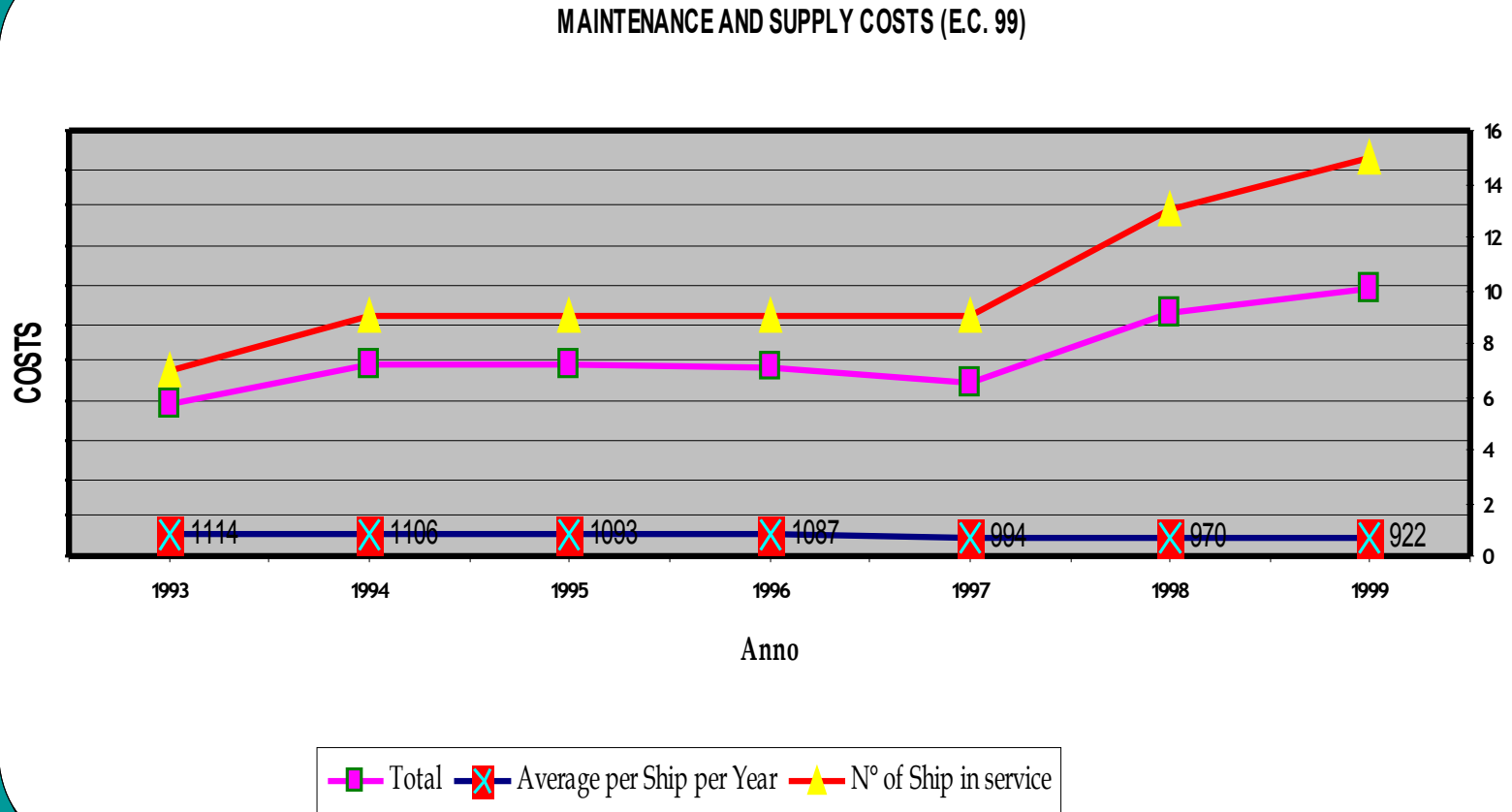
## KEY PERFORMANCE INDICATORS

### Invoice Control Time





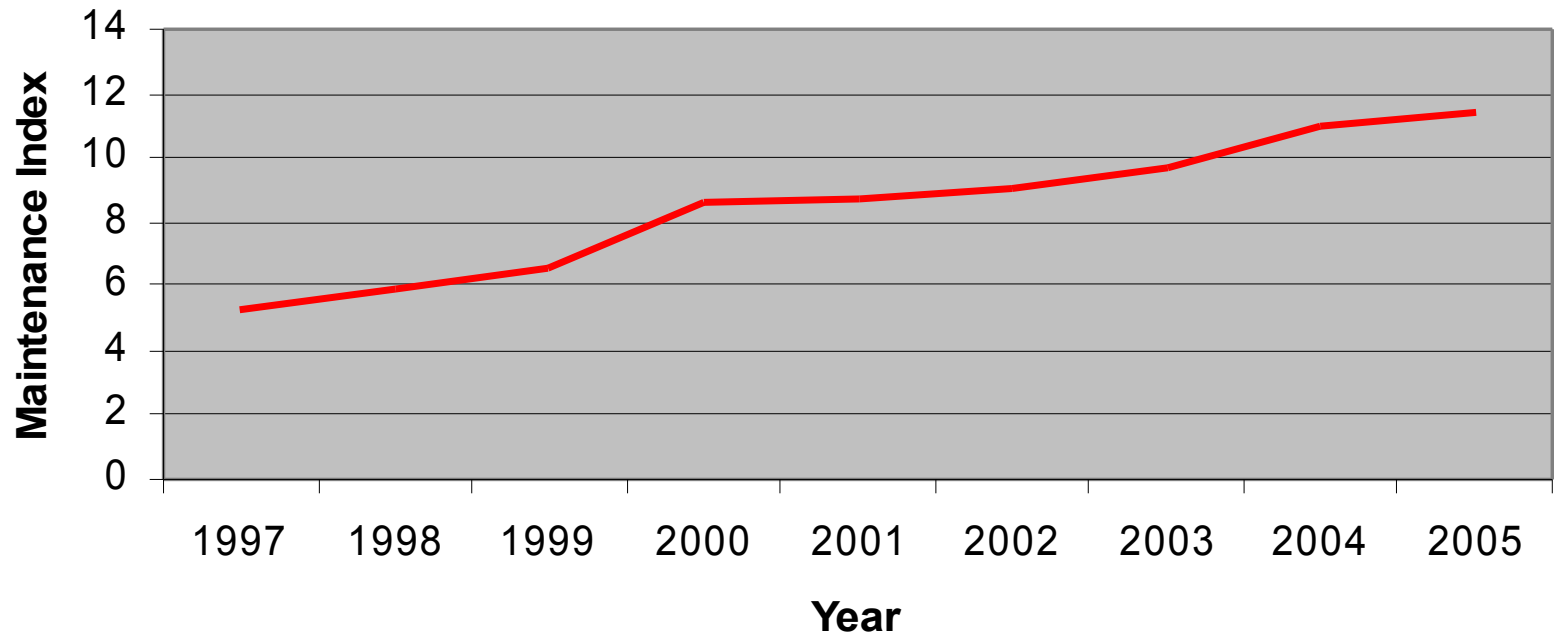
## KEY PERFORMANCE INDICATORS





## KEY PERFORMANCE INDICATORS

### Maintenance Preventive Vs. Corrective





## KEY PERFORMANCE INDICATORS

### The Benefits

**The results reached are:**

- **The company purchasing is more efficient than before. While the number of vessels is tripled, number of buyers is doubled, Mean Time Between Order Emission decreased of 23%;**
- **Savings have been achieved for maintenance and purchase;**
- **Less Corrective Maintenance more Preventive Maintenance;**
- **Higher Maintenance Intervals;**
- **Economic savings achieved;**
- **Cost of Order issue decreased of 2.5 times;**
- **Better ways of working: faster and with less mistakes;**
- **Invoice Control Time Reduced. Payment done on time.**



## KEY PERFORMANCE INDICATORS

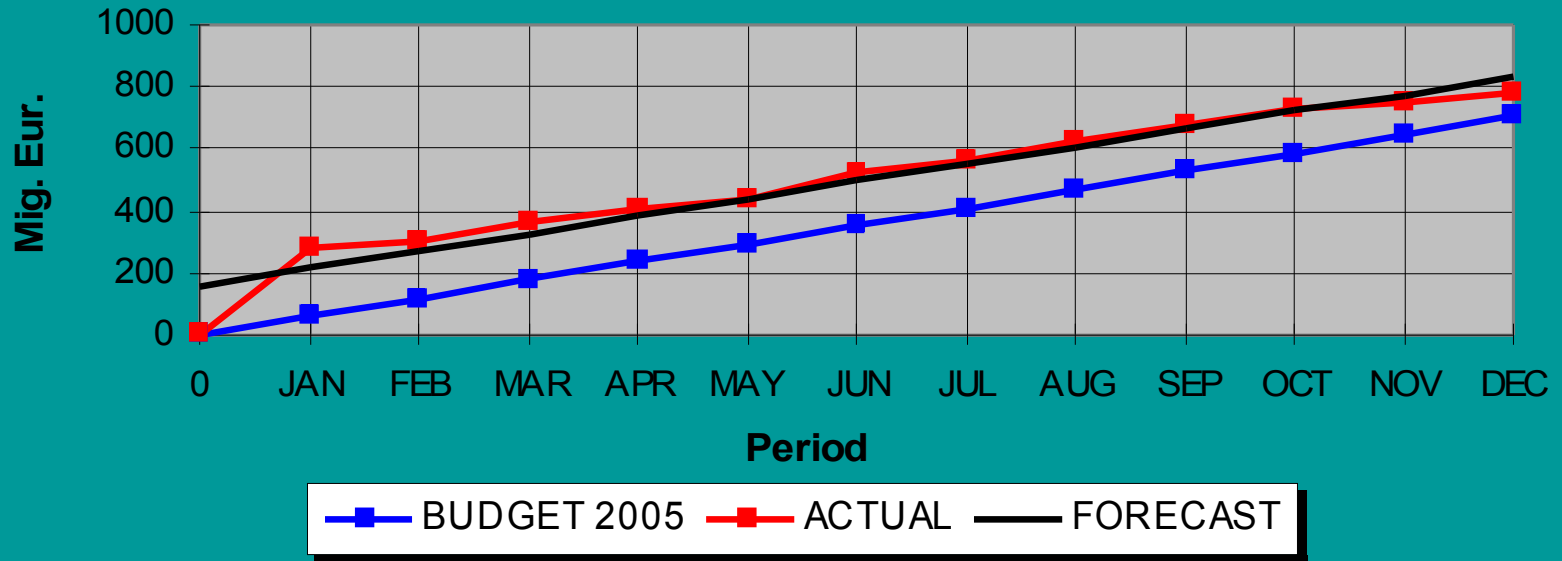
The parameters shown are a good example of KPI to be utilised in monitoring the performance of Maintenance and Purchasing department and are from the passive cycle of Maintenance and Purchasing. Also parameters of active cycle could be monitored and used as KPI in order to improve purchase and negotiations with suppliers such as:

- Turn over by supplier;
- Turn over by product class;
- Average price for product class;
- Product class by origin;
- Geographical distribution of purchase;
- Maintenance Man hours per Repair
- Budget vs. Actual



## KEY PERFORMANCE INDICATORS

### MAINTENANCE AND SUPPLIES ACTUAL VS BUDGET





## E-COMMERCE

### The Next Step

**According to the aim of continuous improvement of processes, even if good results have been achieved, a company has to go further if wishes to ameliorate its performance.**

**In the view of Grimaldi Group Naples the next step for further improvement in Maintenance and Purchasing will be e-commerce or in any case Internet Portal Application.**



## MARINE SUPPLY CHAIN COLLABORATION

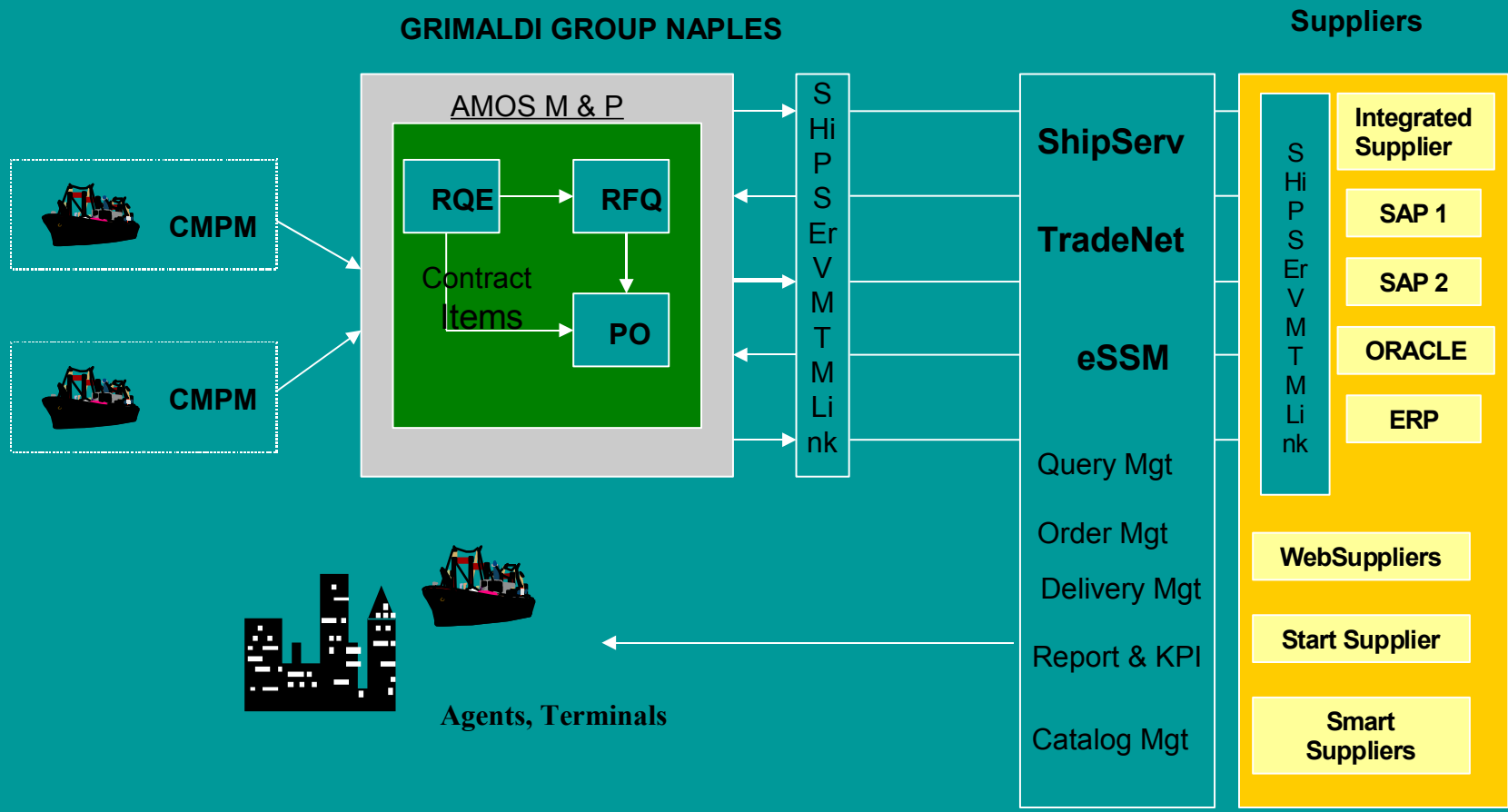
**Integration of back office systems with e-commerce portal is the way to**

**:**

- **Achieve further cost reduction with regard to passive cycle of purchasing;**
- **Obtain additional value from extended KPI analysis;**
- **Benchmark in order to fix more ambitious targets;**
- **Integrate information MPD & Supplier ;**
- **Improve Logistics**



## MARINE SUPPLY CHAIN COLLABORATION





## MARINE SUPPLY CHAIN COLLABORATION

### Conclusion

**Only companies capable of managing data as a strategic resource and investing in data quality can improve their profitability and efficiency and the use of these information for strategic planning will impact their overall business result positively.**

**In the ship technical management the limited visibility of what is spent and why across the fleet can have a relevant economical impact. Without high quality usable and electronic data, KPI, benchmarking, inefficient processes remain unchanged, causing vessel operating costs to be higher than necessary.**



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## QUESTIONS ?



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