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
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
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

- 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

<table>
<thead>
<tr>
<th>Repeatable KPAs</th>
<th>Goal 1</th>
<th>Goal 2</th>
<th>Goal 3</th>
<th>Goal 4</th>
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<tbody>
<tr>
<td>Software configuration management</td>
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<td>Software quality assurance</td>
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<td>Software subcontract management</td>
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<td>Software project tracking &amp; oversight</td>
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<td>Software project planning</td>
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<td>Requirements management</td>
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- fully satisfied
- not satisfied
- not applicable
- not rated
### CBA-IPI results for Level 3

<table>
<thead>
<tr>
<th>Defined KPAs</th>
<th>Goal 1</th>
<th>Goal 2</th>
<th>Goal 3</th>
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</thead>
<tbody>
<tr>
<td>Peer reviews</td>
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<td>Intergroup coordination</td>
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<td>Software product engineering</td>
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<td>Integrated software management</td>
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<td>Training program</td>
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<td>Organization process definition</td>
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<td>Organization process focus</td>
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- [ ] fully satisfied
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- [ ] not applicable
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**Legend:**
- [ ] fully satisfied
- [ ] not satisfied
- [ ] not applicable
- [ ] not rated

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**Battelle LOGOS Intl**
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

- 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

- 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.

- Software project management
- Requirements management
- Software process improvement
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

### Key Milestones

<table>
<thead>
<tr>
<th>Year</th>
<th>LOGOS SWAP</th>
<th>SEPG formed</th>
<th>Action Planning</th>
<th>Artifacts generation</th>
<th>Major SPI Involvement</th>
<th>Training</th>
<th>GAP assessment</th>
<th>CBA-IPI</th>
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<tbody>
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<td>1998</td>
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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?
Assessing the Organization

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

BCA Assessments:
- LOGOS SWAP (Strength and Weakness Assessment Profile)
- GAP
- CBA-IPI

May 1998
August 2001
December 2001
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:

<table>
<thead>
<tr>
<th>Improvement Task</th>
<th>Responsibility</th>
<th>Effort (hours) LOGOS/BCA</th>
<th>Start date</th>
<th>End date</th>
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<tr>
<td>Turned into action items that we tracked and prioritized at each weekly SEPG meeting</td>
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Keep them Simple! Generate them quickly!
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.

If Improvement = Goal   look at specific KPAs
Working toward Level 2 or Level 3

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:

- Change Control with Requirements Management
- Intro to CMM
- Software Estimation I
- Software Estimation II
- SPP
- SPTO
- SQA
- SCM
- StarTeam
- Vendor
Providing Training

In-process

1 hour

Intro to CMM
ISM
SPE
PR

Software Estimation I
Requirements analysis and documentation
Software Testing

Level 3
Aiding BCA to reach its goals

- 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
Summary of Achievements

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Level 2 +
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