OLDM

DATA MANAGEMENT IN THE NEW MILLENIUM

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OVERVIEW

- Market Pressures
- Traditional Decision Support
- OLDM: IT Beyond the Data Warehouse
- Implementing OLDM
- The Potential of OLDM

BEFORE YOU LEAVE…

PLEASE FILL OUT YOUR EVALUATIONS!

Thank you!

MARKET PRESSURES
ENTERING THE NEW MILLENIUM

- **Rapid Change Demands Operational Action**
  - **FASTER THAN MANAGEMENT CAN ANALYZE INFORMATION**
  - **FASTER THAN MANAGEMENT CAN BE INFORMED**
- **Electronic Commerce**
  - **$236 BILLION U.S. BY YEAR 2002 (FORRESTER RESEARCH)**
- **Globalization**
- **Old Style Decision Support Won't Suffice**
  - **TOO SLOW**
  - **TOO AD-HOC**

CONCLUSION

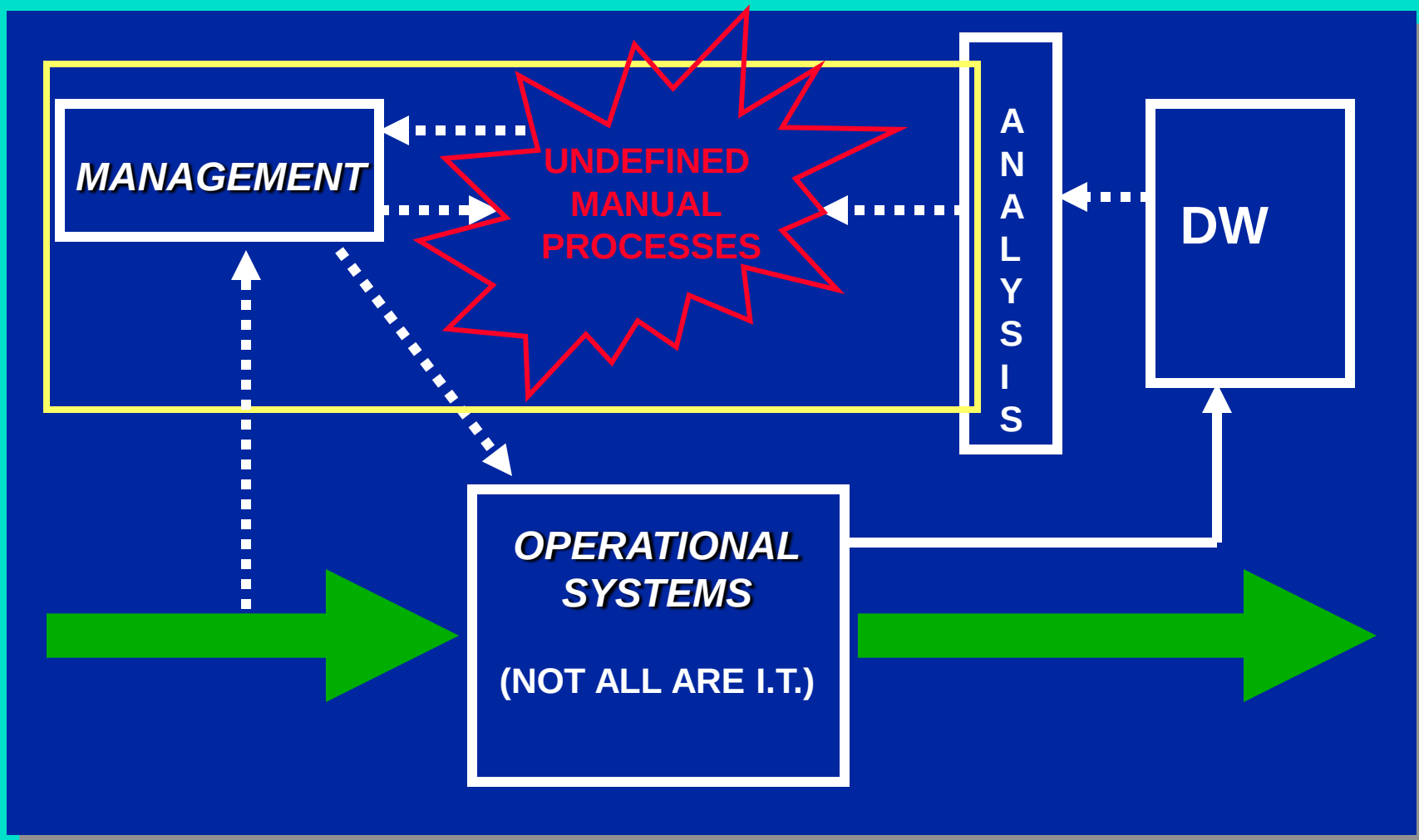
Only Agile Businesses Will Survive

TRADITIONAL DECISION PROCESS

- **Management Decisions Traditionally Based on *Judgement***
  - **POOR RECORDS KEEPING OF SITUATION, REASONING, AND DECISION**
  - **LITTLE FEEDBACK ON RESULTS**
  - **DECISION IS HEURISTIC AND AD-HOC**
  - **NOT PREFERRED BY MANAGERS**
  - **BUSINESS CAN'T "LEARN"**
  - **DECISIONS ARE SLOW, EVEN IF REPEATED**
  - **"POLICY MANUALS" DON'T FIX THE PROBLEM (NO ONE READS THEM)**

SUPPORTING THE JUDGEMENT

THE DSS APPROACH



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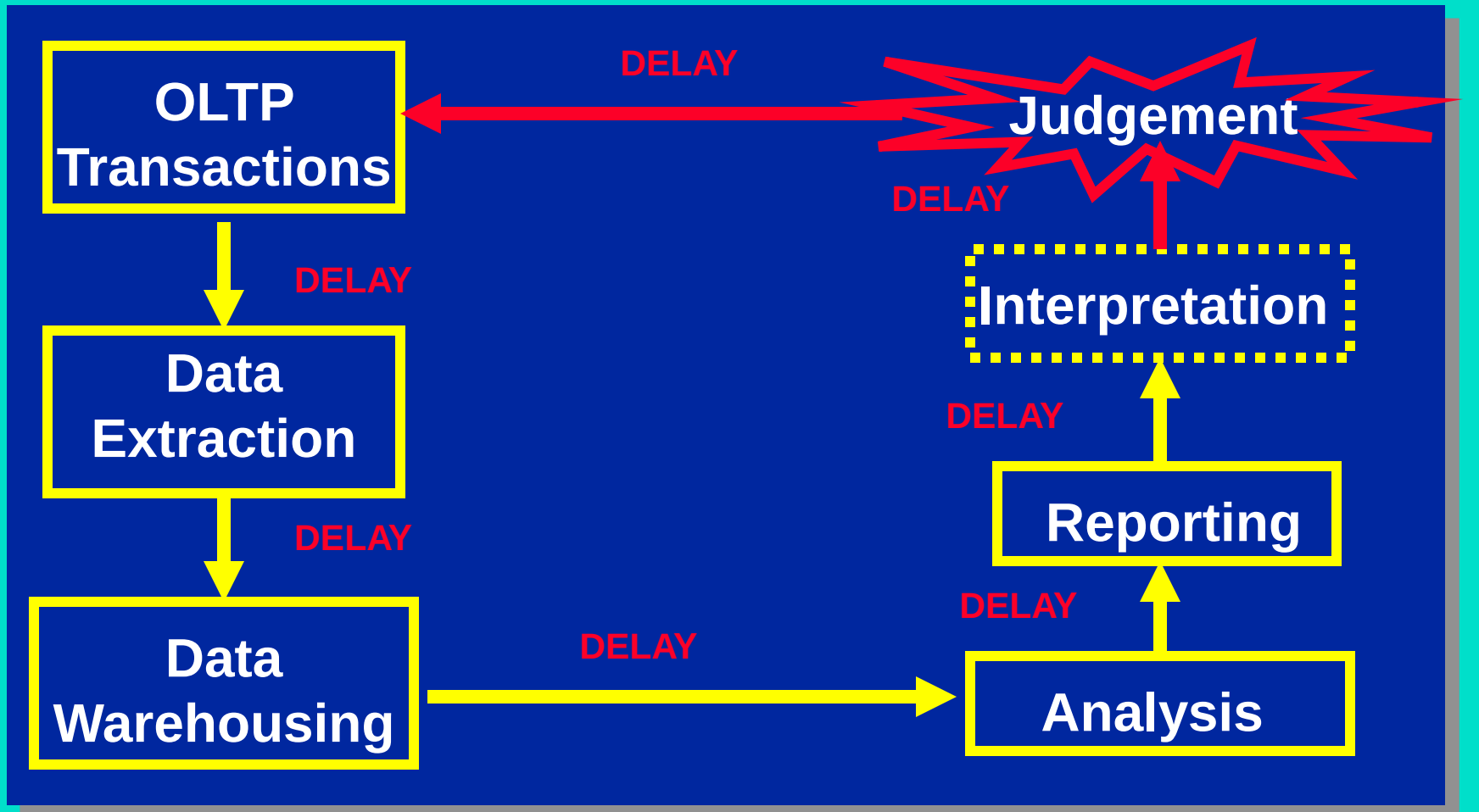


OLTP
Order Processing

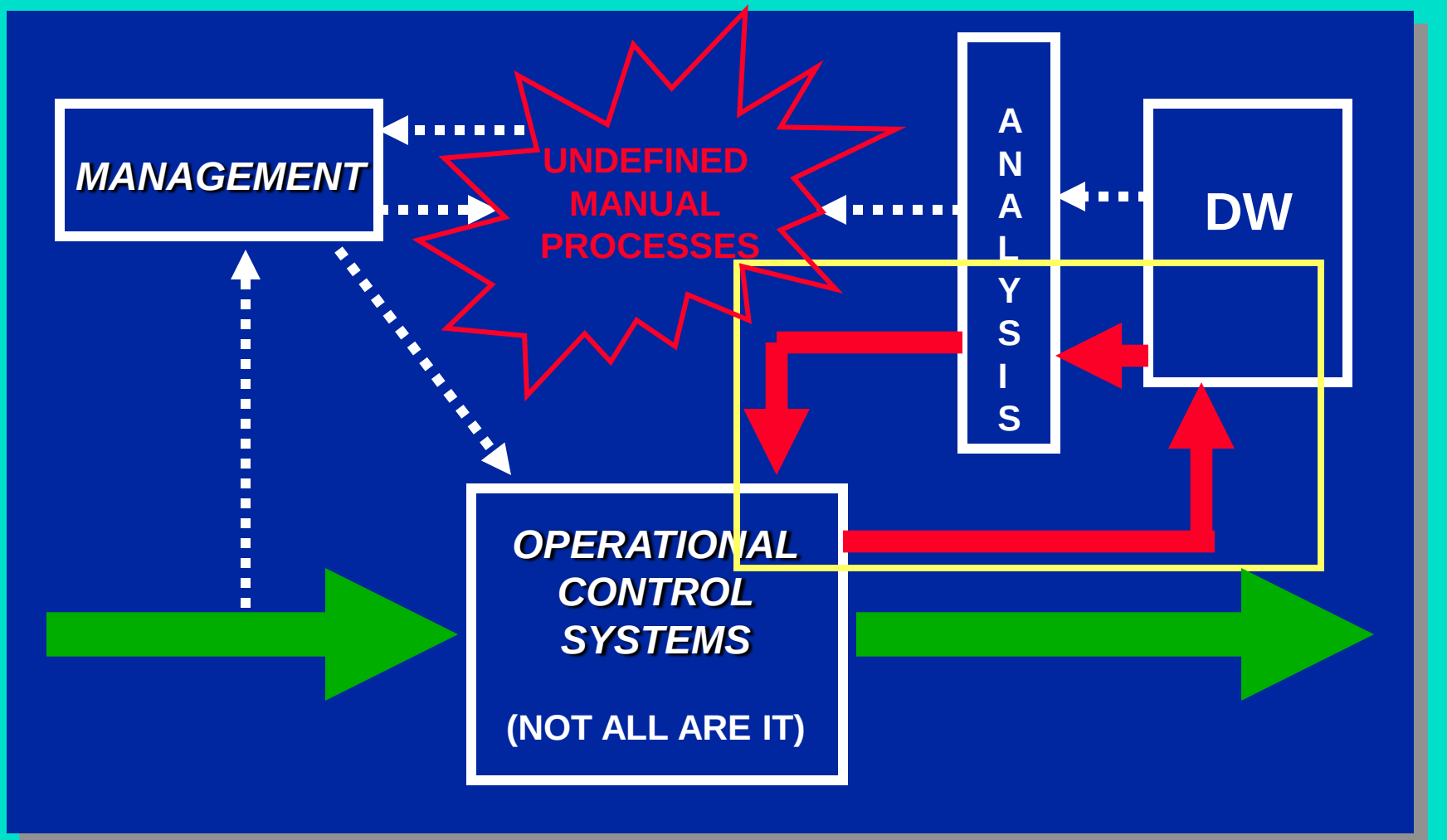
- **Focus on Collecting Information (Order Acquisition)**
  - CORRECTNESS
  - SPEED
  - QUEUED FOR FULFILLMENT (PACKING, SHIPPING, BILLING)
- **Automated "Customer" Interaction Is Sequential**
  - CUSTOMER ORDERS ARE INPUTS
  - SHIPMENTS AND BILLS ARE OUTPUTS
- ***Only Secondarily* Drive Business Functions**
  - SERVICE LEVELS
    - » *INVENTORY REPLENISHMENT IS SEPARATE*
    - » *LITTLE CUSTOMER KNOWLEDGE OR FEEDBACK*
  - DELAYS OF DAYS OR WEEKS POSSIBLE

PROBLEMS AND OPPORTUNITIES

- **Problems**
  - DELAYS, DELAYS, DELAYS
  - INCONSISTENT ANALYSIS AND REPORTING
  - INCONSISTENT JUDGEMENT
  - UNRELIABLE IMPLEMENTATION
  - DIFFICULT TO CHANGE
- **Opportunities**
  - CERTAIN DSS PROCESSES CAN BE
    - » *ANTICIPATED*
    - » *PARAMETERIZED*
    - » *DECOMPOSED TO THE OLTP TRANSACTION LEVEL*
  - DRIVEN BY INDIVIDUAL TRANSACTIONS
    - » *DELAYS AND INCONSISTENCIES DISAPPEAR*
    - » *IMMEDIATE FEEDBACK ENABLES MUCH HIGHER SERVICE LEVELS*

OLDM

MORE THAN CLOSED LOOP DSS



WHAT IS OLDM?

(On-Line Decision Management)

- **Restoring The Highly Integrated Business**
  - OLTP, DECISION SUPPORT, BUSINESS MODELING, AND PLANNING FUNCTIONS
  - INCREMENTAL RATHER THAN PERIODIC
  - ONLINE DATA CAPTURE
  - ONLINE LOOKUP AND RECOMPUTATION OF CONTROL VALUES
  - ONLINE EXECUTION OF PARAMETERIZED DECISION RULES
- **Decision Support Information Capture**
  - ACCESS DEMOGRAPHICS, STATISTICS, etc.
  - SURVEY CUSTOMER ONLINE IN EXCHANGE FOR AN ADDITIONAL DISCOUNT.
  - SIMULTANEOUS WITH BUSINESS FUNCTION INPUTS

WHAT IS OLDM?
(On-Line Decision Management)

- **Compute/Estimate Secondary and Control Information**
  - BASED ON PLANNING AND FORECASTING RULES
  - USING “DELTA” PROCESSING
  - CAN BE “ASYNCHRONOUS”
- **Rule Based**
  - DATABASE EQUIVALENT OF AN EXPERT SYSTEM
  - IMMEDIATE RESPONSIVENESS TO CHANGES IN CONTROL INFORMATION
- **Decision Support Information**
  - AVAILABLE ONLINE
  - READY TO USE "AS IS"
  - MANAGEMENT DEFINED!
  - IMMEDIATELY AVAILABLE TO MANAGEMENT - RAPID REPORTING

OLDM
Order Processing

- **Focus on Customer Satisfaction and Business Profitability**
  - **CORRECTNESS AND SPEED ARE STILL IMPORTANT**
  - **ERRORS AND REPROCESSING ARE AVOIDED**
  - **INVENTORY IS ASSIGNED, BILLING IS PREPARED, AND SHIPPING SCHEDULED *ONLINE***
  - **ONLY PHYSICAL WORK IS POSSIBLY DEFERRED**
  - **PHYSICAL WORK CAN BE SCHEDULED BY SYSTEM**
    - » ***BASED ON CUSTOMER REQUIREMENTS, WORK LOADS, AND AVAILABLE RESOURCES***
  - **CUSTOMER CAN BE GIVEN A DELIVERY COMMITMENT**

OLDM
GOALS AND BENEFITS

- **Analysis of Historical Records**
  - ORDER PROCESSING, INVENTORY LEVELS, SHIPMENTS, RECEIVABLES, CUSTOMER HISTORY, ETC.
- **Goals**
  - MEASURES OF EFFICIENCY
  - ANTICIPATE CHANGES (PLANNING AND FORECASTING)
  - MAKE ADJUSTMENTS
  - INTEGRATION OF MODEL & CONTROL FUNCTIONS
- **Problems Documented On-line**
- **Classes of Problem and Corrective Action Codified**
  - PROBLEM RECOGNITION
  - DECISION RULES

OLDM
RULE-BASED MANAGEMENT

- **Create Strategic Rules**

  IF

  MARKET DEMAND { DECREASES }

  THEN

  IMPLEMENT MARKETING CAMPAIGN { B1 }

  IF

  PROFIT MARGIN DROPS BELOW VALUE { X }

  THEN

  ADJUST OVERHEAD BY STRATEGY { Y }

- **Must Not Forget Alert Rules**
  - **IF UNANTICIPATED CONDITION, THEN NOTIFY THE CFO**
- **Must Not Be Too Reactive**
  - **WOULD CAUSE "THRASHING"**

OLDM
RULE-BASED MANAGEMENT

- **Learning Requires Four Types of Information**
  - **THE CHARACTERISTICS WHICH IDENTIFY A CLASS OF PROBLEM**
  - **THE CORRECTIVE ACTIONS (MANAGEMENT RESPONSES BY PROBLEM CLASS)**
  - **RULES TO IMPLEMENT ACTIONS**
  - **RECORD OF RESULTS**
    - » **DERIVE BUSINESS PERFORMANCE METRICS**

An OLDM Application = a Database Expert System

OLDM
IMPLEMENTING RULES

- **Database Tables For Rules Maintenance**
  - TABLE PER RULE
  - COLUMN PER CONDITION PARAMETER
  - COLUMN FOR NAMED ACTION
  - COLUMN FOR EACH ACTION PARAMETER
- **Rule Processing via Stored Procedures**
  - GIVEN CONDITIONS, FIND ACTION AND ITS PARAMETERS
  - ACTION NAME IS A STORED PROCEDURE NAME
  - EXECUTE FROM WITHIN OLTP TRANSACTION
    - » *CAN BE SYNCHRONOUS OR PARALLEL ASYNCHRONOUS*
    - » *MAY WAIT FOR COMPLETION IN OLTP TRANSACTION*
- **Rules Maintenance**
  - A SIMPLE GUI APPLICATION

OLDM
IMPLEMENTING DELTA UPDATES

- **Store Control Data**
  - SUMMARY TABLES
  - STATISTICS AND DEMOGRAPHICS
  - CLASSIFICATIONS
- **Avoid Table Scans**
  - SELECTIVELY PRECOMPUTE MULTIPLE LEVELS OF ROLLUP
  - STORE LEAST COMMON DENOMINATORS ONLY
    - » COUNT, SUM ARE SUFFICIENT FOR COUNT, SUM, AND AVERAGE
  - USE DELTA UPDATES
    - » INSERT VAL1: *SUM = SUM + VAL1, COUNT = COUNT + 1*
    - » DELETE VAL2: *SUM = SUM - VAL2, COUNT = COUNT - 1*
    - » UPDATE VAL2 TO VAL2: *SUM = SUM + VAL1 - VAL2, COUNT = ?*

A NEW ROLE FOR MANAGEMENT

- **Reactive Management**
  - MONITORS AND IDENTIFIES "IMPORTANT" BUSINESS EVENTS
  - ANALYZES BUSINESS REQUIREMENTS
  - IDENTIFIES PLAN OF ACTION
- **Anticipatory Management**
  - ANTICIPATE BUSINESS CONDITIONS THAT WOULD SIGNAL CHANGE
  - ANTICIPATE APPROPRIATE ACTIONS
  - STATE THESE AS RULES
  - MONITOR RULE EFFECTIVENESS
  - TUNE AND EVOLVE THE RULES
  - HANDLE EXCEPTIONAL SITUATIONS MANUALLY
    - » *AN OPPORTUNITY TO DEFINE NEW RULES!*

THE POTENTIAL OF OLDM

- **Supports Zero Management Initiative**
  - BETTER MANAGED BUSINESSES
  - KNOWLEDGE ASSET CAPTURE AND RETENTION
  - CONSISTENCY ACROSS THE ENTERPRISE AND EXTRAPRISE
  - FLEXIBLE, HIGHLY RESPONSIVE - E-COMMERCE READY!
- **Close Loop With Customer**
  - EVENT AND MARKET DRIVEN, BUT CONTROLLED
- **Direct Customer Interaction**
  - VIA WEB, TELEPHONE, REMOTE CONNECTION
- **Improved System Capacity Planning and System Management**
- **The Re-alignment of Business and IT**

BIOGRAPHY

David McGoveran is a well-known relational database consultant and president of Alternative Technologies (Boulder Creek, CA), specialists in solving difficult relational applications problems since 1981. He published The Database Product Evaluation Report Series; has co-authored several books with Chris Date; and is completing Zero Management: Business in the New Millenium. This seminar is based partially on his workshop: The Client/Server University: Designing Effective Applications.

PLEASE FILL OUT YOUR EVALUATIONS...

Thank you!