

***Software Maintenance Maintenance Productivity  
Controlling the Customer Expectations***

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***AGENDA***

***1 - Context***

***2 - Software Maintenance Challenges***

***3 - Maintenance Measurement Programme***

***4 - Management Indicators***

***5 - Benefits***

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## ***CEO TOOLS TO MANAGE***

- . How do we manage our business today?***
  - . Current MBA models for business management***
  - . Engineering models for cost prediction and control***

***Based on quantitative methods that use performance data supplied by financial systems and operational systems***

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## ***CEO TOOLS TO MANAGE***

### ***Performance Data***

- Passed***
  - Current***
  - Future***
- 
- By production lines and services***
  - Calculate Production/Financial ratios and trends***
- 



## ***CIO TOOLS TO MANAGE SOFTWARE***

- . Can tell you what was spent where***
  - . How much was done by high level category***
  - . Use mainly customer surveys and Benchmarks***
  - . Knows IT is strategic but has a hard time giving hard numbers to his customers on:***
    - productivity by service, quality of service***
    - profitability of his business***
- 

## ***To answer the CIO Questions***

### ***NEED A CHANGE IN SOFTWARE MANAGEMENT CULTURE***

- . Push Towards I.S. charge back***
    - Software development projects***
    - Software maintenance and support***
    - Operations & Infrastructure***
  - . Business decisions are moving to systems owners which will have a service contract (SLA)***
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## ***PROCESS DEFINITION & MATURITY LEVEL***

*. ISO9001:2000 Certification for IS (2002-2004)*

*And*

*. Maturity Model Level 3 achievement:  
MANAGED & DEFINED PROCESSES*

*. STRONG INFLUENCE OF QUALITY PROCESS  
OVER THE DEVELOPMENT CYCLE;*

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## ***SOFTWARE MAINTENANCE CHALLENGES***

*A. Maintenance Culture*

*B. Definitions of Software Maintenance Work*

*C. Usual Indicators*

*D. Management perceptions*

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## ***A. MAINTENANCE CULTURE***

- . SUPPORT THE OPERATIONS (MOVE QUICKLY)***
  - . SHORT AND REPEATABLE MANAGEMENT PROCESS***
  - . RELIABLE TIME RECORDING SYSTEM BASED ON SERVICE REQUESTS AND MAINTENANCE SCHEDULES***
  - . STRONG INFLUENCE IN OPERATIONAL QUALITY REVIEWS***
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## ***B. SOFTWARE MAINTENANCE DEFINITIONS***

- . All activities associated with alteration, modification or changes of software***  
***- Sharpe et al., 1991***
  - . Any work done on a software application after it has been implemented***  
***- Gill & Kemerer, 1990; Parik & Zvegintzov, 1983***
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## ***B. DEFINITIONS***

***A USEFUL CONCEPT TO DISTINGUISH  
MAINTENANCE FROM DEVELOPMENT:***



## ***B. Software DEVELOPMENT PROJECT***

- . A complex problem that needs:***
  - a variety of practitioners***
  - a specific project structure***
  
- . Executive priorities***
  - cost benefits study***
  - work program***
  - deadlines***
  
- . Limit: UKSMA\* IS more than 5 days of effort***

***\*also ISBG***

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## ***B. SERVICE REQUEST***

- . Small request or problem:***
    - 1, rarely 2 practitioners***
    - no project structure***
    - At C&W less than 5 days of effort***
  
  - . Incoming on a random basis***
  
  - . Priority:***
    - First to the operations failures***
    - Second requests prioritized by end-users***
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## ***B. In Summary***



***SOFTWARE MAINTENANCE***  
***=***  
***SERVICE REQUEST***

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### ***C. USUAL SOFTWARE MAINTENANCE INDICATORS***

- . Number of request on waiting list*
  - . Average time in queue*
  - . Estimated number of days in queue*
  - . Number of completed requests*
  - . Number of in process requests*
  - . Days: ACTUALS versus ESTIMATES*
- 

### ***C. USUAL CONCEPT OF SOFTWARE MAINTENANCE***

- . QUEUE SERVICING:*
    - Queue management*
    - Short term management*
    - Reactive management*
  - . IMPACT*
    - Poor control on the demand*
    - 6 to + 12 months*
-



***D. MANAGEMENT PERCEPTIONS CIO)***  
***limited information available***

***. FEW INFORMATION ON MEASURES OF  
SOFTWARE UNDER MAINTENANCE***

***. FEW INFORMATION ON MAINTENANCE OUTPUT***

***. DIFFICULTY TO MEASURE PRODUCTIVITY  
(compared to development)***

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***D. MANAGEMENT (CIO) PERCEPTIONS***

***GOOD MANAGEMENT:***

- OF SHORT TERM***
- OF THE LEVEL OF SERVICE***

***BUT***

***LACK OF ADEQUATE CONTROL:***

- USERS : BUDGET/COSTS, SERVICE SPEED,  
UNAUTHORIZED WORK***
  - SUPPORT SERVICES ARE UNCLEAR***
  - NO PERFORMANCE & TRENDS***
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## ***IMPROVE THE MAINTENANCE MEASUREMENT PROGRAMME***

***A: LIST THE AREAS TO IMPROVE***

***B: KEY MEASUREMENT CORNERSTONES***

***C: DEFINE COMMON MEASURES***

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### ***A) DELIVERABLE-BASED APPROACH***

***. PRODUCTIVITY IS DERIVED FROM THE  
OUTPUTS AND THE INPUTS***

***. "IT IS ESSENTIAL TO HAVE A DEFINITION  
OF THE OUTPUTS OF THE MAINTENANCE"  
- Abran & Nguyenkim, 1993***

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## ***A) PREREQUISITES TO MEASUREMENT***

- . DEFINED PROCESS FOR MAINTENANCE  
(ex: ISO14764, IEEE1219)***
  - . CONTROL AND FOLLOW-UP***
    - OF REQUESTS (with Ticket systems)***
    - OF EFFORT (with time recording systems)***
  - . FORMAL APPROVAL PROCESS OF REQUESTS***
  - . SIGN A CUSTOMER SERVICE LEVEL AGREEMENT***
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## ***B) I.S.O. 14764 CATEGORIES***

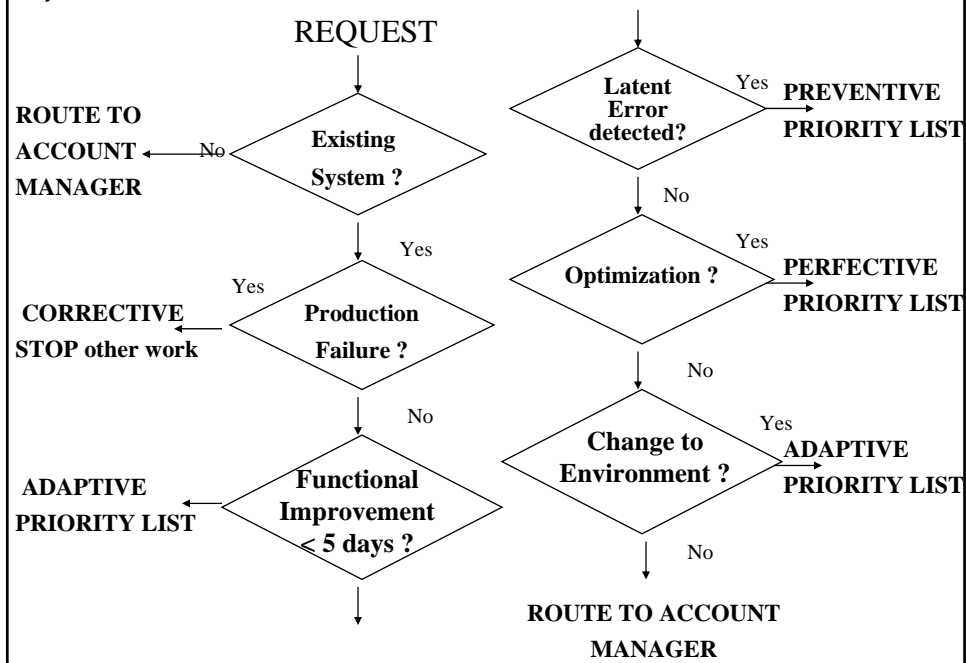


- Enhancements***
  - Adaptive***
  - Perfective***
- Correction***
  - Preventive***
  - Corrective***

***Taken from ISO14764, 1999-11-15***

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## ***B) DOCUMENT THE REQUEST PROCESSING***



## ***B) RECORDING THE EFFORT***

### ***. DIRECT CHARGES:***

***- ALL EFFORTS DIRECTLY RELATED TO A SERVICE REQUEST***

### ***AND***

***- THAT COULD BE BILLED CHARGED AS A SERVICE FOR THE END USER***

### ***. INDIRECT CHARGES***

- TRAINING & BOOKS***
  - TRAVEL & MEALS***
  - PRAYER***
  - SICKNESS & LEAVE***
-

## ***B) FOLLOW-UP & CONTROL***

***. DAILY COLLECT***

***. CONTROLS***

***- VALIDATION ON RECORDING***

***(Integrity)***

***- COMPLETE (All & all the time)***

***. ANALYSIS OF DATA***

***. BUDGET ON A SYSTEM BASIS***

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## ***C) ANALYSIS OF MAINTENANCE BUDGET***

***. IS INTERNAL ANALYSIS***

***- PER MAINTENANCE***

***GROUP***

***- PER APPLICATION***

***- PER PERSON***

***. ANALYSIS FOR USERS***

***- PER APPLICATION***

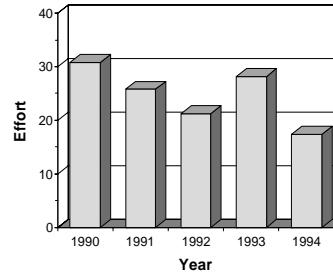
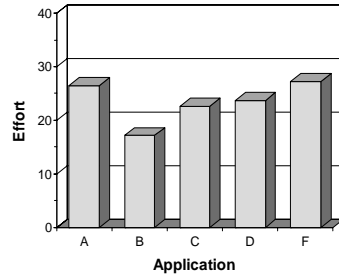
***- PER MAINTENANCE***

***CATEGORY***

***- BUDGET COMPARISON***

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## ***B) COMPARE APPLICATIONS INTERNALLY (INTERNAL BENCHMARK)***



## ***B) PRODUCTIVITY INDICATORS***

### ***. DELIVERY RATE (Requests/Days) PER***

- ***CATEGORY***
- ***APPLICATION***
- ***SIZE (more mature organisations)***

### ***. TRENDS PER***

- ***DIVISION***
  - ***CATEGORY***
  - ***APPLICATION***
  - ***PERIOD (quarterly, yearly)***
  - ***SIZE and COMPLEXITY***
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## ***BENEFITS***

***MANAGEMENT INFORMATION***

***BENCHMARKING (Internal and External)***

***BUDGETS BREAKDOWN***

***STRATEGIC ADVANTAGES***

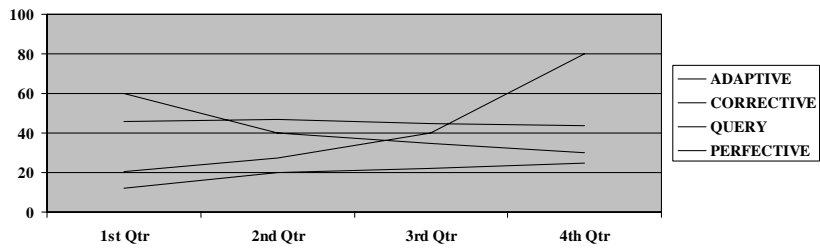
***INDUSTRIAL COOPERATION***

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## ***BENEFITS – MEASURABLE EVIDENCE***

***. JUSTIFY MAINTENANCE ACTIVITIES***

- DELIVERY RATE***
- TRENDS BY SERVICES***



## ***Conclusion***

**it is rare to find “IS” software Support and Maintenance Groups that:**

- THAT HAVE A MAINTENANCE PROCESS  
DEFINED AND UNDER CONTROL**
  - THAT HAVE ONE “SERVICE LEVEL AGREEMENT”  
SIGNED WITH THEIR CUSTOMERS**
  - THAT HAVE A MEASUREMENT SYSTEM WHICH  
REPORTS THEIR ACTIVITIES MONTHLY**
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