High Maturity Practices in Quality Assurance

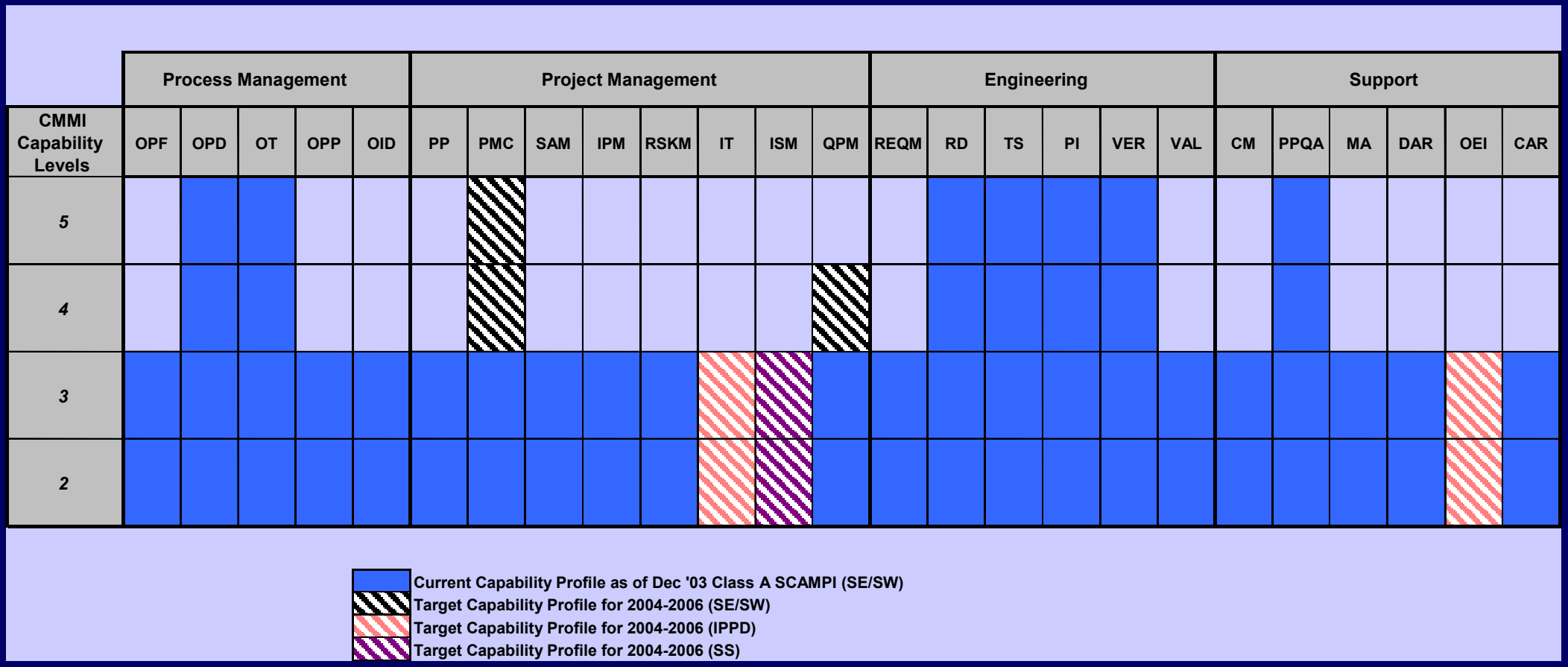
Mechanisms for Quantitative Management (QM) and Continuous Process Improvement (CPI)

Presentation Outline

- Mission Solutions' Maturity Profile
- Quality Assurance (QA) Influence Model
- Quality Assurance Sub-processes
- Quantitative Management
- Continuous Process Improvement
- Results and Lessons

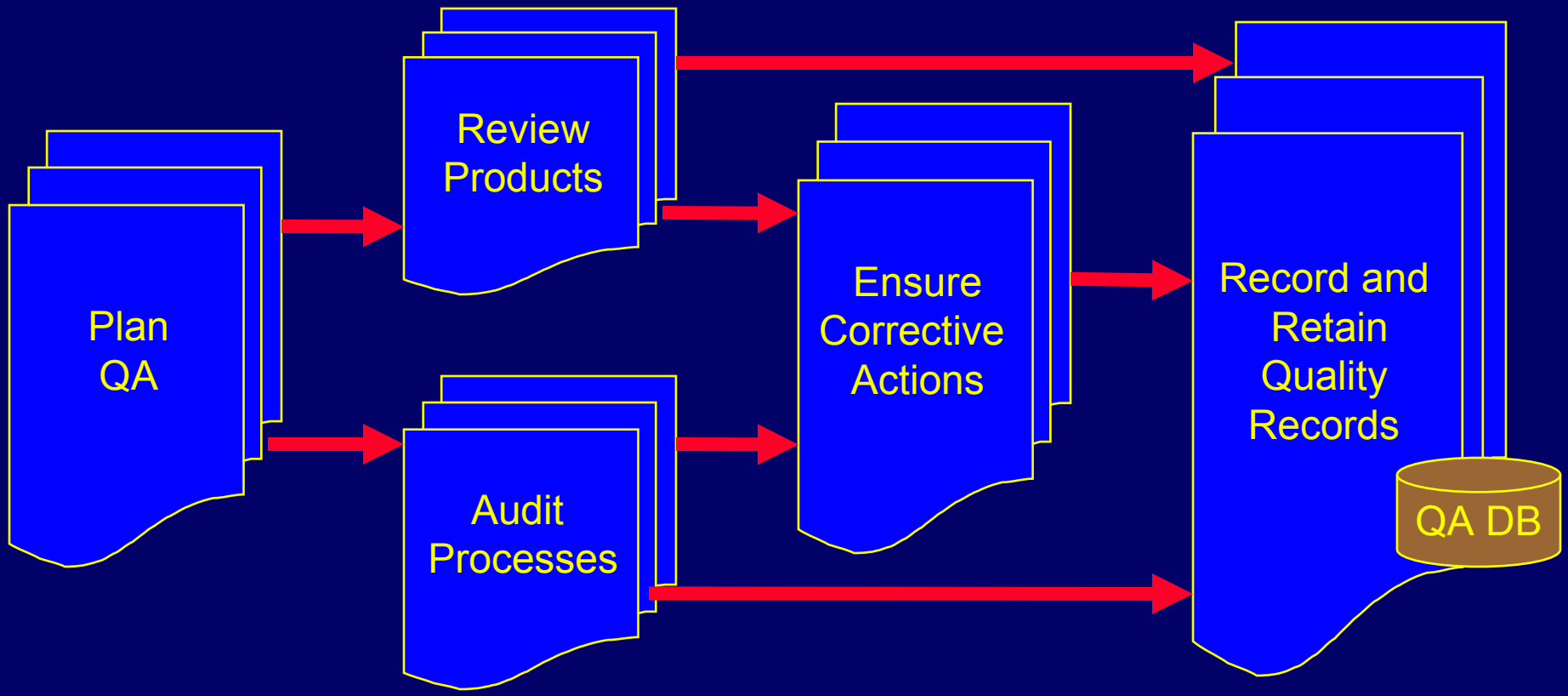
PROCESS IMPROVEMENT PROGRAM

CMMI Capability Profiles for SE/SW/IPPD/SS

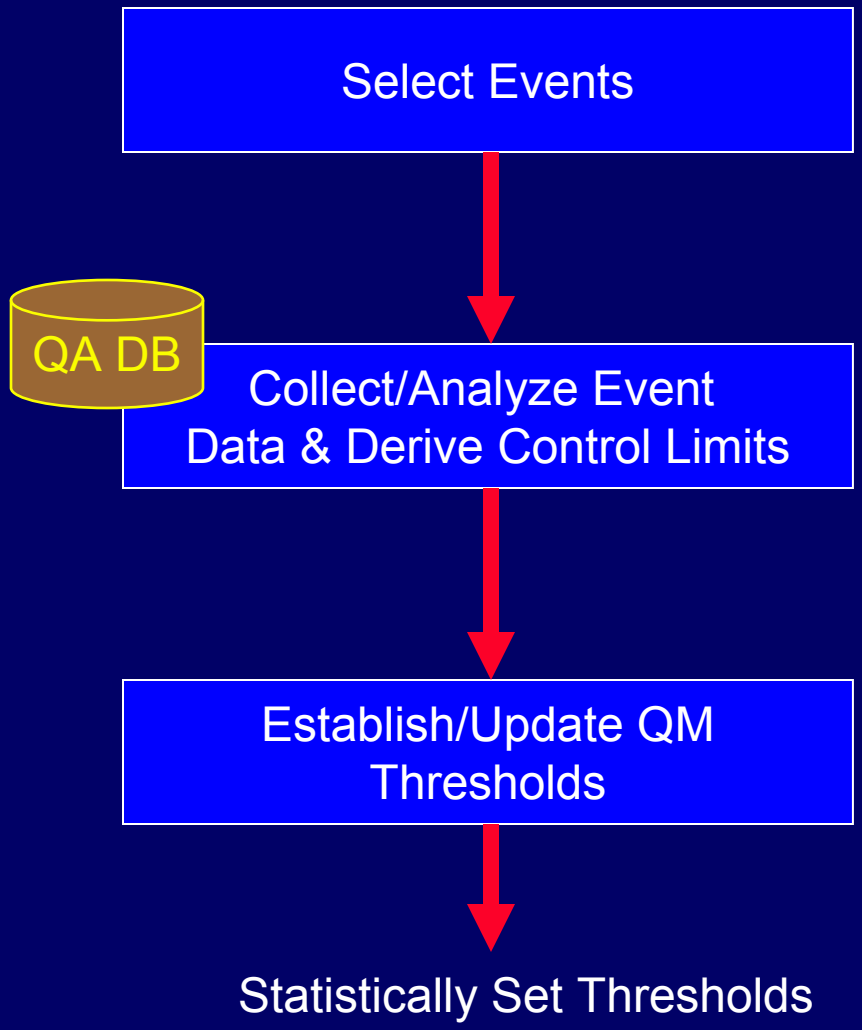


Quality Assurance Influence Model

Primary Quality Assurance Sub-processes



Quantitative Management: Creating the Basis

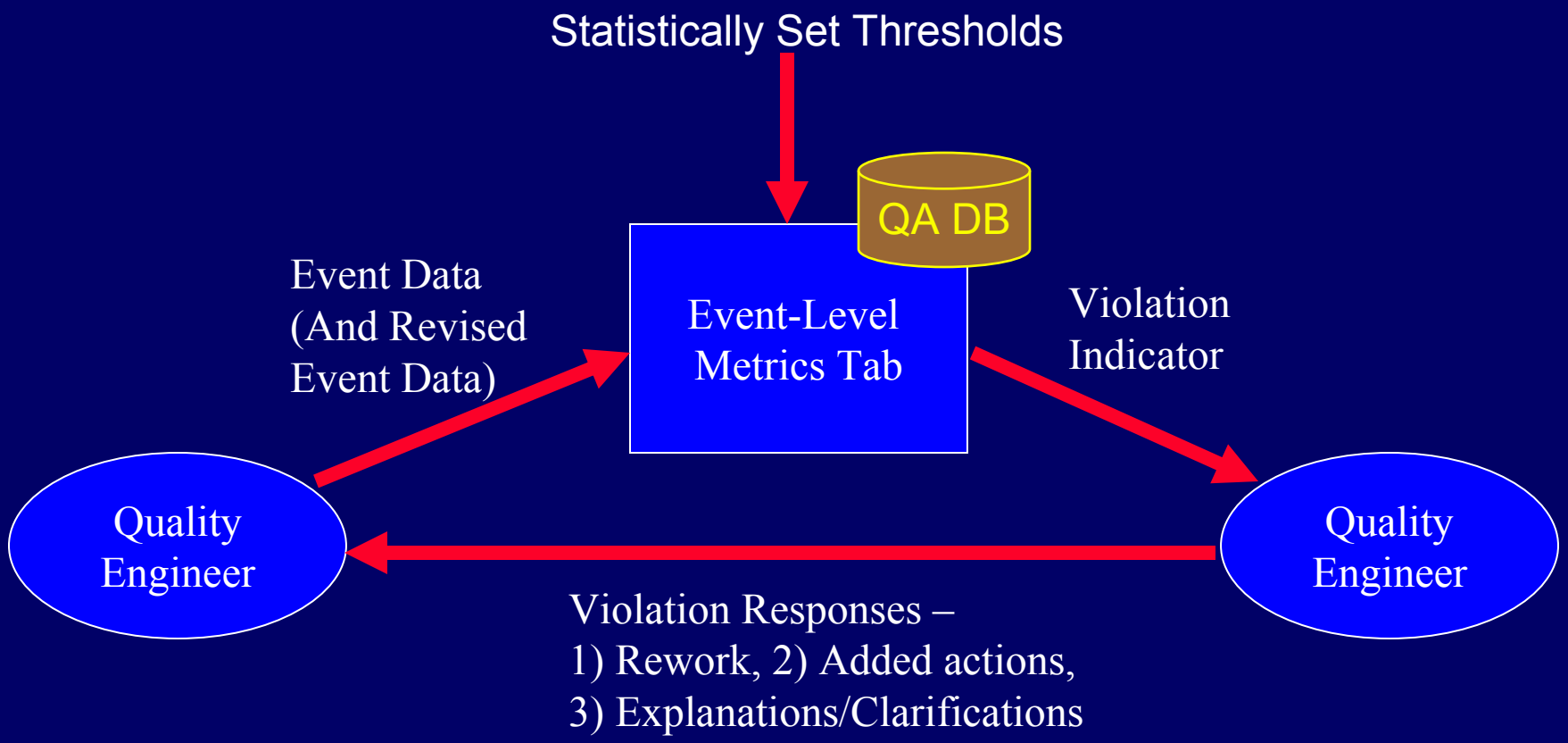


EVENTS:
- Audits
- Document Reviews
- Change Control Board Support
- Metrics Validations

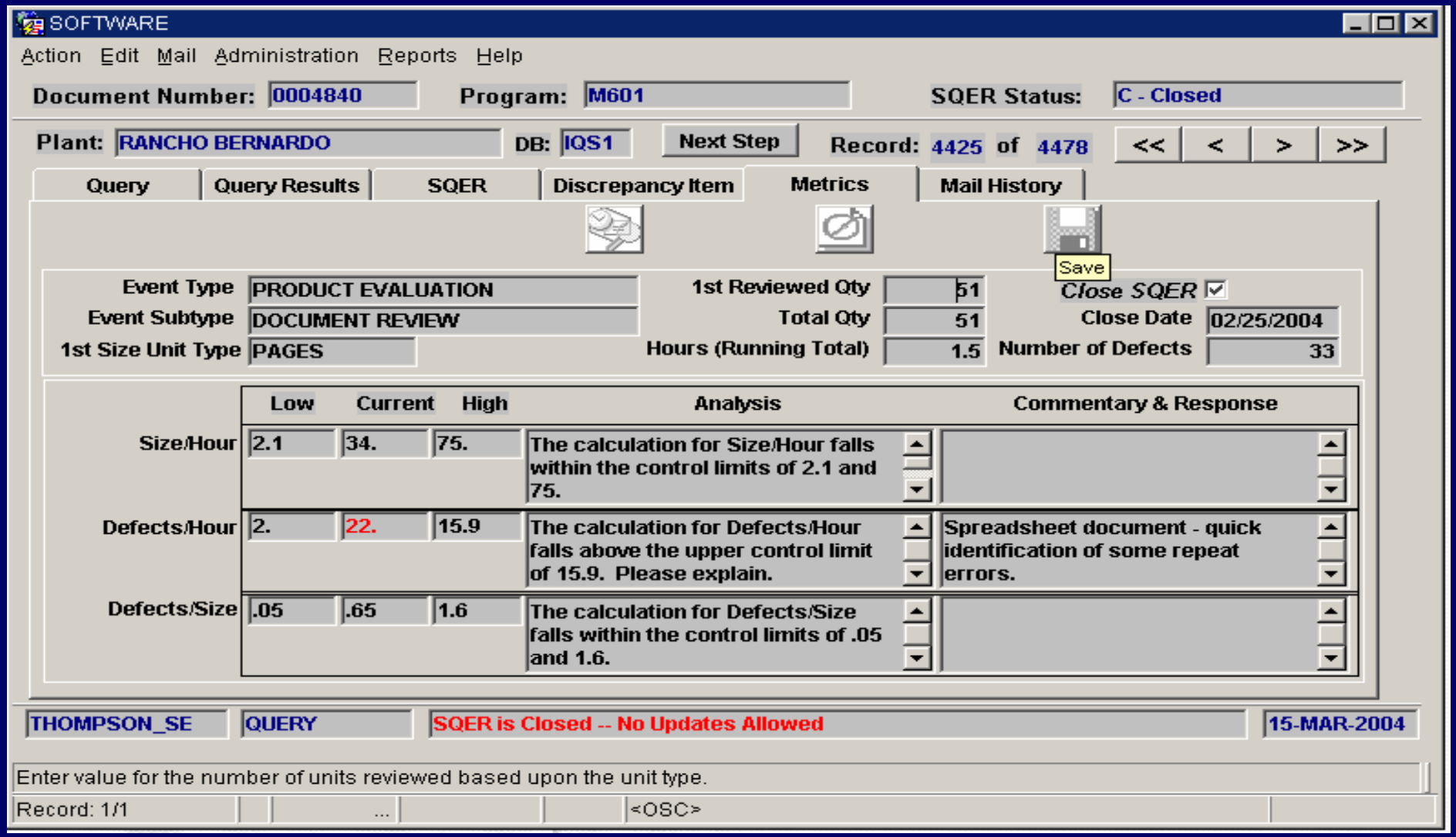
MEASURES:
- Size (#),
- Effort ($),
- Quality/Yield (Q)

THRESHOLDS:
- Set near Mean +/- '3 Sigma'
  - Productivity (#/$)
  - Yield Rate (Q/$)
  - Batch Yield (Q/#)

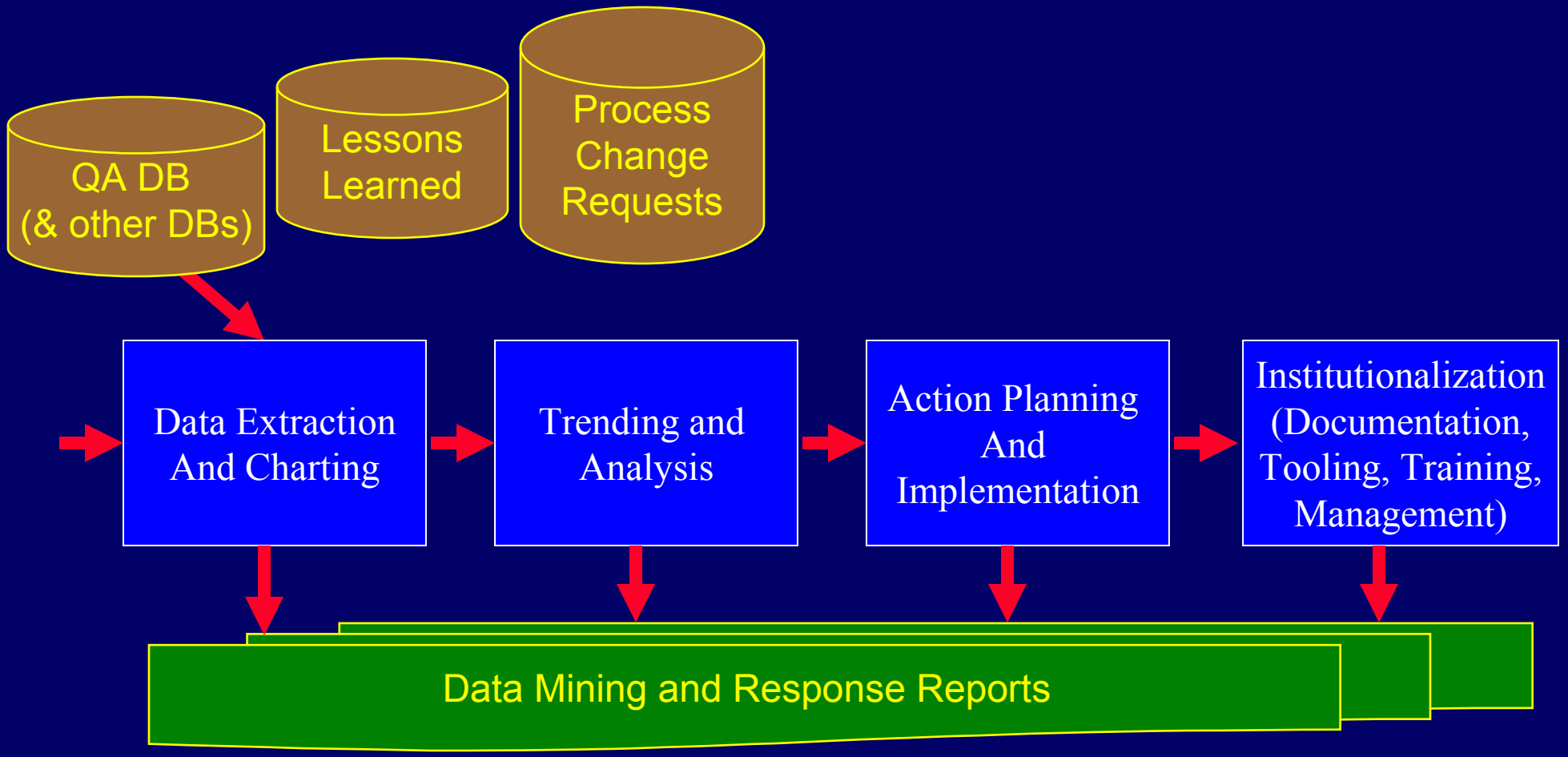
Quantitative Management: Event Level Checking and Intervention



Metrics Tab



Continuous Process Improvement: Transforming Data into Action



Data Mining for Improvement

- Metrics Cycle:
  - Identify Quantitative Goals and Indicators
  - Develop and Implement Plans to Accomplish Goals
  - Identify Measures, Charting, and Analysis

  - Collect Data
  - Create Charts

  - Identify Trends/Anomalies
  - Perform Causal ("Contributing Factors") Analysis
  - Identify and Trigger Actions
  - Track and Report Status

- Document all together ("Data Mining Report")

Realized Improvements

- Quantitative Results:
  - Provided event-level data for estimating QA
    - Project CMMI Audits take 11.74 hours on average, etc.
  - Improved detection of problems
    - Discrepancy Report review findings/hour increased 108%
  - Improved Corrective Actions
    - Proportion with Preventive actions increased from 15.7% to 26.5%
  - Reduced audit cycle time
    - 48.1% reduction in cycle time (days to complete audits)

Realized Improvements (continued)

- Qualitative Results:
  - Improved discipline of Quality Engineers (QE)
  - Provided example of QM/CPI for organization
  - Improved QE ability to support project QM/CPI
  - Improved perception of QA organization

Lessons Learned (QM & CPI)

- Improvement of Data Collection dominated early QM/CPI activity
- Link to organization level goals was allegorical rather than provable
- Few (~10%) data mining charts provide insights
  - Combinations of charts provide better picture
- QM/CPI Plans and Reports provide critical artifacts for focusing and proving QM/CPI

Contacts

Name:
Steven Thompson

Tel:
1-858-592-5515

email:
Steve.e.Thompson@BAESystems.com