

Achieving Level 2 and Beyond

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and

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Tonight's Agenda

- **Steve Hannigan, Battelle**
 - ✓ Corporate and project background
 - ✓ Improvement goals
 - ✓ Process improvement history
 - ✓ BCA achievements
 - ✓ Lessons Learned
- **Judi Brodman, LOGOS International, Inc. (LOGOS)**
 - ✓ Reasons for LOGOS being chosen for this effort
 - ✓ LOGOS Role
 - Sizing up the organization
 - Determining the optimum route for achieving goals
 - Aiding organization to reach its goals
 - ✓ Summary of Achievements

Who we are

■ Battelle Memorial Institute

- ✓ \$1 billion company
- ✓ 7,500 people worldwide
- ✓ 700 IT/Information Systems professionals
 - Provide a full range of information systems engineering capabilities to a wide range of government and commercial clients
 - Army
 - Air Force
 - Health and Human Services
 - Department of Transportation
 - Ohio State government
 - Department of Energy

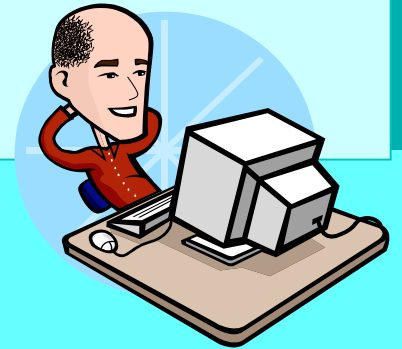
■ Battelle Cambridge Office (BCA)

- ✓ Staff of 20+ includes contractors
 - Wear multiple hats (necessitated by small staff)



What BCA projects consist of

- **Developing Software**
 - Client server
 - Web
- **Re-hosting application software to a web platform**
- **Building customized databases (data warehouse)**
 - Built 300+ databases over 7 year period



What BCA contracts look like

- **High level statements of work**
 - **Supplemented by**
 - emails
 - telephone calls
 - meeting minutes, memorandums, other documentation



What are BCA software process improvement goals

- Improve our internal processes
- Improve deliverables to our customers
- Achieve Software Engineering Institute's Capability Maturity Model (SW-CMM) Level 2 maturity rating in Cambridge Office
- Implement SW-CMM practices to facilitate attainment of CMM Level 3 maturity rating in the future
- Attract a more diverse business base



BCA process improvement history

- **Concerted effort began in 1998**
 - Brought in LOGOS International to do a **Strengths & Weaknesses Assessment Profile (SWAP)**
 - Formed a **SEPG**
 - Developed **Action Plans**
 - Began documenting policies and procedures
- **Hiatuses in 1999 and 2000 due to staff availability**



BCA process improvement history ⁻²

- **Major push starting in late 2000**
 - Senior Cambridge management more involved
 - SEPG more active and more committed
 - Staff more committed
 - Major investment in tool (StarTeam) to support configuration management, change process, and to provide a process and project repository

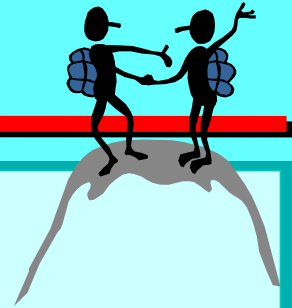


What BCA has achieved

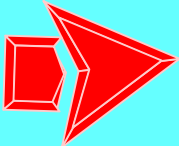
- Levels 2 and 3 policies, procedures, practices, forms, templates, etc. created, used, and revised as part of continuous improvement activities
- Software Development Plans (SDPs) and Configuration Management (CM) Plans for all major projects
 - All have been used and updated
 - All have same basic structure
- Organizational Quality Assurance plan (QAP)
 - QAP used and/or tailored by all projects
- SPI Web Site
- SPI Newsletter



What BCA has achieved -2

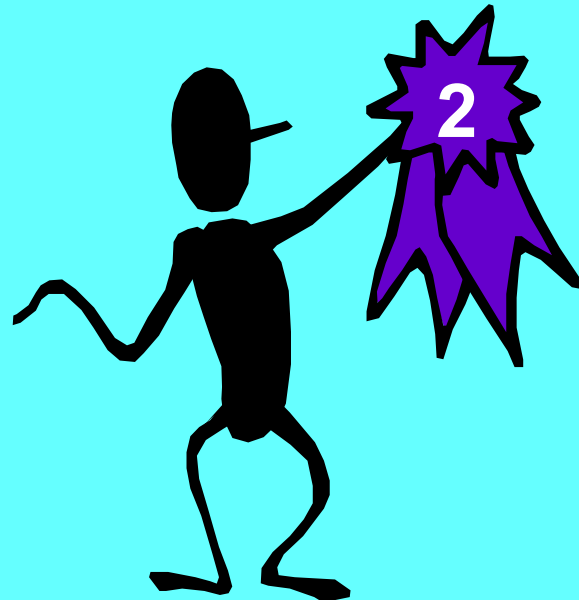


- **Training Program in place**
 - Organization Training Plan exists
 - KPA training modules exist
- **Project and process repository exists**
- **GAP Assessment completed in August 2001**
- **Successful CMM-Based Appraisal for Internal Process Improvement (CBA-IPI) assessment completed December 2001**



CBA-IPI results for Level 2

Repeatable KPAs	Goal 1	Goal 2	Goal 3	Goal 4
Software configuration management	●	●	●	●
Software quality assurance	●	●	●	●
Software subcontract management	○(NA)	○(NA)	○(NA)	○(NA)
Software project tracking & oversight	●	●	●	
Software project planning	●	●	●	
Requirements management	●	●		



- fully satisfied
- not satisfied
- (NA) not applicable
- (X) not rated

CBA-IPI results for Level 3

Defined KPAs	Goal 1	Goal 2	Goal 3
Peer reviews	○	○	
Intergroup coordination	○(NA)	○(NA)	○(NA)
Software product engineering	○	●	
Integrated software management	○	●	
Training program	○	○	○
Organization process definition	○	●	
Organization process focus	●	●	●

- fully satisfied
- not satisfied
- (NA) not applicable
- (X) not rated



BCA Implementation of Configuration Management

- **CM Manager for the office and CM Coordinator for each project**
- **Designation of Configuration Items (CIs)**
 - source code
 - user documentation
 - requirements
 - design documentation
 - other work products as determined
- **Use of StarTeam as major repository for storing and controlling (CIs)**
- **Periodic CM audits on each project**

BCA Implementation of Quality Assurance

- **QA Manager for the office and QA Coordinator for each project**
- **Focuses on process consulting during the early stages of projects**
 - **Assist in the structuring and creation of critical processes and associated documentation**
 - **Provide suggestions and alternatives**
- **Evolves into QA audits as project progresses**
 - **Ensure project manager and staff are following SDP and all applicable policies and procedures**
 - **Provide management with visibility**

Lessons Learned

- ✓ Use an internal expert or external consultant who knows software process improvement, CMM, and also has recent experience in participating in assessments
- ✓ Make certain that you focus on CM early – process documentation needs to be controlled, managed, accessible to staff, etc.

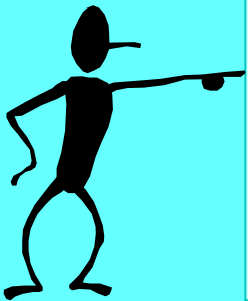
Avoid having to ask – “Where is this stuff?”

- ✓ Set reasonable expectations
 - Level 2 is a long, tough climb
 - Don't undersell the effort to get there



Lessons Learned .2

- ✓ **If you start and then stop, there will be re-work; you always lose something during the hiatus**
 - organizational momentum
 - staff
 - management commitment
- ✓ **Don't underestimate the preparation time for an assessment**
- ✓ **Management commitment is key**
 - Grass roots effort sufficient for some things
 - No management commitment causes priority problems – project vs. process



Lessons Learned .3

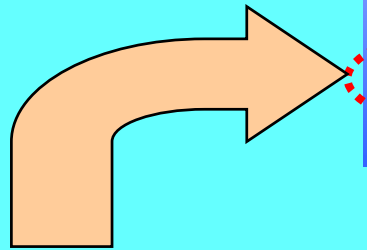
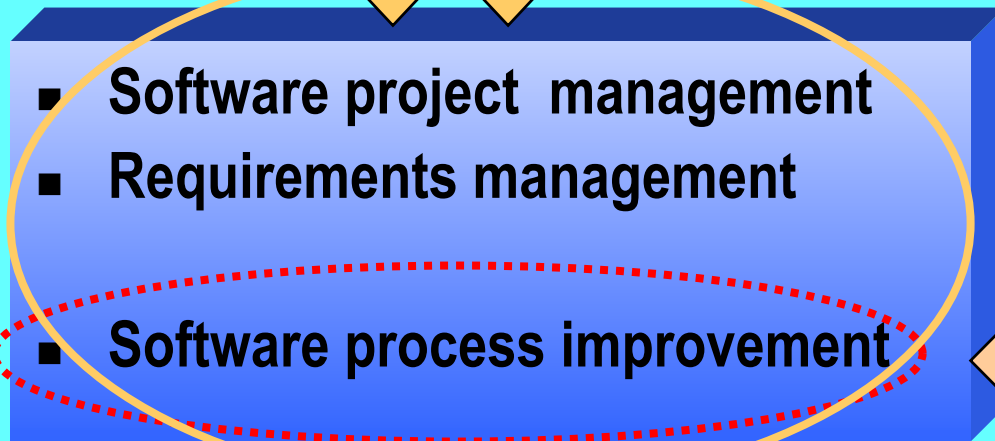
- ✓ **Make sure Policies, Procedures, and Plans add value**
- ✓ **You're never done - new development tools, customer requirements, etc. force change**

Process improvement is continual and never ends

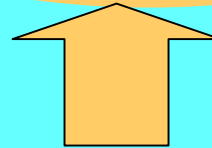


Who is LOGOS International, Inc.

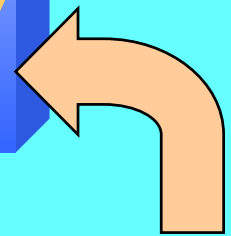
Consulting Training



Assessments



Small Projects
Small Organizations



Research

What was LOGOS' Role

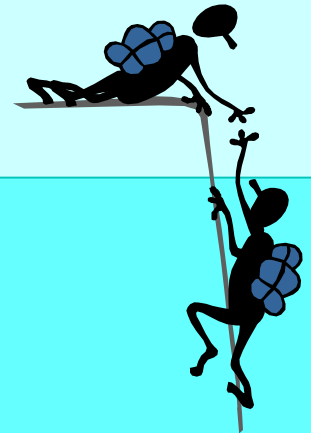
- Size up the organization



- Determine optimum route for achieving goals



- Aid organization to reach its goals



Sizing up the Battelle Cambridge Office



- Culture
- Knowledge of SPI
- Level of process
- Type of Projects/Work load
- Goals
 - ✓ Corporate
 - ✓ SPI
- Senior Management support

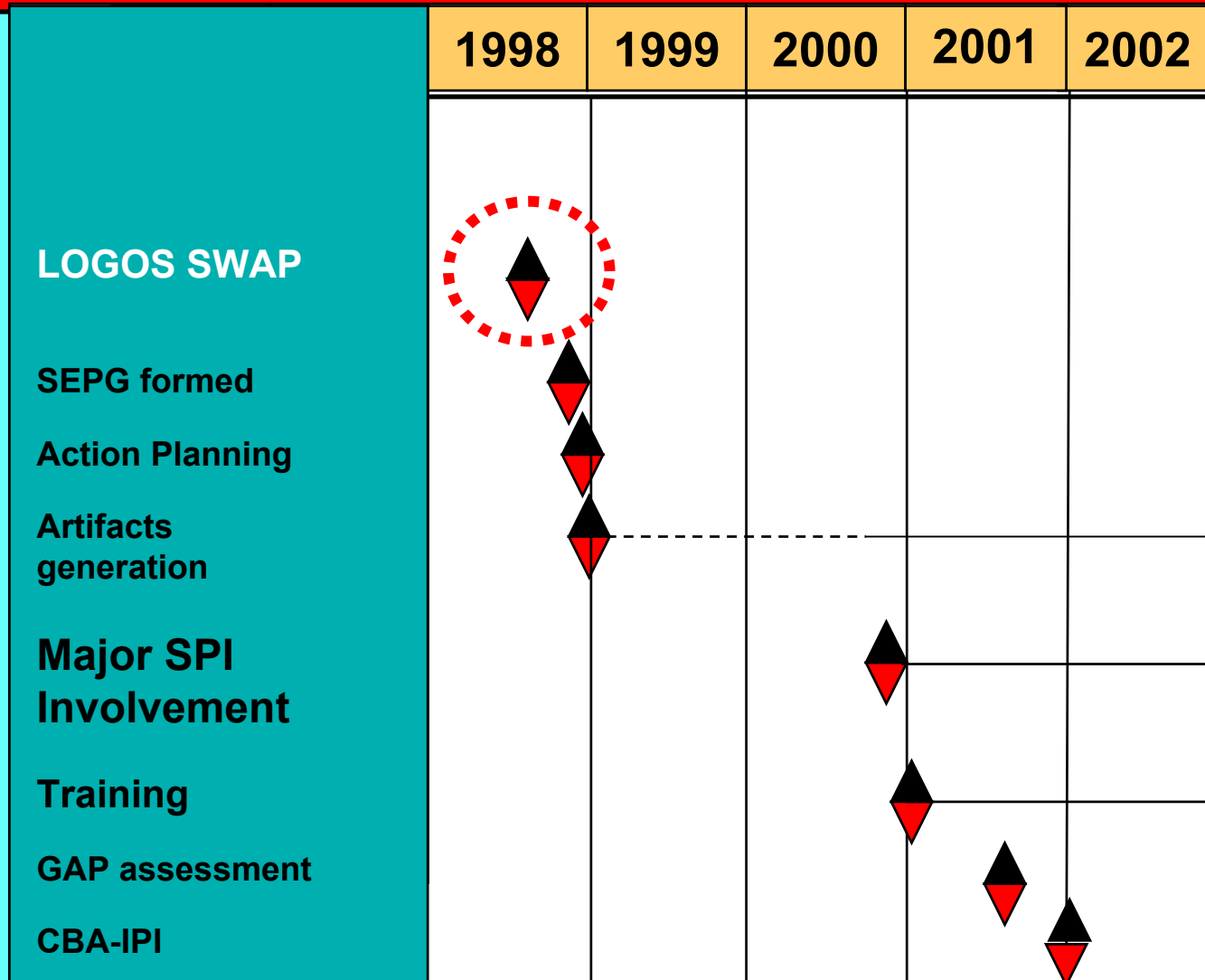


ASSESS THE ORGANIZATION

- ✓ Establish an organizational footprint



Sizing up the Battelle Cambridge Office

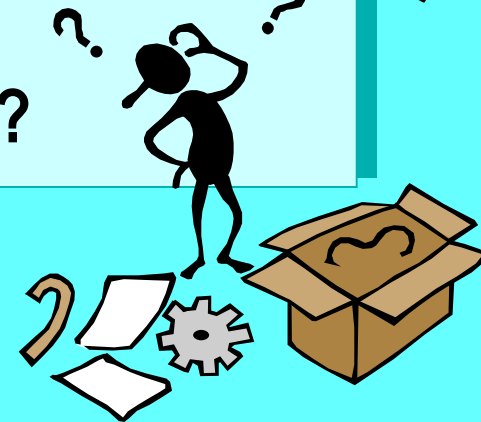


Determining the optimum route

Choices to be made:

- Assessment type? CBA-IPI, SCE, GAP or mini?
- SEPG or not? Type of members?
- Action plans? How detailed?
- Use existing documentation?
- Work towards Level 2 or 3?
- Provide training? When and on what?

CMM expert?



Assessing the Organization

Question to ask –

- Why are we performing the assessment ?
 - Initial footprint – guidance?
 - Assessment readiness?
 - Maturity Level Rating?

BCA Assessments:

- May 1998 ■ LOGOS SWAP (Strength and Weakness Assessment Profile)
- August 2001 ■ GAP
- December 2001 ■ CBA-IPI



Setting up an SEPG

Question to ask –

- How will we guide, plan, and track the SPI effort ?

Evolution of BCA SEPG:

- **Setup early - 1998**
 - ✓ Chose project leaders and area experts
 - ✓ No senior management or LOGOS personnel
- **Revamped at end of 2000**
 - ✓ Senior management chaired the meetings
 - ✓ LOGOS was present at all meetings
 - ✓ Minutes and action items were generated
 - ✓ Staff members were brought in to contribute to special tasks – web site



Developing Action Plans

Question to ask –

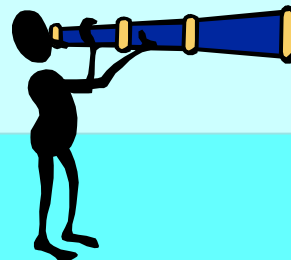
- How much detail is enough ?

Example of BCA Action Plans:

Improvement Task	Responsibility	Effort (hours) LOGOS/BCA	Start date	End date
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Keep them Simple !

Generate them quickly !



Turned into action items
that we tracked and
prioritized at each weekly
SEPG meeting

Using Existing Documentation



Question to ask –

- What can we use and how can we use it ?

BCA documentation:

- Tried to use corporate procedures
- Used Corporate format
- Rewrote policies and procedures to fit the Cambridge organization
- Update documentation as process continues to mature



Working toward Level 2 or Level 3

Questions to ask –

- Are we going for Level 3 ?
- What do we have in place ?

If Level 2 = Goal

All projects do the same things but not necessarily the same way

If Level 3 = Goal

All projects do the same things the same way (s)
Templates, forms, choice of estimation techniques,
choice of lifecycles, etc.

Value-added

If Improvement = Goal → look at specific KPAs

Working toward Level 2 or Level 3 .2

BCA's Goal = Level 3

- ✓ Created common templates and forms
 - SDP, CM Plan, estimation worksheets, change requests, status reports, etc.
- ✓ Developed organizational QA plan;
 - tailoring of organization's QA Plan and project QA described in SDP (originally had project QA Plan)
- ✓ Develop CM plans for all projects
- ✓ Created tailoring guidelines for SDP for small projects and research efforts
- ✓ Created organization's process and project library
- ✓ Developed training modules
- ✓ Developed Level 2 and 3 action plans



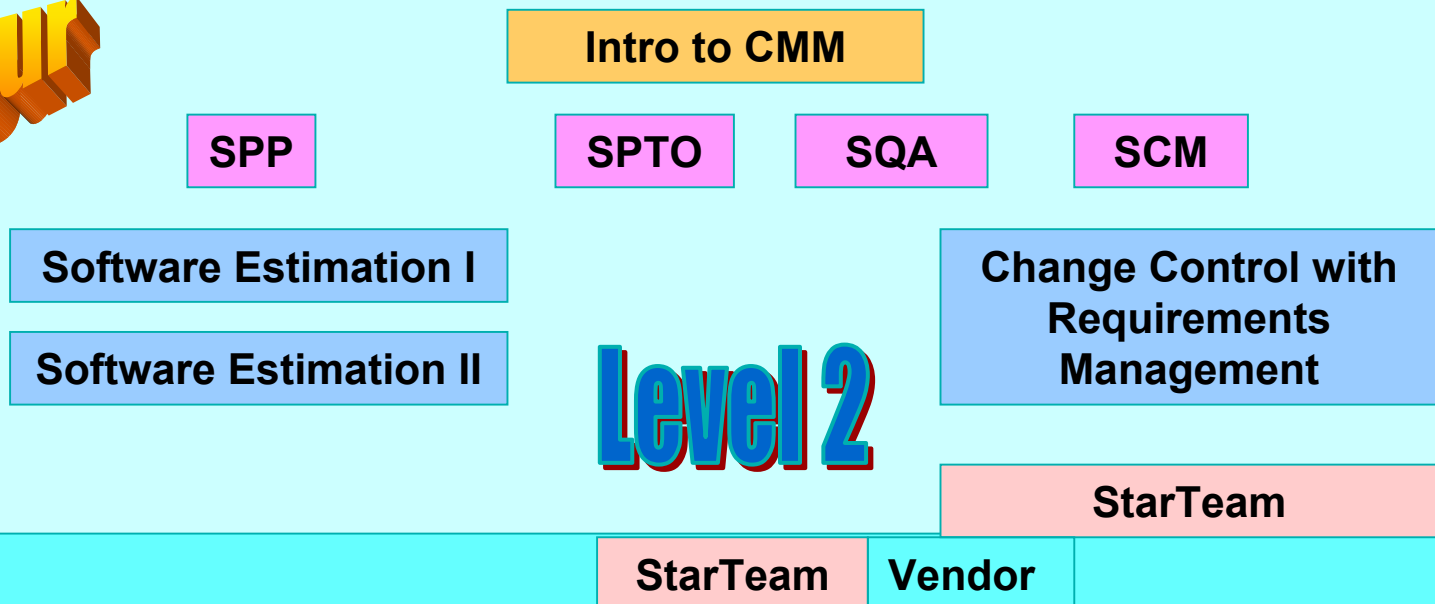
Providing Training

Questions to ask –

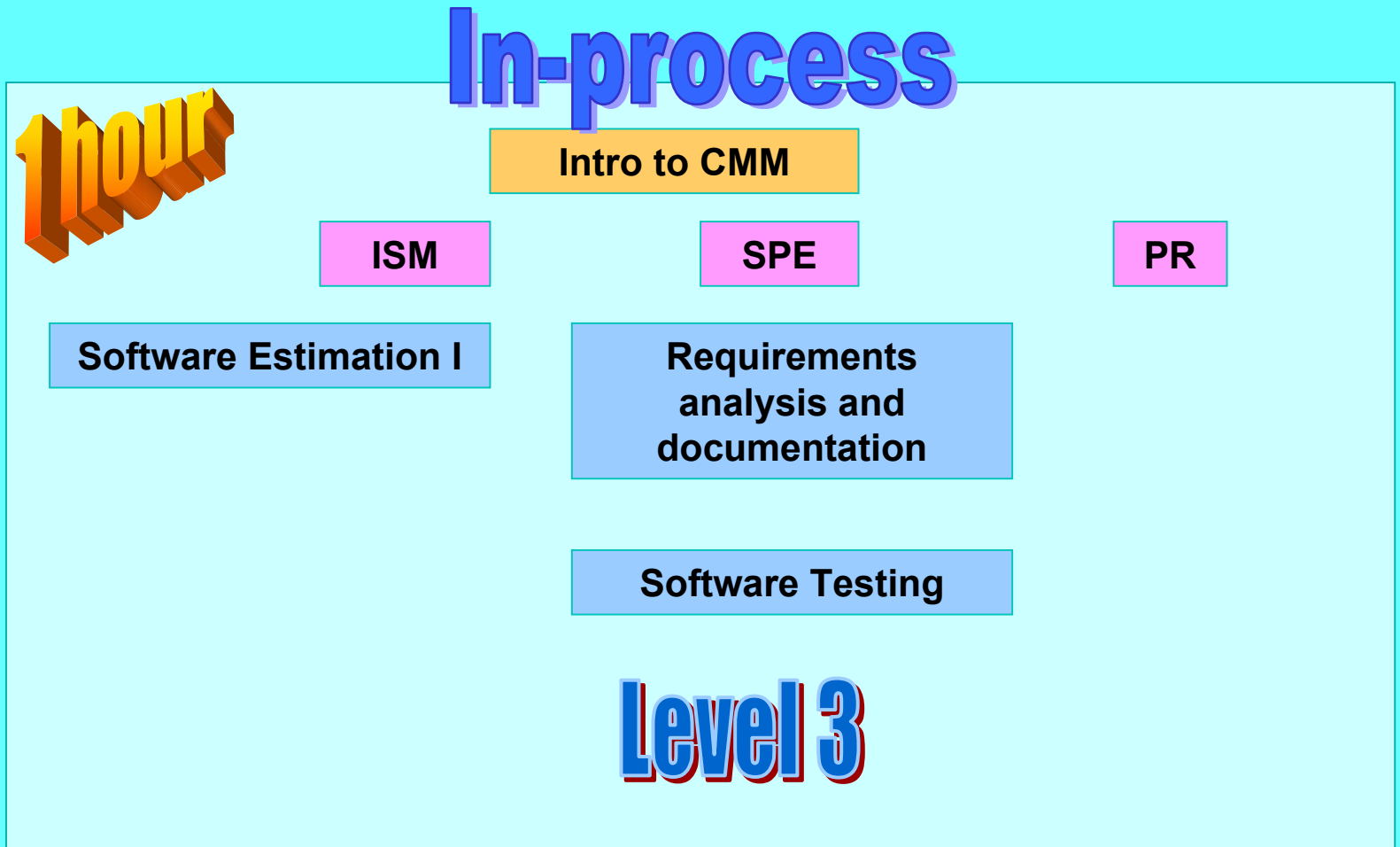
- What training do we need ?
- Where do we get it ?

BCA Training - modules developed:

1hour



Providing Training -2



Aiding BCA to reach its goals

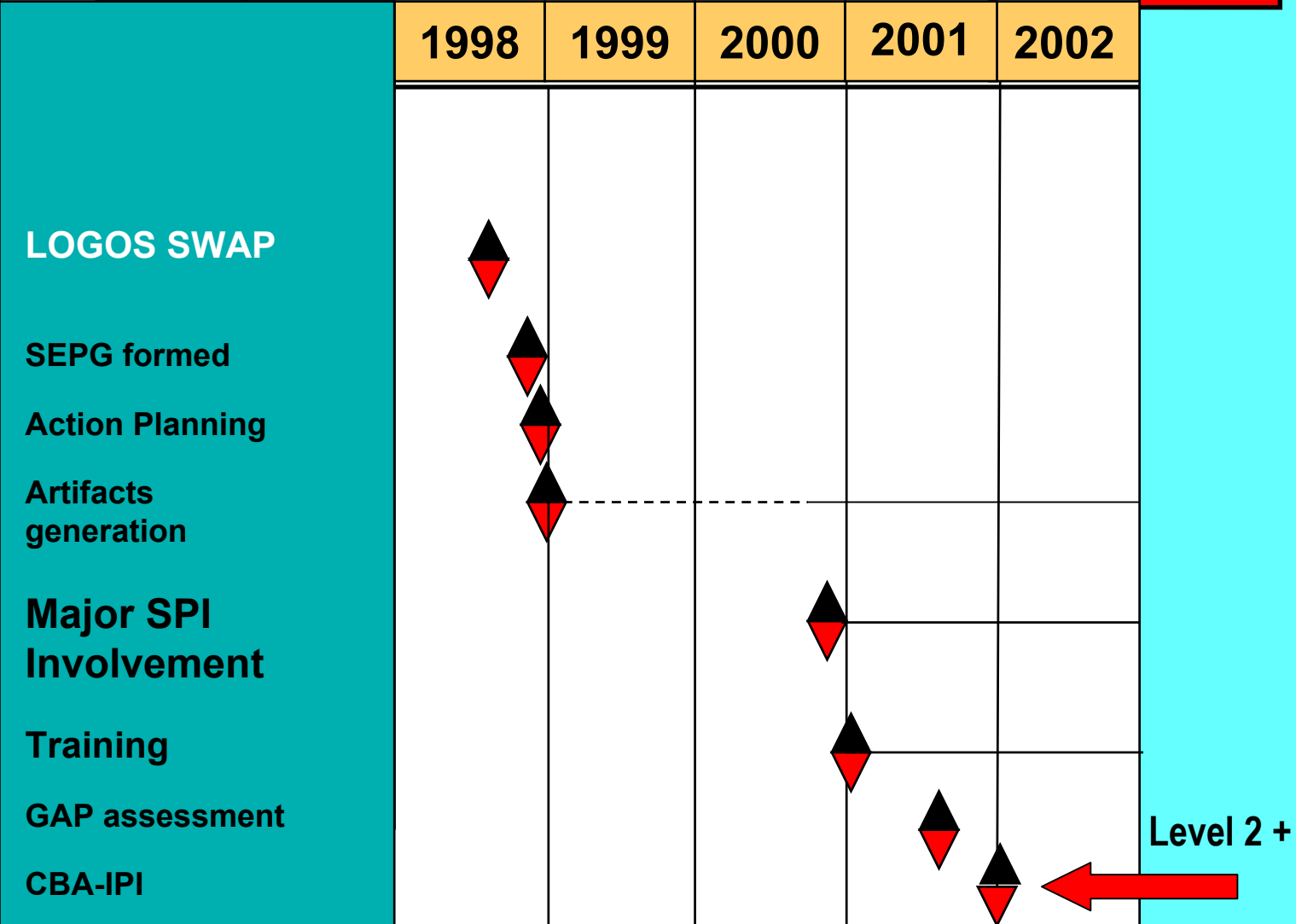
Level 2



- **Guidance in capturing and improving the BCA process**
 - ✓ Rational as to what needed to be done and what didn't
 - ✓ Value-added activities and artifacts mapped against the CMM
- **Attendance at the SEPG meetings**
 - ✓ Prioritization of action plans and action items
 - ✓ Continual pressure to get the job done
- **Generation and/or review of documentation**
- **Development and/or review of the training modules**
- **Tracking of artifacts and activities**

*CMM in
Stealth Mode*

Summary of Achievements



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