



# Dayton SPIN

## Full Life Cycle Independent Verification & Validation (IV&V) for COTS

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Presented by

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ERPWatch™ IV&V Services

Lighthouse Technologies Inc.





## Presenter Bio

**Mr. David Deakin** has over twenty-five years experience in Information Technology, including more than ten years as a strategic leader of global IT teams, and over fifteen years as project leader for major international COTS deployments. He is currently working as program lead on an IV&V assessment for a large government ERP integration program.

Mr. Deakin is VP, Operations and ERPWatch™ IV&V Practice Leader for Lighthouse Technologies, Inc., a small business headquartered in Beavercreek, OH.





# Agenda

- **Purpose of presentation**
  - **To provide orientation for a non-traditional approach to Independent Verification and Validation (IV&V) of Commercial Off The Shelf package (COTS) integration programs.**
  - **Agenda**
    - **What is IV&V and what are the expected outcomes from it?**
    - **Why do we need IV&V, and what is the advantage of this non-traditional approach?**
      - The gory truth about COTS deployment performance
      - The value proposition of IV&V
    - **IV&V deployment methodology**
    - **Questions and Answers**





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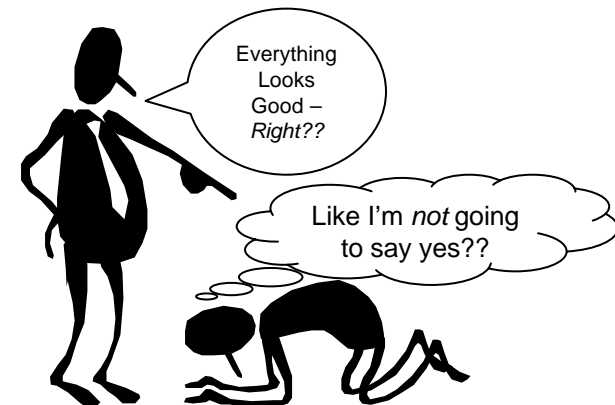
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# What is Independent Verification & Validation (IV&V)?

- **Verification**
  - Will you meet your expected project target?
- **Validation**
  - Will you meet your expected business need (is this project aligned with your operational need?)
- **Independent**
  - The assessor completely unbiased in their analysis, i.e.:
    - Does the assessor have any incentive to bias the analysis and recommendations?
    - Are they influenced by internal leadership, politics or expectations?





## What is the Expected Outcome of IV&V?



- Identification of significant program quality issues
- An analysis of likely root cause and a prediction of future effects of these defects
- A quantification of risk assigned to these defects (QPI™)
- An assessment of impact on project cost and schedule (CPI and SPI)
- An impact assessment on achieving business value
- Recommendations & Justifications for corrective action
- A framework for continuous quality throughout the project lifecycle.





# What is the Expected Outcome of IV&V?

- Identification of significant program quality defects

Tell me honestly and directly – how well are we doing?

- Answer the question

Will the program really meet the schedule and cost you promised me?

- Answer the question

Will we meet the return on investment we promised the stakeholders?

- Answer the question

**If not, what can I do about it?**

What problems do we already have that I haven't heard about?  
How and when can we fix these?

- Review the program

- Answer the question

***Will I still have a job after this??***





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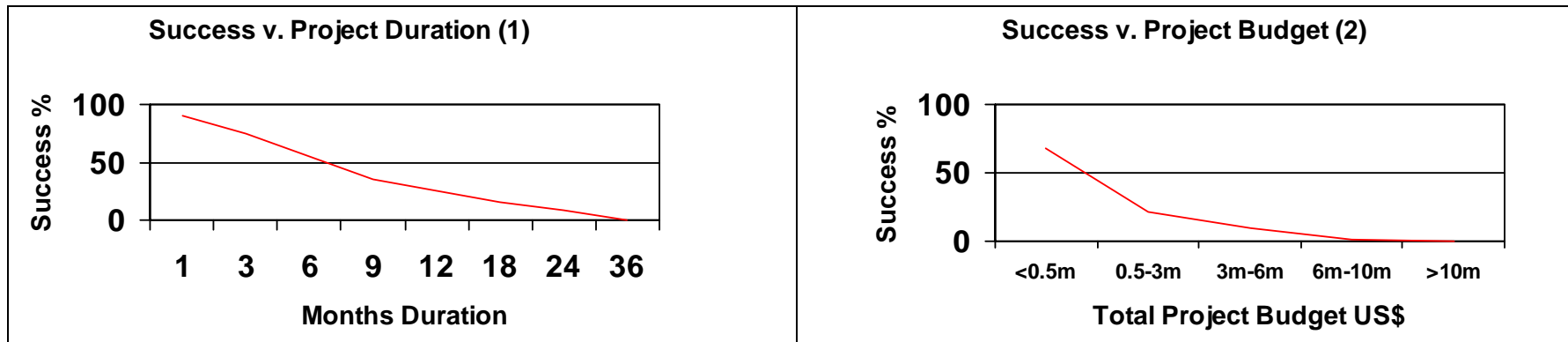
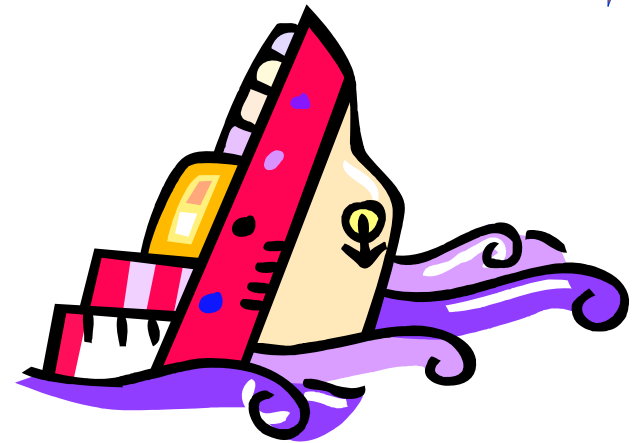




## What are the Risks without IV&V Risk Management?

- **The Gory Facts About ERP COTS Integration Projects:**

- Only 34% of ERP implementations succeed with full functionality, within forecast cost and time frames; <sup>(1)</sup>
- Cost overruns average 43%; <sup>(1)</sup>
- Schedule overruns average 82%; <sup>(1)</sup>
- Implemented functionality averages 52% of what was desired.<sup>(1)</sup>



(1) Chaos Report - 2002, The Standish Group. (2) ChAOS in the new millennium, 2000, The Standish Group.

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# What are the Drivers for COTS Successes/Failures?

## The Hidden Costs of COTS <sup>(4)</sup>:

1. Training
2. Integration and testing
3. Data conversion
4. Data analysis
5. Consultants Ad Infinitum
6. Replacing your best and brightest
7. Implementations teams can never stop
8. Waiting for ROI
9. Post-ERP depression.

Why are you doing this?  
What business value do you want to achieve?  
What do I need to focus upon to achieve this?

Top 5 factors for Success <sup>(2)</sup>	Weight of Influence
User involvement	20
Executive Support	15
Clear business objectives/reqmts	15
Experienced project manager	15
Small milestones	10

“...the problem is that with so many things going at the same time, we just don't have the time to check every deliverable – and that worries me sometimes because many of our team members haven't been involved with anything like this before. We are reporting CPI's and SPI's at our monthly status meetings with management, so I know we are completing lots of tasks – I just don't have that 'warm fuzzy feeling' they we are doing them well enough to make this project a success – and neither does our management...”

**Big Rocks, Gravel and Sand<sup>5</sup>: Success is dependant upon managing the quality of critical success factors and the avoidance of known failure drivers across a broad scope of activities.**

(2) ChAOS in the new millennium, 2000, The Standish Group. (4) CXO Group report, 2004. (5) Stephen Covey



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Stable software. Engineered.

Quality is the focus of every system we engineer.

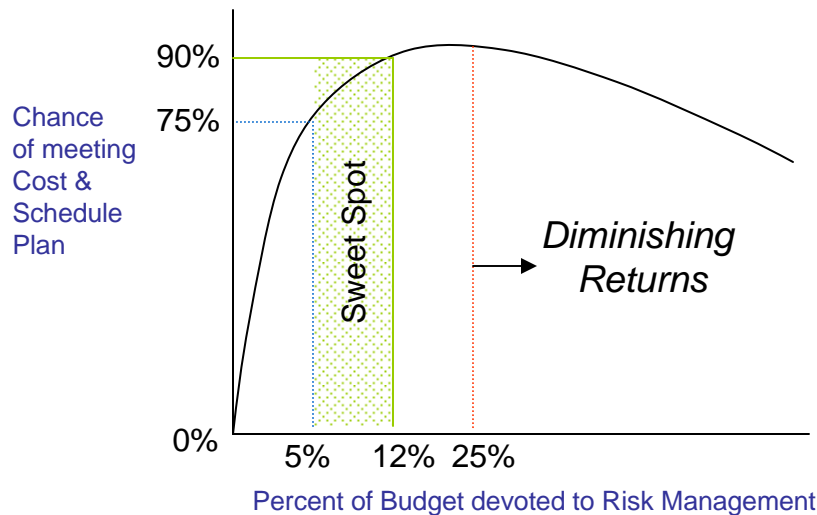


# What are the Benefits of IV&V Risk Management?

## What the experts say:

“Devoting a small amount of attention to risk management produces dramatic benefits.”

*Software Project Survival Guide by Steve McConnell.*



## Our Experience:

Based upon our analysis, an investment in IV&V of 8% of project budget will reduce the risk of cost overage from an average of 43% <sup>(1)</sup> to an average of 20% (a 23 percentage points improvement)

Schedule and functionality improvement expectations are even greater.

<sup>(1)</sup> Chaos report - 2002, The Standish Group.

## Bottom Line:

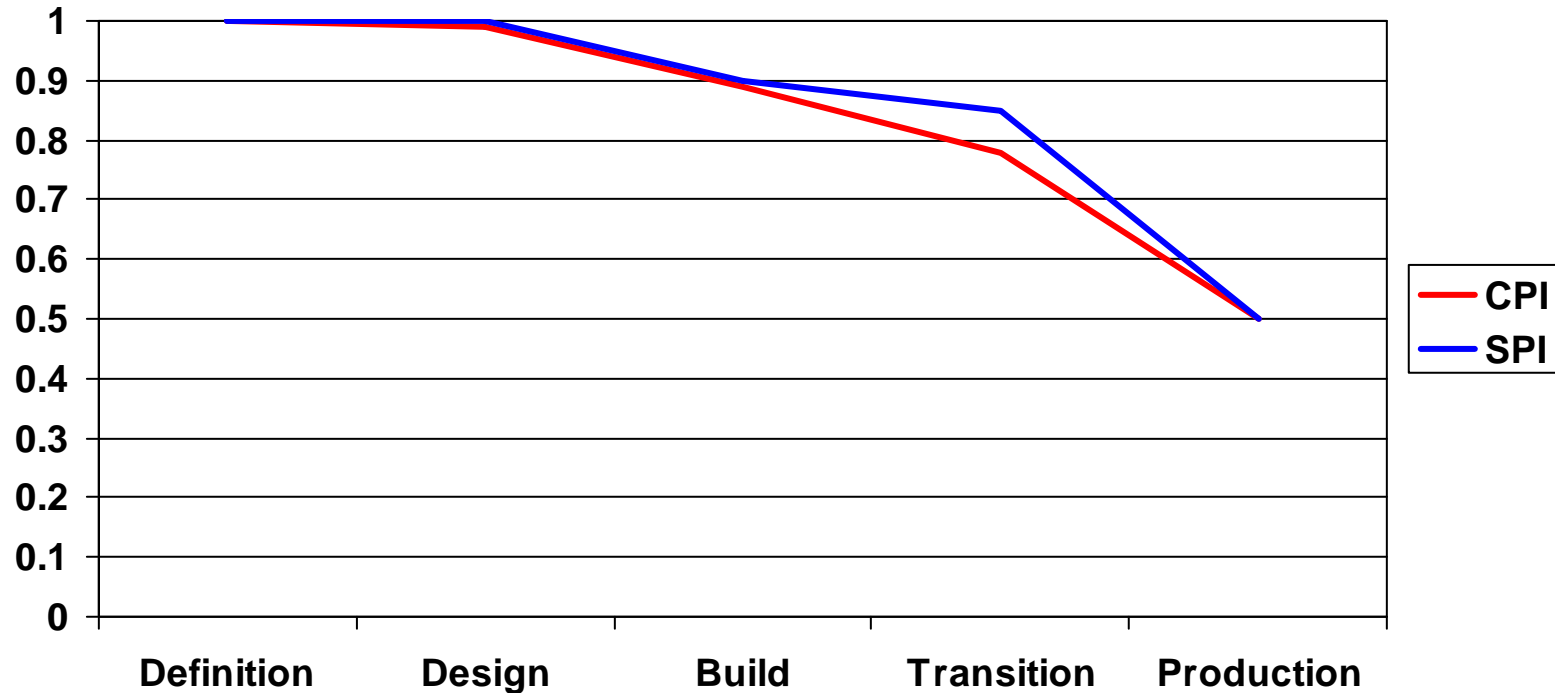
Small investments in IV&V offers significant ROI in terms of cost and schedule containment



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# The Limitations of CPI and SPI – the Dangers of Traditional Test-Based IV&V



“The project looked great until we got ready for the transition to production, then it fell off a cliff – what gives?”

(1) A Recipe for Success, 1998, The Standish Group. (2) ChAOS in the new millennium, 2000, The Standish Group. (3) The Meta Group, 2003.

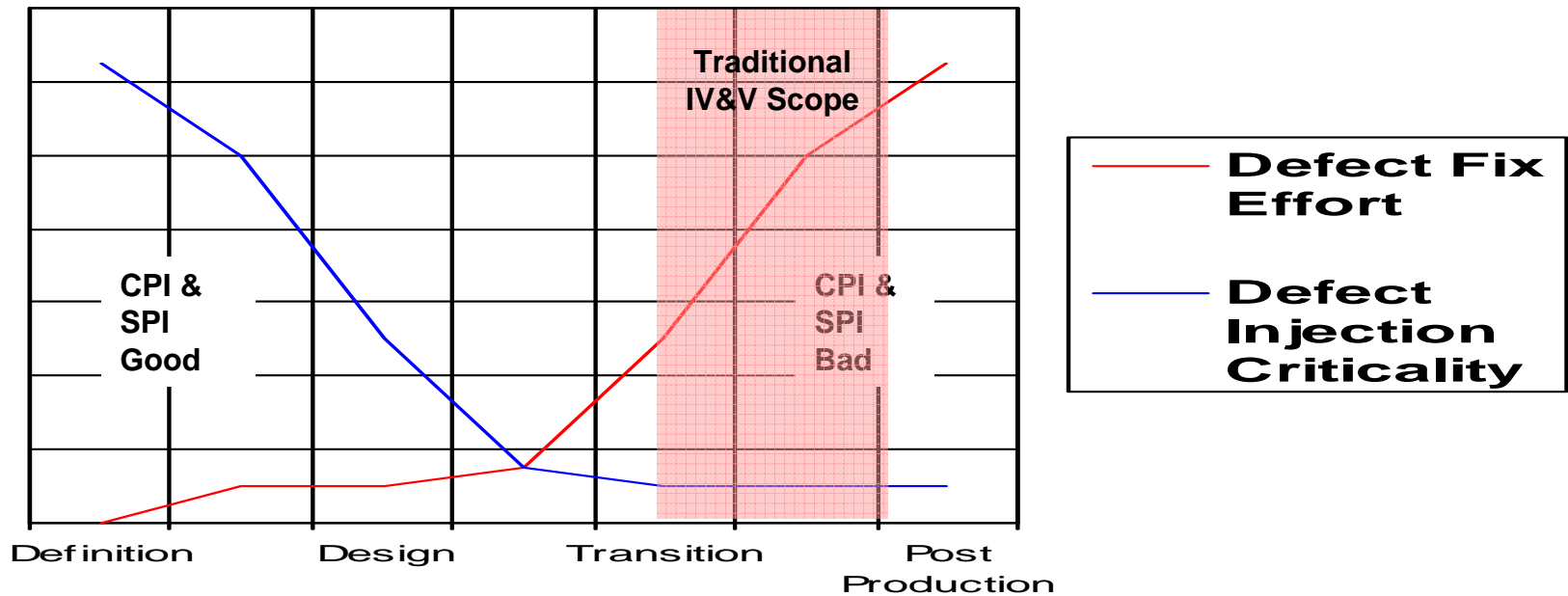


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# The Limitations of CPI and SPI – the Dangers of Traditional Test-Based IV&V

## An “Average” ERP Deployment



“The project looked great until we got ready for the transition to production, then it fell off a cliff – what gives?” We need a **Quality Metric!**

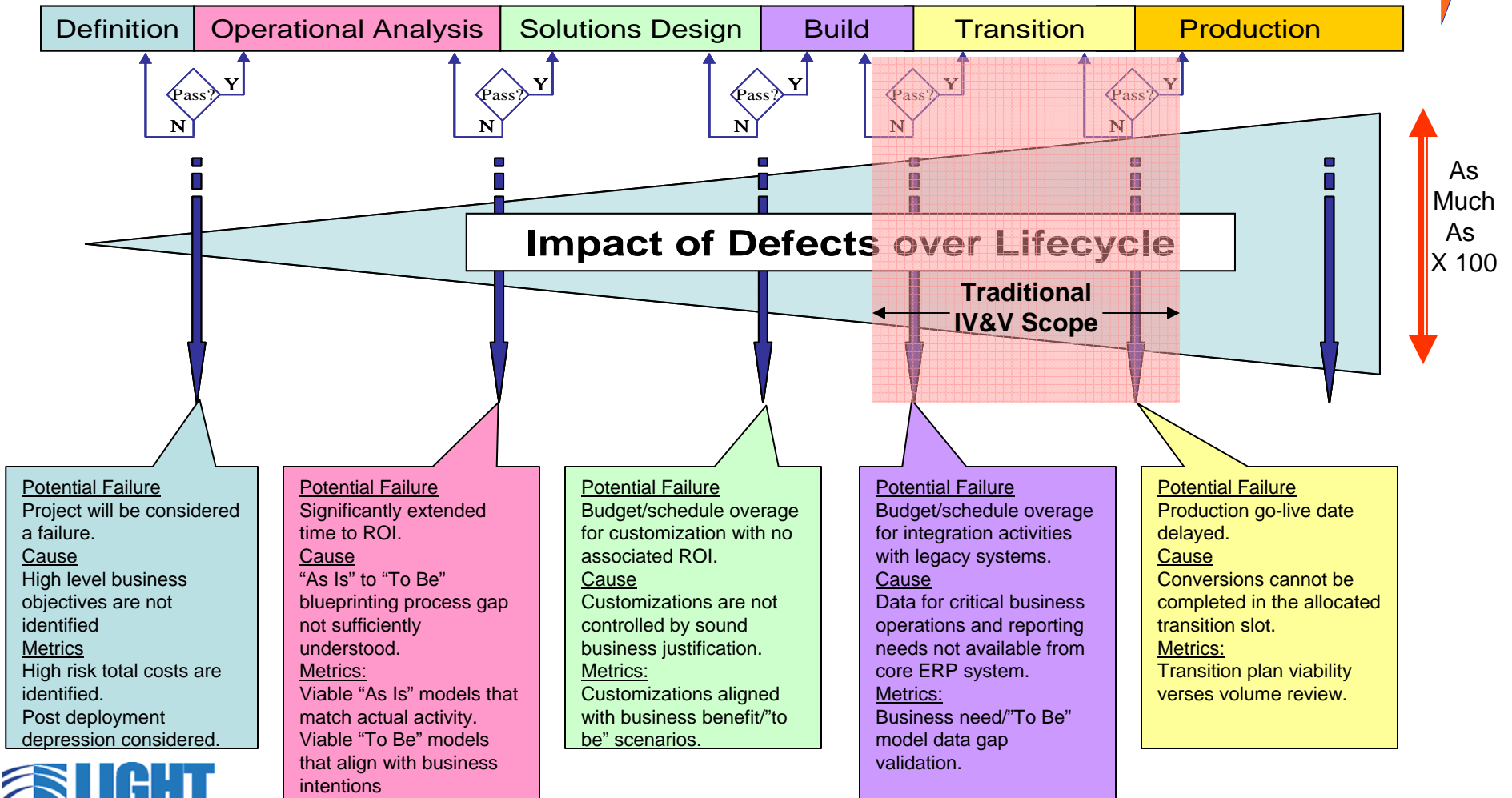
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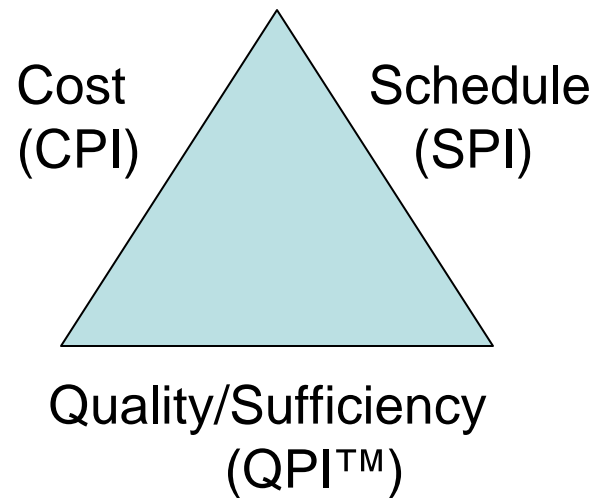
# The Impact of Defects through the COTS Deployment Lifecycle





# The Missing Metric – QPI™

The missing component: Quality and Sufficiency of Work



- PMOs traditionally track cost and schedule
- IV&V measures quality and sufficiency to meet objectives
- People, Process and Product Scope



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# Assessment Methodology

## Assessment Team Actions:

1. **Survey** stakeholders
2. **Interview** managers & team members
3. **Review program artifacts**
4. Calculate artifact defect density verses norms.
5. Analyze findings against KPV's
6. Rate KPVs against best practices
7. Develop findings & recommendations
8. Prepare Assessment Report



- Assessment determines how project performs against best practices
- Recommendations focus on actions necessary to implement best practices
- Roadmap drives the implementation of these recommendations

Looking for Strengths & Weaknesses



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## What is QPI™ made up from?

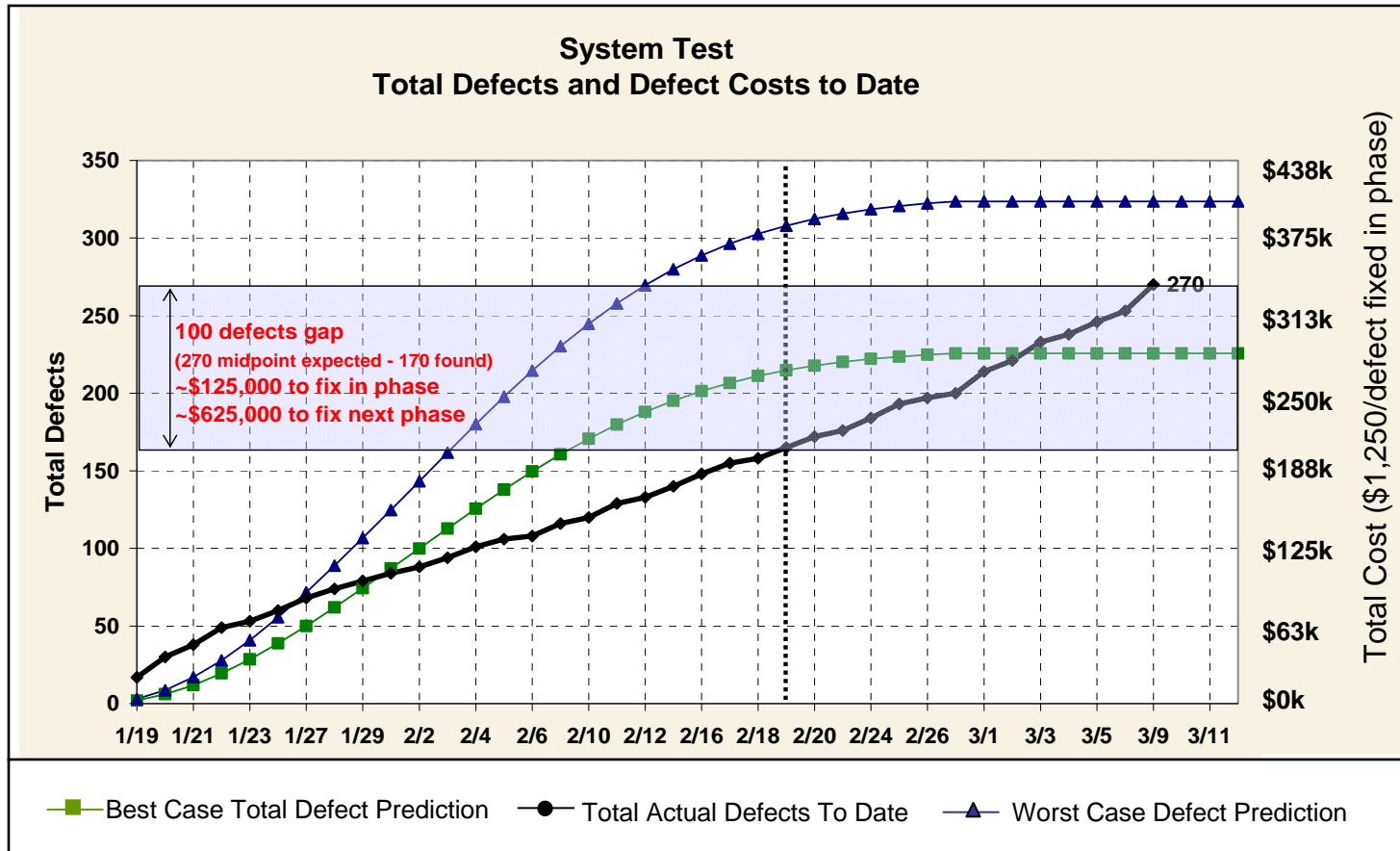
- **Quality of “Products” – typically Defect Density of artifacts**
- **Quality of “Process” – typically process maturity**
- **Quality of “People” – typically competence and capacity.**





# Program Artifacts Inspection

## Defect Density Analysis



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# Process & People Ratings

## Key Program Views™ (KPVs)

KPV #	KPV Name	Criticality Rating <sup>(1)</sup>	Current Rating <sup>(2)</sup> 0-10	Goal Rating <sup>(3)</sup> 0-10
01	Governance	High	X	X
05		High	x	x
04	Requirements Management	High	x	x
07		High	x	x
16		High	x	x
10		Medium	x	x
13		Medium	x	x
12		Medium	x	x
14		Medium	x	x
09		Medium	x	x
06	Risk Management	Medium	x	x
03		Medium	x	x
02	User/Customer Management	Low	x	x
15		Low	x	x
08		Low	x	x
11		Low	x	x

<sup>(1)</sup> **Criticality Rating** = Where improvement will yield the greatest program benefit.

<sup>(2)</sup> **Current Rating** = How current program compares to industry standard best practices.

<sup>(3)</sup> **Goal Rating** = Successful programs operate at this level.

- **ERPWatch™ assesses programs using KPVs**
  - KPVs are major activities/ processes inherent in COTS/ERP implementations
  - Represent industry best practices
- **KPVs/best practices result from extensive ERP deployment experience and industry research**





# Rating the KPVs

- **Each KPV rated on scale of 0-10**
  - Current rating measures assessment subject against industry standard process improvement continuum.
  - Goal rating measures where successful programs operate
- **Not every program needs to operate at level 10 for each KPV to be successful**
  - Takes substantial program investments in resources
  - Investment only justified for certain projects (i.e., space shuttle, critical weapons systems, nuclear power plant systems, or advanced medical technology systems)
- **KPVs are of weighted importance**
  - Type/size/phase of program have to be considered
  - Some KPVs become more significant than others
- **KPVs prioritized based on criticality to success**
  - High criticality KPVs yield greatest benefit from improvements implemented
  - Assessment team developed prioritized recommendation list to show how implementing each action improves the potential for success

<b>0 - 3</b>	<b>4 - 7</b>	<b>8</b>	<b>9</b>	<b>10</b>
<i>Incomplete</i>	<i>Performed</i>	<i>Managed</i>	<i>Quantitatively Managed</i>	<i>Optimizing</i>

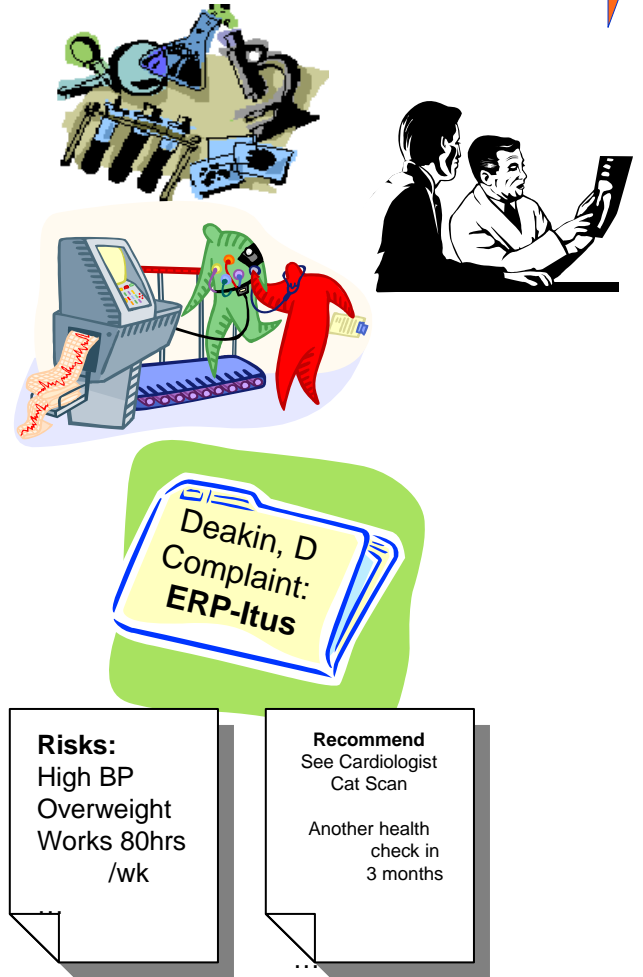




# IV&V Delivery Phases

## – Baseline Assessment

- **Broad scope analysis of risks associated with your people, processes and tools**
  - Typically 8-16 weeks duration
  - Targets based upon observed and reported issues, business drivers, critical success factors and major failure drivers for selected COTS
    - » Surveys, Interviews, Artifact Inspection.
- **Typical Deliverables:**
  - Baseline Assessment Report
    - » Root Cause Analysis
    - » Impact Predictions
  - Recommendations for specific risk mitigation projects in identified areas of risk
  - Recommendations for deeper analysis in suspected areas of risk (Deep Dives)
  - Recommendations for *Continuous IV&V Monitoring*.



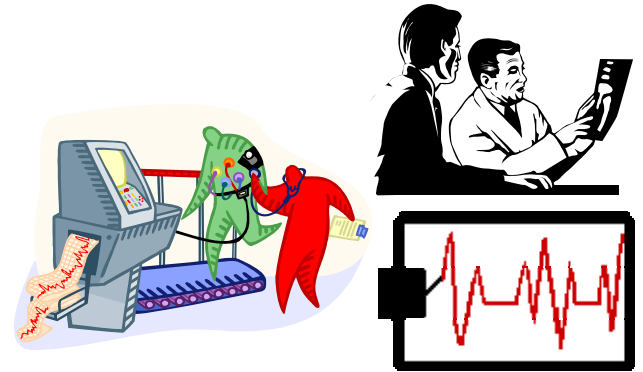


# IV&V Delivery Phases

## – Continuous IV&V Assessment

### • Health Checks

- Regular “Mini Baseline Assessments” checking the status of recommendations deployment and assessing any new risk factors
  - » Typically monthly
  - » Targets based upon previously recommended actions
  - » Checks for changes in major drivers and readjusts targets for next Health Check™  
Surveys, Interviews, Artifact Inspection



### • Typical Deliverables:

- Health Check Assessment Report
- Recommendations for specific risk mitigation projects in identified areas of risk
- Recommendations for deeper analysis in suspected areas of risk (Deep Dives)
- Target adjustments/Rolling Wave Re-plan.

#### Risks:

- Reduced hrs to 60hr/wk
- Predict increase life expectancy to 20 years

#### New Factors:

- Installed latest Beta of Project Server, suggest brain scan...





# IV&V Delivery Phases

## – Continuous IV&V Assessment

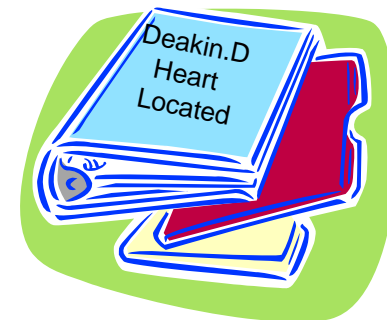
### • Deep Dive Analysis

- Target analysis of high level risks identified in the Baseline Assessment or in last Health Check assessment
  - » Duration varies
  - » Surveys, Interviews, Artifact Inspection
  - » Leverages specialists in risk area.



### • Typical Deliverables:

- Detailed Analysis for Risk Area
  - » Root Cause Analysis
  - » Impact Predictions
- Recommendations for specific risk mitigation projects in identified areas of risk
- Recommendations for *Continuous IV&V Monitoring*.





## Full Lifecycle IV&V – Take Away Thoughts

- The math is very simple – IV&V easily justifies itself in improved project and business performance
- Traditional testing phase based IV&V doesn't maximize the benefit, because it kicks-in too late to minimize remedial costs and effects.
- CPI and SPI are helpful in program management and visibility, but without an objective measure of quality/fitness for purpose (QPI™), you will never be confident of reported project performance and likely outcome.





# IV&V for ERP Implementation

**Thank You**

**Q & A**

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