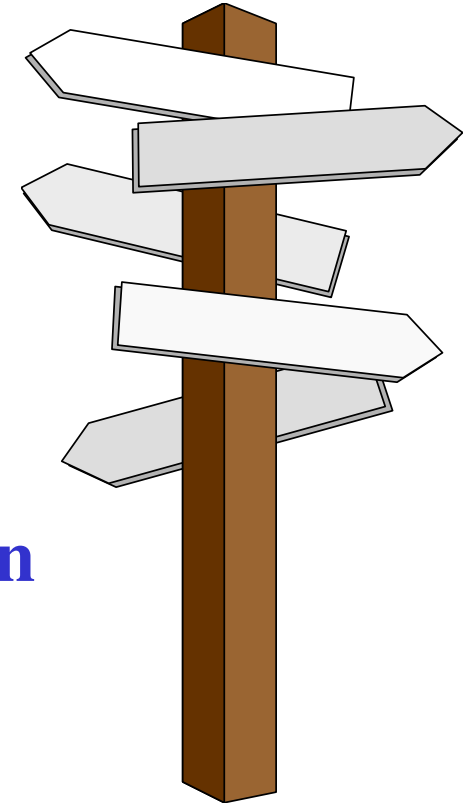


Achieving CMM Level 2 in an R&D Environment

Dr. Ronald J. Wojcik
Executive Director
BellSouth

Talk Outline

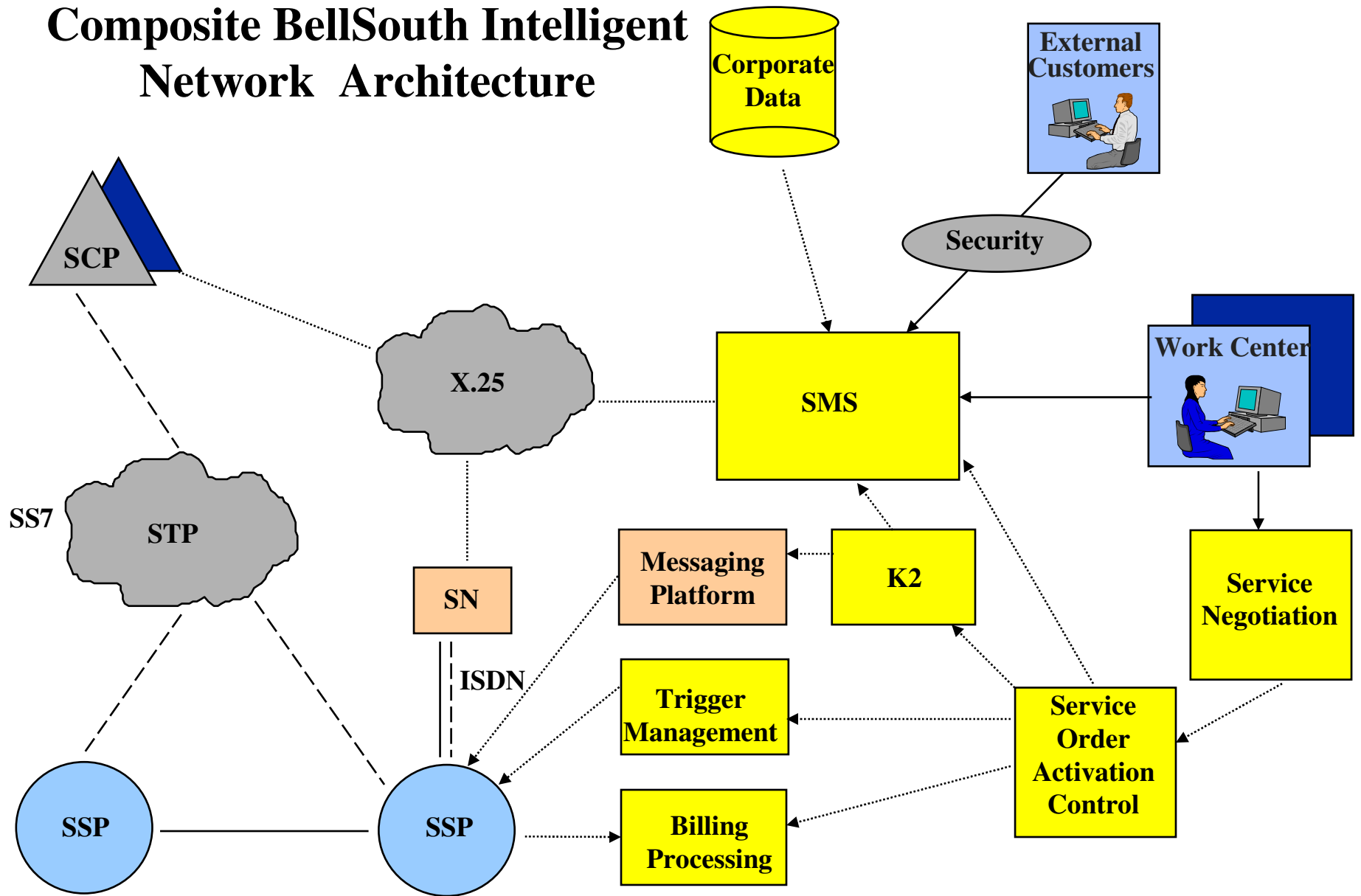
- **Synopsis of Software Development Mission**
- **Quality History & Initial CMM Hurdles**
- **Key Success Factors**
- **Accomplishments & Current Status**
- **Open Discussion**



Software Development Mission

- **Development of Real-time Network-based Services**
 - Full Life Cycle Support
 - Demanding Performance Requirements
 - Demanding Time-to-Market Challenges
- **Development of Complex Operations Support Systems**
 - Network Services Data Management & Support
 - Provisioning Flow-through
 - Network Topology and Maintenance Support

Composite BellSouth Intelligent Network Architecture



Services Palette

Calling Name

AdWatch

Simultaneous Ring

Government Notes

Concourse E

Wireless/Wireline

Port Edge

BellSouth Voice Mail Selective Carrier Routing

Privacy Director

BusyConnect

500 SAC

INTRAC

ZipConnect

EOLS

Call Back

800

Message Delivery Service

Crisis Link

Queries of Last Resort

One Number

Local Number Portability **AIM-2000**

Ring Back

Design Edge

Private Virtual Networks

Community Messaging

Call by Call Routing

Extension Mailbox

Calling Party Pays - Wireless

Government Emergency Telecom Service

Calling Card

Calling Name to/from Independents

Virtual Access Voice Private Virtual Networking

Call Control

Call Waiting Deluxe

Non-Published Message Delivery

Business Intercept Call Completion

Data Reach

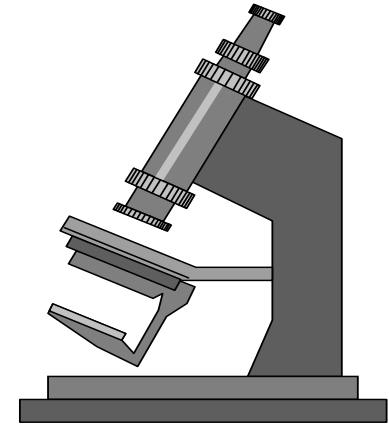
Fax Mail

Internet Call Waiting Deluxe

Flexible Call Forwarding

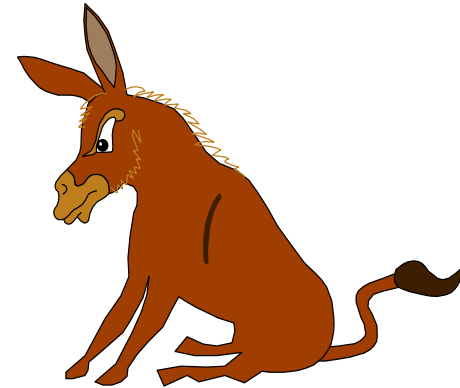
Message Link

Organization Quality History



- **Processes Defined Early in Organization's History**
- **Detailed Requirements & Independent Testing**
- **Active Process Improvement Teams Staffed by Practitioners**
- **Highly Talented & Motivated Personnel**
- **Strong Track Record of On-Time High Quality Software Deliveries**

Initial CMM Hurdles



- **Functional Organization: 3 Centers & 2 Locations**
- **Ad Hoc Project Management Approach**
- **Developers Want to Develop, Not Do Project Management or Software Quality Assurance**
- **Engineer & Manager Concerns Over Bureaucracy & Overhead**
- **Management Fallback to “Heroes” in a Pinch**




Getting Started

- **Management Commitment to Formal Assessment**
 - **Self-Assessment: Organization “Close” to Level 2**
 - **Self-Assessment: Likely “Easily Achievable”**
- **Formal Software Process Framework Documented**
 - **Primarily Stitched Together Existing Processes**
 - **Formal Project Management Structure Initiated**
- **Baseline Assessment Conducted**

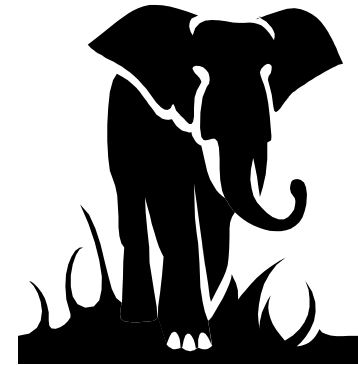
S & T Assessment Profile

Repeatable KPAs	Goal 1	Goal 2	Goal 3	Goal 4
Software Configuration Management				
Software Quality Assurance				
Software Project Tracking & Oversight				
Software Project Planning				
Requirements Management				
Peer Reviews				

Maturity Level 1
July 1998

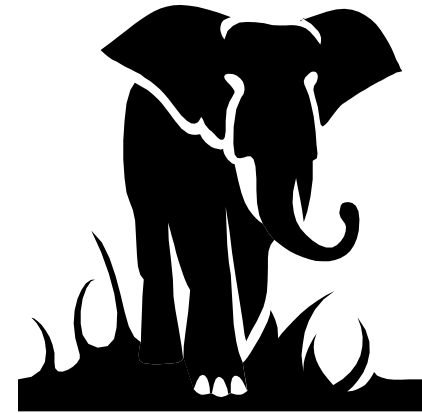
-  Fully Satisfied
-  Partially Satisfied
-  Satisfied
-  Not Satisfied

Getting Serious



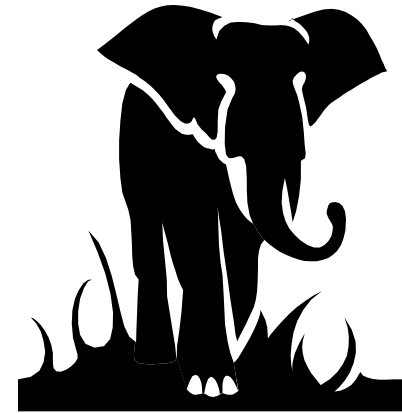
- **Action Plan for CMM Assessment Formulated**
 - **Driven by Feedback from Baseline Assessment**
 - **Managed as a Project**
 - **Included Level 3 As Well As Level 2 Capabilities**
- **CheckPoint Assessments Pursued with SEI Lead Assessor**
 - **Clarified Spirits and Letter of CMM Intent**
 - **Validated Relevance of Improvement Efforts**
 - **Ensured Soft Spots Received Focus Attention**
 - **Quickly Exposed Problem Areas Needing More Pointed Attention**

Getting Serious



- **Software Quality Assurance Formalized**
 - **Fleshed Out Pockets of Resistance**
 - **Underscored Seriousness of Process Adherence**
 - **Systematic Key Learning Sessions Initiated**
- **Project Management Function Significantly Grown**
 - **Role Conflicts with Management Surfaced & Addressed**
 - **Intra-group Communication Problems Addressed**
 - **External Project Issues Requiring Upper Management Attention Highlighted Via Bi-Weekly Reviews**

Getting Serious



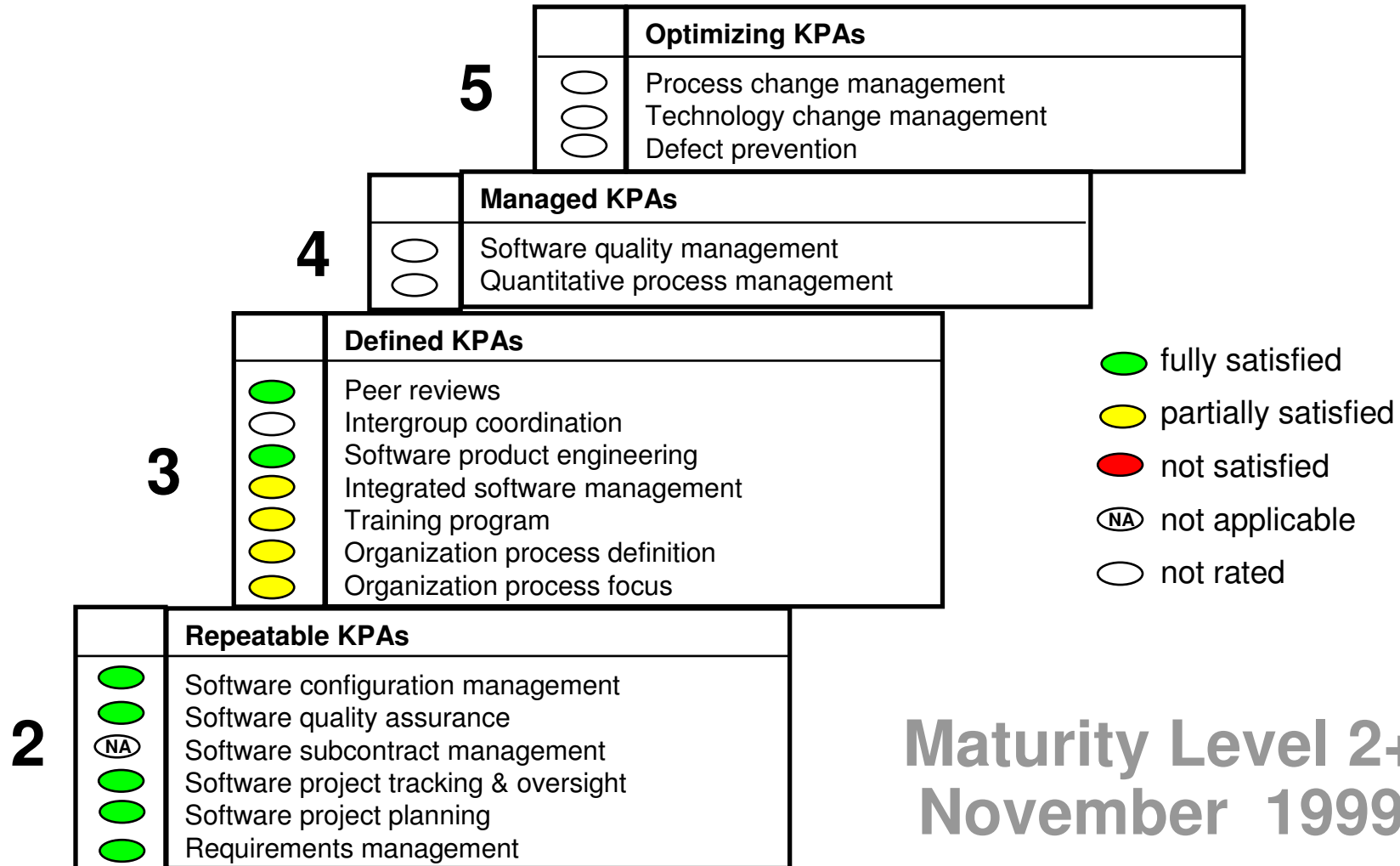
- **Focus On Formal CMM Level 3 Assessment Stressed**
 - **External Validation versus Internal “Puffery”**
 - **Organizational Pride of Quality in Practice and Products**
 - **Importance of Assessment in Competition for New Work**
- **Emphasis on Value in Process Procedures**
 - **Reduction of Internal Frustration In Pursuing Projects**
 - **Willingness to Revise Procedures When Warranted**
 - **Value of Systematic Approach to New Employee Assimilation and Early Effectiveness**

Managing Progress

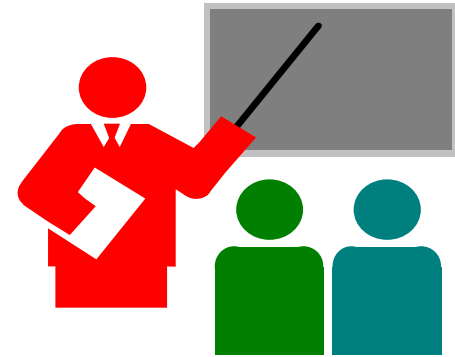
- **Systematic Interim Assessments to Validate Progress Towards Goal & Refine Approaches**
- **Explicit Action Plan Reviewed Periodically With “Challenges” Identified**
- **Reinforcement on Ongoing Basis of Importance of Effort Including Senior Management “Interest”**
- **“Bully Pulpit” Approach to Both Management and Engineers Where Needed - Limited Need To Do**



Key Process Area Profile

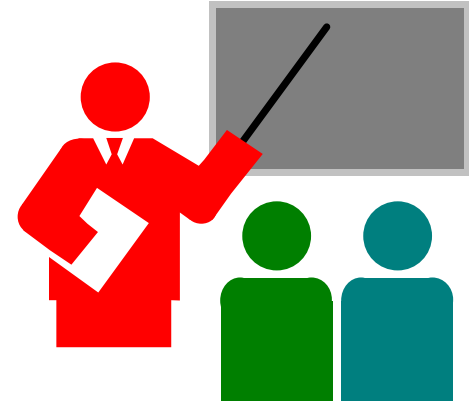


Key Insights



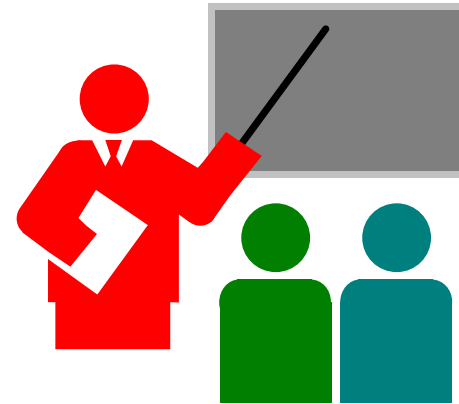
- **External Recognition Is Important to the People in the Organization!**
- **Project Management Roles versus Functional Manager Roles Require Time to Work Out**
- **Technical Strength of Project Managers Important for Success**
- **Internal CheckPoints Against Specific Plan Creates Focus**
- **Software Quality Assurance Efforts Must Bring Value - Improvements Justify the Effort to Collect the Data**

Key Insights



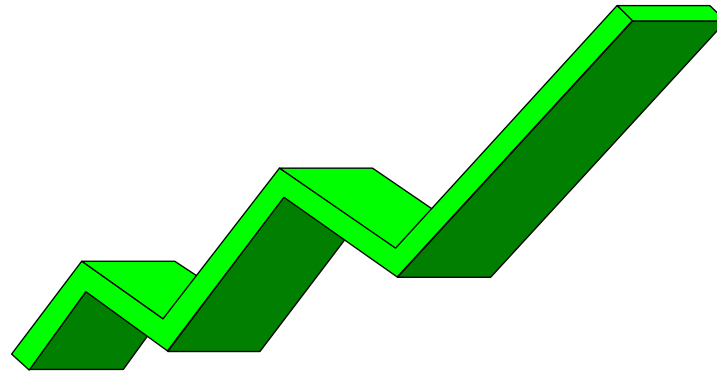
- **CMM Progress Drives Behaviors and Initiatives That Naturally Drive the Organization Up the CMM Ladder**
- **CMM Progress Drives Engineers in Emerging Projects to Establish or Seek Support For Discipline That Has Not Yet Been Set in Place**
- **CMM Progress Indirectly Challenges Other Partner Organizations to Tighten Up Their Approaches**

Key Insights



- **A Highly Motivated Organization Does Not Need To Be Coerced Into CMM Pursuit!**
- **Need to Strike Balance Between Process Improvement and Product Development Efforts**
- **Success Is Very Satisfying!**

Current Status



- **Action Plan to Achieve CMM Level 3 Assessment Is Being Pursued**
 - **Improvements For Level 2 Included**
- **Emerging Project Being Included In Level 3 Scope**
 - **Real Tradeoffs Needed Between Project Needs & Assessment Timing**
- **Formal Level 3 Assessment Targeted for Mid-2001**

A gray silhouette of a person with their arms raised in a celebratory gesture, positioned behind the text.

**It's the Hard That
Makes It Great!
If It Was Easy, Anyone
Could Do It.**

- Tom Hanks - A League of Their Own