8th Annual Cost Schedule Performance Management Conference

October 20-24, 1996, Tysons Corner, Virginia

- Conference Workshop Recommendations and Conclusions. *(Added 6 Feb 97)*

- Gary Christle's Paper "Where Are We Going? How Do We Get There?" *(Added 6 Nov 96)*

- Wayne Abba's Paper "OUSD(A&T) Initiatives Update" *(Added 6 Nov 96)*

- Wayne Abba's Paper "The International Environment" *(Added 6 Nov 96)*

- Sam Araki's Keynote Presentation on EV Management in Lockheed Martin is available for downloading as a MS Powerpoint file. *(Updated 20 Nov 96)*

- Linda Reiners' Presentation on reengineering EV Management in Lockheed Martin is available for downloading as a MS Powerpoint file. *(Added 20 Nov 96)*

- Dr. Kelman's Keynote presentation was off the cuff, so no material is available.
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Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std Z39.18
OUSD(A&T) Initiatives Update

Wayne Abba

8th Annual International Cost Schedule Performance Management Conference

October 27, 1996
OSD Initiatives

- Electronic Data Interchange
- Contractor Cost Data Reporting
- Project Management Tools
- Earned Value Ownership
  - Department of Defense
  - Industry
MIL-HDBK-881: Background

- Specs & Stds cancelled June 1994
- Defense Stds Improvement Council-December 1994
  - Approved retaining MIL-STD-881B
  - Until replaced by a guidance document
- Support contractor named in 1995
MIL-HDBK-881: Status

- Cited in DoD Regulation 5000.2-R
  - “Bridge Policy” in Deskbook
  - MIL-STD-881B remains in effect
- September 1996 Handbook Draft
  - Mandatory for Program WBS
  - Guidance for Contract WBS
- Coordinate in near future
Electronic Data Interchange: Background

- EDI is Federal Government policy
- Implications seen by DoD in late 80’s
  - Worked with NSIA
  - Formed working group
  - Incorporated in Performance Analyzer
  - USD(A&T) Policy Memo Jan. 95
    - Mandatory for new contracts (CPR or C/SSR)
    - Incorporated in Data Item Descriptions
Electronic Data Interchange: Status

- Successful early implementation
  - Shipyards
  - V-22 at Boeing Helicopters
  - Encourage contractor participation

- Implementation Conventions
  - 839 (Cost), 806 (Schedule), 196 (CCDR)

- “Getting Started” Handbook issued
Contractor Cost Data Reporting: Background

- CCDRs a problem-
  - 1991 DoD/Industry TQM Report
  - DoDIG Report
  - 1991-94 OSD RFP reviews

- Excessive WBS definition
  - “WBS vs. IPT”

- Too many reports, too much detail
Contractor Cost Data Reporting: Status

- Study by Institute for Defense Analyses
- Requirement reaffirmed after review
  - USD(A&T), SAEs, DUSD(AR), D(PA&E)
- USD(A&T) Policy Memo Jan. 18, 1996
  - Fewer reports in less detail and less often
  - Central office for oversight
  - IPTs involve contractors when appropriate
Contractor Cost Data Reporting: Status Cont’d

- OSD PA&E “high priority;” encourages inquiries from anyone

- Points of contact-
  » Mr. Gary Bliss (703) 695-4348
  » Mr. Tom Coonce (703) 697-0374
  cooncet@paessmtp.pae.osd.mil
Project Management Tools

- Risk management
  - IDA study--Risk Analysis & Cost Mgmt.

- NAVAIR initiatives
  - PEO(A) and PEO(T)
  - In-house Earned Value
  - IBR process
  - Integrated Technical Performance

- Performance Analyzer & COTS software
DoD Earned Value Ownership: Background

- Briefed Mr. Longuemare January 1994
- SAE meeting September 1994
- Executive Steering Group named
- Dr. Kaminski letters January 1995
  - Support 1993 “Model Program” initiative
  - SAEs: Take ownership
  - Industry: Accept responsibility
  - DoD: Encourage value-added changes
C/SCSC reaffirmed

» DoD 5000.2-R issued March 15, 1996

USD(A&T) Dec. 1995 Memorandum

» Change C/SCSC implementation structure from PMJEG to DCMC Executive
  – Simplify review & acceptance process
  – Encourage responsible, timely innovation
DoD Earned Value Ownership: Status

- SAEs took ownership in 1994
- June 1996 SAE meeting with USD(A&T)
  - Strongly endorsed reforms, especially the Integrated Baseline Review process
  - Air Force proposed assigning C/SCSC “compliance responsibility” to DCMC
  - DCMC agreed to accept responsibility
3 alternatives offered to USD(A&T):

1. Transfer compliance and 1 billet per Service
2. Transfer compliance without billets; API to provide for budget adjustments
3. Do not transfer compliance

All Services concurred with Alt. 2

USD(A&T) signed Memo Oct. 1, 1996
Compliance Responsibility Memorandum

- DCMC assume responsibility as soon as possible, not later than end FY 1997
- Dir, API take necessary budget actions
- Emphasize data integrity for PMs
- Applies to C/SCSC compliance reviews
  - Not to IBRs and related PM support
  - Components implement earned value
  - DCMC improve support to program offices
Whose Idea Was This?

- The idea is not new-
  - Recommended by DoDIG in 1993 report
  - OSD did not agree
  - DoDIG agreed to forbear

- So why is it OK now?
  - Earned Value accepted throughout DoD
  - DCMC ready to take it on
    - “Center of Excellence”
Industry Earned Value Ownership: Background

- Long history with NSIA
  - ADL Study
  - TQM Study
- Mr. Longuemare Sep. 94 letter to NSIA
  - Offered partnership for industry standard
  - Possible ISO 9000 approach
- 1st meeting in Phoenix, April 18, 1995
Industry Earned Value Ownership: Status

- Industry accepting responsibility
  - Boeing Defense & Space Group
  - Lockheed Martin Missiles & Space
  - McDonnell Douglas
  - Northrop Grumman
  - General Electric Aircraft Engines
  - and many more...
Industry Earned Value Ownership: Status

- Industry standard issued Aug. 96
  » Signed by AIA, EIA, NSIA, ASA, SCA

- Ball *belongs to industry*
  » DoD will borrow it for 5000.2-R

- OSD role is to protect public interest
  » 5000.2-R, DFARS clauses, guidance being revised
  » Workshops to identify & address issues
Adopts 32 EVMS guidelines as immediate replacement for 35 C/SCSC

- New 5000.2-R baseline requirement

Reserves right for appropriate reviews

- As determined by DCMC and/or DoD PM
- Does not accept self-certification

Encourages evolution to “true” standard

- Industry (ANSI) and/or International (ISO)
Evolution of EVMS

- 1967: C/SCSC (COMPTROLLER)
- 1989: C/SCSC (PROGRAM MANAGEMENT)
- 1993: EVMS
- 1996: INDUSTRY STANDARD

MODEL PROGRAM VISION

DOD CONTRACTS

INDUSTRY INTERNATIONAL
Conceptual Models

- Reconciling government and commercial practices
- “Who certifies?”
Government/ Commercial Practices

3 LEVELS:
• “Core”
• “Enterprise”
• “Public Sector”

“Industry Standard Guidelines for EVMS” suggests there are no major differences in the principles that should be used for management of complex projects in government and industry. We should shift our attention to the practices.
Who Certifies?
3 Possible Scenarios

1) Rely on 3rd party and/or industry certification

ISO 10006
Self-Cert
BS 6079

World Class Suppliers

DoD Business Base
Who Certifies?
3 Possible Scenarios--Cont’d

2) Grant DoD Certification (Status quo)
Who Certifies?
3 Possible Scenarios--Cont’d

3) Include 3rd party, industry, and/or DoD EVMS at time of each acquisition
“You hold the key...”
Reaching New Dimensions In Performance Management

Where Are We Going?
How Do We Get There?

DoD Integrated Program Management Initiative
Executive Steering Group
October 28, 1996
C/SCSC IS DEAD
Long Live

Earned Value
Transfer of Compliance Responsibility for C/SCSC

- SAE/DAE meeting June 11, 1996
  - Integrated Program Management Initiative
- Growing acceptance of earned value
  - Declining review activity
    - Need to ensure a minimal core of expertise
- Approved October 1, 1996
  - Effective ASAP
  - NLT September 30, 1997
Transfer of Compliance Responsibility for C/SCSC

- Each Component required to:
  - Implement earned value effectively on contracts;
  - Ensure management systems reviews are requested when necessary;
  - Ensure DCMC is supported with appropriate program office and functional personnel when reviews are required.
Industry Standard Guidelines for Earned Value Management Systems (EVMS)

- DoD Requests Industry to develop standard, September 1994
  - ISO 9000 “Model”

- Industry responded with EVMS “Guidelines,” August 19, 1996
  - NSIA, AIA, EIA, SCA, ASA
Industry Standard Guidelines for Earned Value Management Systems (EVMS)

- **Proposed DoD response:**
  - Adopt EVMS guidelines as replacement for C/SCSC;
  - “Self certification” not acceptable;
    - Reserve the right to review “for cause”
      - Break the *direct* link between contract award and reviews;
      - Joint surveillance;
      - Focus on specific identified deficiencies
  - Continue evolution toward a true “standard.”
    - ANSI, ISO, etc.
    - Big world: BS 6079; ISO 10006
The Proposed Processes

**AWARD**

1. Contract Award
2. Proposed ADA, AA or 3rd Party Certification?
   - Yes: Advance Agreement/Letter of Acceptance
   - No: Self-Certification
3. Did they propose to self-certify?
   - Yes: Implement system & conduct self-evaluation
   - No: Obtain 3rd Party Certification
4. Government Review & Validation
5. Did they propose 3rd Party Certification?
   - Yes: Obtain 3rd Party Certification
   - No: Self-Certification complete
6. Acceptable to Government?
   - Yes: Advance Agreement/Letter of Acceptance
   - No: Terminate Agreement
7. Surveillance

**SURVEILLANCE**

1. BRR
2. PM Concerns
3. Routine Surveillance
4. Apparent System Problems
5. Determine magnitude of problem (Focused Surveillance Review)
6. Compliant with Criteria?
   - Yes: Resume Routine Surveillance
   - No: Terminate Agreement & Take contractual remedies
7. Advise Ktr of problems
8. Are problems fixed?
   - Yes: Resume Routine Surveillance
   - No: Terminate Agreement & Take contractual remedies
9. Self-Certification continue
10. Advance Agreement/Letter of Acceptance
11. Surveillances

**CHANGES**

1. Contract Development change
2. Submit change for approval
3. Advise Ktr of change
4. 2 week lag
5. Advise Ktr of problems
6. Are problems fixed?
   - Yes: Resume Routine Surveillance
   - No: Terminate Agreement & Take contractual remedies
7. Focused Surveillance Review
8. Review findings cleared?
   - Yes: Resume Routine Surveillance
   - No: Terminate Agreement & Take contractual remedies
9. Advise Ktr of waiver?
10. Submit change for approval
11. 2 week lag
12. Terminate AA & take contractual remedies
13. Resume Acceptance Process

**FIGURE 3-1** SURVEILLANCE PROCESS

**AWARD SURVEILLANCE CHANGES**
System Reviews

For contractors with current Letter of Acceptance, Advance Agreement, or “3rd party” certification, only two ways to trigger a review:

- Surveillance
  - IBR
  - PM
  - Plant rep
- System change

Today’s process OR the proposed process!!
So What is the Big Problem?

- Contract clause requires prior approval of system changes!

- Proposed process allows ACO waiver of prior approval.
Work Shop Focus

- The surveillance process.
- Considerations in determining waiver of prior change approval.
  - If EVMS is a real “standard,” it should be plant-wide.
USD(A&T) Direction
July 9, 1996

- Expand Integrated Project Management Initiative Executive Steering Group to include other Defense and non-Defense agencies;
- Establish metrics;
- Priority emphasis on EDI to include relationship to CALS/CITIS; implications of “on-line” access;
- Develop and implement a plan of action that will lead to the availability of tools to better integrate cost, schedule, technical performance, and risk management.
Earned Value Management

8th Annual International Cost/Schedule Performance Conference

27-31 October 1996
“The use of earned value management process . . . even where no contractual requirement exists. I intend to expand this practice and to make earned value the basis for management of all our efforts.”

“Our programs must continue to improve their performance management practices and skills and we must intensify efforts to eliminate activities that do not add value to the program management process.”

Sam Araki
Lockheed Martin Missiles & Space
August, 1995 Sam Araki formed the EVM Task Force with the following objective:

Extend to all enterprise activities a cost effective, earned value system that satisfies minimal requirements consistent with prudent business practice and essential to both the intent of C/SCSC and best commercial practice.
Unprecedented Support

“Task Force activities will not prejudice recognition by the Department of Defense of the Lockheed Martin Sunnyvale Performance management System as compliant with Cost/Schedule Control Systems Criteria (C/SCSC).”

“The commendable initiative shown by Lockheed Martin, Sunnyvale and by DPRO is consistent with the objectives of Acquisition Reform, and provides an opportunity to minimize or eliminate differences between military and commercial management requirements.”

Dr. P. G. Kaminski,  
Under Secretary of Defense,  
(Acquisition and Technology)
EVM Task Force

Steering Committee
LMMS Office of the President
DCMC Commander

Exec. Task Force
Key Program Vice Presidents
Division Directors of Business Ops
DCMC Deputy Commander

Implementation Team
Task Force Manager
DCMC C/SCSC Focal Point
Program Reps
Process Reps
Information Systems Reps
Functional Reps

- LMMS and DCMC Exec. Mgmt

- Business, DCMC, and Program Senior Mgmt

- Cross Functional Team
DCMC’s Expectations

- Government and company program manager ownership of EVM
- Standardization of EVM process across the enterprise
- Cost effective and meaningful joint surveillance
- Eliminate non-value-added activities associated with EVM
Perform a Requirement Analysis

Top Down

- Sound principles
- Some clarification and redundancy
- White Paper

Rewrite I/P
- Expected outcome good

Rewrite for all programs
- Integrate with other systems - WEB

Get the message out, retrain!!!

Identify and remove impediments

- Professional interpreters developed
- Lack of real "user" involvement
- Mistakes generated rules

"Guidance"

Company

Folklore

Criteria
Pilot Program

Benchmark - IRIDIUM®

Pilot - Milstar

Best-Demonstrated Practices

Program Implementations

Process Change Flow
### EVM Change Status

#### Process Change Candidates

- EAC Triggers
- Variance Analysis
- Work Authorization
- Baseline Management
- Consistent OBS/WBS
- Level of CAM
- Business Support Role
- EV Technique
- Streamlined Material EV
- Use of Metrics
- Meetings/Information
- COTS
- Surveillance
- EDI

*Process changes resulted from commercial benchmarking and best demonstrated practices*
Eliminate Non-Value-Added Activity

Annual estimated unique pieces of paper generated before and after process change for single program

Coopers & Lybrand Study

- C/SCSC 3rd-highest regulatory cost driver
- Two-thirds effort associated with pushing paper

Variance Analysis, Work Auth, Annual EAC

Paper Generated Pre-EVM Chg
Paper Generated Post-EVM Chg
Use the “Real Info”

LMMS Action

- Eliminate cost account variance reports
- Develop standard status review charts for teams with graphics
- Encourage customer participation on IPTs

I’ve got to get these variance analysis reports written

“IPT Status Meeting

Total Float +15

CV (100) 75
SV  1.02
SPI .95
CPI .95

"Beans R Us"

Capitalize on internal program management process
The Value of Judgment
Substitute Analysis For Arbitrary Rules

“All Traffic Must Stop”
OR
“Yield”
Focus on the Message Driver’s Intent

LMMS Actions
- EAC triggers
  - SPI
  - CPI
  - TCPI
  - Risk
- Replace thresholds with significant indicators
  - Risk Areas
  - PDT Concerns
  - WBS
- Use analysis realtime
**Develop a Quality Assurance Program**

“Contractor Ownership Includes Methods to Evaluate and Ensure the Quality of the EVM System”

**Monitor**

- **Product**
  - Data reviewed by senior management
  - CPR data analysis
  - Independent EAC analysis
  - Program reviews

- **Process**
  - Statistical process control approach
  - Use diagnostics and metrics
  - Program take responsibility for generation and response

**Key Features**

- Non-interface
- Look for trends and significant discrepancies
- Replace CAM Interviews with “training” where indicators exist
- Focus includes value of information provided
**Teamed for the Future**

**Must Break Down Stovepipes for Common Processes**

- Adopted Throughout LMMS
- Corporate Handbook
- Working w/ Gov’t & Industry
- DCMC Key

Integrated Product Teams

Single Processes

- Engr
- Mfg
- Test
- ILS
- Vendors

- Air Force
- Army
- Navy
- NASA
- Commercial
Teaming Approach to Ongoing Surveillance

Joint Surveillance Team
- Customer PO
- DCAA

DCMC Local Internal Compliance

Program A

DCMC Hdqtrs

DCMC District

DCMC Local

Internal Compliance

Customer PO

Customer’s Customer

Program A

Service Focal Pt.

CORYLAC
Benefits to the Government

• Public funds are at risk on large cost based contracts – a joint Program Office, DCMC, & LMMS process will exist to manage resources wisely

• Atmosphere created that capitalizes strengths of participants in surveillance process to develop programs with opportunity of success

• Environment fosters active and constructive participation of DCMC, DCAA, and Program Offices with LMMS to develop a sound earned value management strategy

Potentially adversarial relationships transformed into productive partnership – renewed emphasis placed on importance of cross-functional teaming
Contractor Benefits

- The integration of system surveillance, data surveillance and program surveillance
- Focus on quality and utility of reports
- Tailor processes to the way the contractor naturally manages
- Focus on prevention of management system deficiencies rather than “find and fix”
- Conduct government reviews only when surveillance and reporting indicate system integration and discipline deficiencies are distorting the presentation of program status
Joint Benefits

- Early teaming yielded end-game success
- Developed mutual respect for government/contractor perspectives
- Both parties feel positive about eliminating non-value added activity
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Benchmark - IRIDIUM®

Pilot - Milstar

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Downsizing – A Reality of the New Environment

Source: DoD budget
Note: DoD is a nonprophet organization
Acquisition Reform Leads the Way to the Use of Commercial Practice and Products for Defense

**Commercial Components**
- Standard Products
- A2100 → A2100M

**Commercial Processes**
- Earned Value Management
- ISO 9000
- Commercial Specs
- Electronic data Management
- Outsourcing Initiative

**Common Processes**
- Mil Spec Replacement
- Contract Requirements Commonality

**DoD Acquisition Reform**

**Competitive LMMS**
EVM Initiative

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September 1995
Pilot Program

Benchmark – IRIDIUM®

1991

Pilot – Milstar

1993

Best-Demonstrated Practices

1995

Program Implementations

Process Change Flow
“The IRIDIUM® Challenge”

- Imposed a challenge to program team to create a paradigm shift to achieve shorter cycle time, reduced cost, and higher quality never achieved in the space business
- Empowered program team to take the best program management practices and eliminate all non-value-added policy, procedures, and work
- Applied special program “Skunkwork” approach (IPT) and Six Sigma quality
- Provided the best motivated people, facility equipment and tools to get the job done
- IRIDIUM® program manager chose to strip down the C/SCSC Earned Value Management tool to manage cost schedule performance and achieved excellent program management results
- Earned Value Management system developed on IRIDIUM® became the best commercial practice benchmark
What are the Minimum Requirements?

Premise:

• If commercial business had no requirements, and
• If management believes they are successfully managing those programs, and
• If we are motivated to be cost effective,
• Then commercial business practices are the minimum requirements

Would commercial business practices satisfy our government customers?
Objective: To demonstrate a government program can be satisfied with current LMMS commercial business practices

- Use Milstar program as a pilot
- Use IRIDIUM® program as a commercial benchmark
- Apply benchmark program practices and concepts to pilot
- Analyze results and cost effectiveness
Performed a Requirements Analysis

- Professional interpreters developed
- Lack of real “user” involvement
- Mistakes generated rules

Top Down

- Criteria
- “Guidance”
- Company
- Folklore

Identify and remove impediments

Sound principles
Some clarification and redundancy
White Paper

Rewrite internal procedures
Expected outcome good

Rewrite for all programs
integrate with other systems – WEB

Get the message out, retrain!!!
**Culture Change**

"The Biggest Challenge of All"

- **Rigid Control** + Slow Reaction
- **Flexible Control** + Quick Reaction

Refocus | Training is Key

"Oversight" (OUUSD, Co. Surv., DCAA, DCMC, Customer)

"Insight" (Co. Surv., Customer, DCMC, Program Manager)

Concept:
- SAR vs IBR
Combine Surveillance Needs

Program A

DCMC Hdqtrs

DCMC District

DCMC Local

Hdqtrs

Local

CORP

Program A

Teaming Approach to Ongoing Surveillance

Customer POC

Internal Compliance

DCAA

DCMC Local

Internal Compliance

Joint Surveillance Team

Customer PO
Eliminate Non-Value Added Activity

Coopers and Lybrand Study

- C/SCSC 3rd-highest regulatory cost driver
- Two-thirds effort associated with pushing paper

Annual estimated unique pieces of paper generated before and after process change for single program

<table>
<thead>
<tr>
<th>Activity</th>
<th>Paper Generated Pre-EVM Chg</th>
<th>Paper Generated Post-EVM Chg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variance Analysis</td>
<td>Paper Generated Pre-EVM Chg</td>
<td>Paper Generated Post-EVM Chg</td>
</tr>
<tr>
<td>Work Auth</td>
<td>Paper Generated Pre-EVM Chg</td>
<td>Paper Generated Post-EVM Chg</td>
</tr>
<tr>
<td>Annual EAC</td>
<td>Paper Generated Pre-EVM Chg</td>
<td>Paper Generated Post-EVM Chg</td>
</tr>
</tbody>
</table>
The Value of Judgment

Substitute Analysis For Arbitrary Rules

“All Traffic Must Stop”

OR

“Yield”

Focus on the Message

Driver’s Intent

LMMS Actions

- EAC triggers
  - SPI
  - CPI
  - TCPI
  - Risk

- Replace thresholds with significant indicators
  - Risk Areas
  - PDT Concerns
  - WBS

- Use analysis realtime
Teamed For The Future

Must Break Down Stovepipes for Common Processes

Integrated Product Teams
- Adopted throughout LMMS with customers
- Corporate handbook

Single Processes
- Working with Government and Industry
- DCMC Key

Engr  Mfg  Test  ILS

Vendors

Air Force  Army  Navy  NASA

Commercial
Established Common Core Process

**Tailor for Fit by Providing a Common Toolbox**

- Phase out 3 of 4 major mainframe systems
- Adding 1 PC-based EVM tool
- Down selecting multiple schedule packages
- Adding key interfaces
- Focus on COT solutions

**Use The Right Tool For The Job**

**One Size Does Not Fit All**

Ask yourself WHY are your processes too “unique” to use COTS
Developed a Quality Assurance Program

“Contractor Ownership Includes Methods to Evaluate and Ensure the Quality of the EVM System”

Monitor

- Product
  - Data reviewed by senior management
  - CPR data analysis
  - Independent EAC analysis
  - Program reviews

- Process
  - Statistical process control approach
  - Use diagnostics and metrics
  - Program take responsibility for generation and response

Key Features

- Non-intervention
- Look for trends and significant discrepancies
- Replace CAM interviews with “training” where indicators exist
- Focus includes value of information provided
**Use The “Real Info”**

**LMMS Action**

- Eliminate cost account variance reports
- Develop standard status review charts for teams with graphics
- Encourage customer participation on IPTs

**Capitalize on internal program management process**

**I’ve got to get these variance analysis reports written**

**“Beans R Us”**
• Acquisition reform has been an enabler

• Lockheed Martin Missiles and Space
  — Customer/product diversity
  — Consolidation managed as a program (EVM)

• EVM summary
  — Enterprise commitment
  — Get back-to-basics
  — Company and program ownership
  — Insight vs oversight
  — Minimum requirements
  — Metric quality assurance program
One-Year Enlightenment

• Precepts of EV are sound
  — Implementation was off-track
• Program definition and planning is key ingredient
• User friendly mechanism
  — Ultimate user involvement
  — COTS/people/process
• Institutionalize/standardize
  — EVM
    • DoD
    • Civil
    • Commercial
    • Internal jobs
• IPT’s involvement
  — Realtime progress focus
  — Management focus not reporting
  — Insight vs oversight