Tool to Facilitate CMMI Appraisals

Preparation, Collaboration and Execution

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Outline

- Tool Description
- Tool Benefits
- Appraisal preparation and collaboration
- Appraisal execution
- Tool Limitations and Workarounds
- Obtaining the free tool (*for government-related use only pending permission from the SEI for public release*)
- Backup slides
  - System requirements
  - References
  - Acronyms

Tool Description

Tool Description

- Background
  - While preparing for an appraisal in 2003, I discovered that filling out a giant spreadsheet may not be the best approach
  - I wanted a tool that would allow others (such as project teams) to collaborate and participate easily in the appraisal preparation process
  - I wanted a tool that could also be used during the appraisal to streamline appraisal activities
  - The tool was developed and tested prior to and during an actual SCAMPI appraisal

Tool Description

- The tool
  - is intended to facilitate Standard CMMI Appraisal Method for Process Improvement (SCAMPI) appraisal preparation, collaboration and execution by providing the entire framework, user-friendly data entry screens, and reports in a MS Access 2002 database
  - provides an alternative to creating and using PIIDs in the typical MS Excel format
  - is free, and tailorable for internal use
- A Windows Help file is provided describing each step of the process

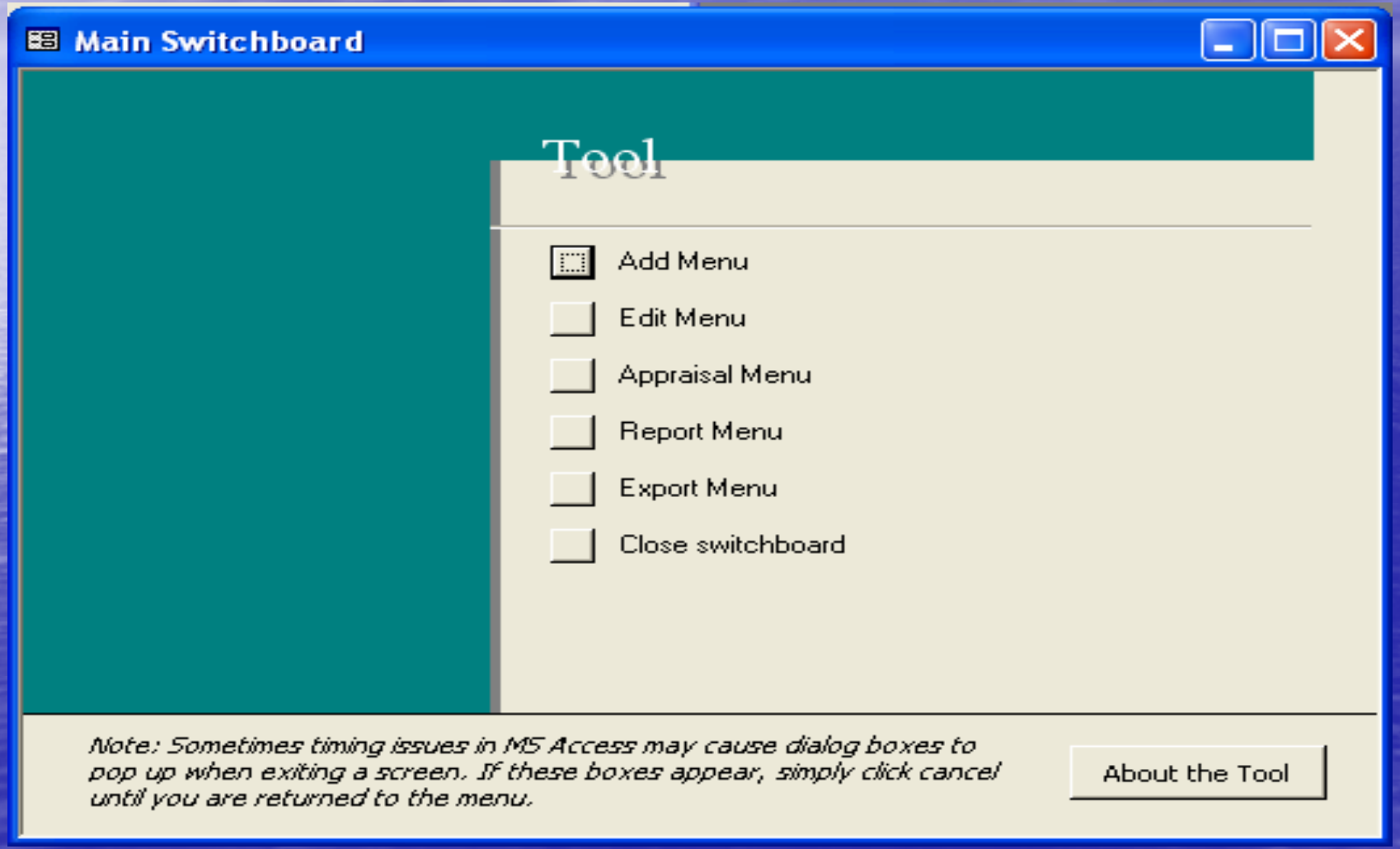
Tool Description

- Twenty-five Capability Maturity Model Integration (CMMI) process areas are included from the SE/SW, IPPD, and SS continuous models.
  - The continuous representation is encouraged because it allows organizations to ease into the "CMMI world" gradually, while still allowing for staged maturity level equivalencies.

Tool Description

- Artifacts and appraisal information can be stored for multiple organizations, and multiple projects within each organization
- Drop down lists present CMMI process areas and practices, along with sample artifacts used to satisfy each practice
- All reference data can be modified to suit your organization's needs
- Hyperlink capability is available to link electronic documents directly to the database

Tool Description
Main Menu



Tool Benefits

Tool Benefits

- Provides a user-friendly transition to appraisal preparation for novices
- Provides simplified data entry for experts
- Multiple users can work on appraisal preparation activities concurrently
- Provides enhanced capability for appraisal data reporting and analysis
- Provides suggestions for rolling up project practice characterizations

Tool Benefits

- Reports can be generated to determine readiness for an appraisal at any given point in time
- MS Access-aware power users may add Practice example artifacts related to the organization, as desired, to build an organization-wide knowledge base
- Hyperlinks can be entered which can help reduce time spent on the actual appraisal
- Observations can be entered during the appraisal, which can later be exported for use in the final findings presentation as strengths and improvement opportunities
- The chart of capability levels is produced automatically at the end of the appraisal

Tool Benefits

- A Windows Help file is included describing each step of the process, including screen shots of the application
- The tool can be used for process improvement without doing a formal SCAMPI appraisal
- There exists the possibility of improved configuration control of artifacts and appraisal records
- There exists the general capability to add new data fields for measurement and analysis depending on the organization's goals and objectives

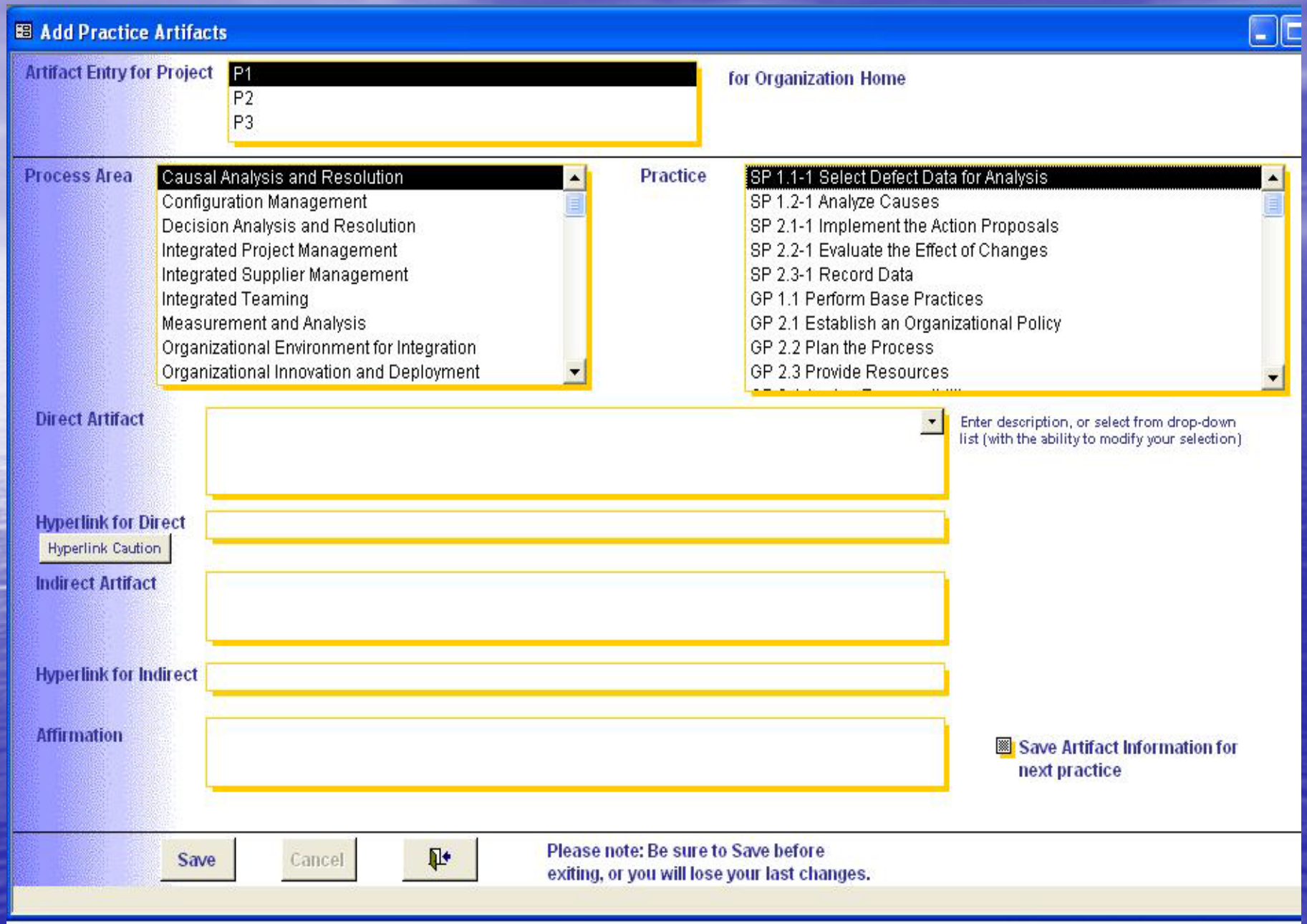
Appraisal Preparation and Collaboration

Appraisal Preparation and Collaboration

- To prepare for a CMMI appraisal involves collecting evidence
- The tool provides drop-down lists and hyperlink capability for ease of data entry
- Storing the database on an organizational network allows users to enter and share information in a collaborative fashion

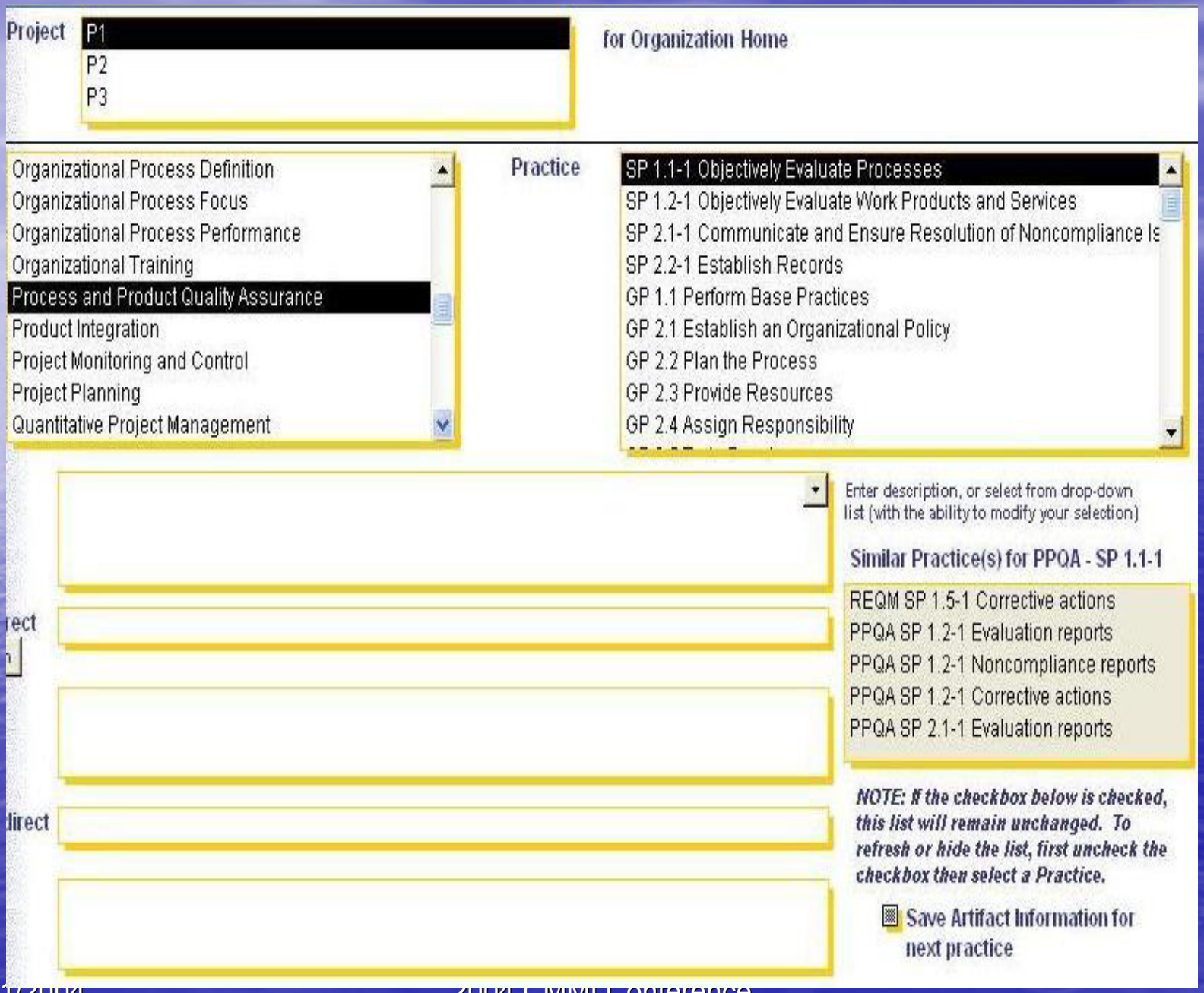
Appraisal Preparation and Collaboration

Adding data – see next screen


Add Practice Artifacts
Artifact Entry for Project
P1
P2
P3
for Organization Home
Process Area
Causal Analysis and Resolution
Configuration Management
Decision Analysis and Resolution
Integrated Project Management
Integrated Supplier Management
Integrated Teaming
Measurement and Analysis
Organizational Environment for Integration
Organizational Innovation and Deployment
Practice
SP 1.1-1 Select Defect Data for Analysis
SP 1.2-1 Analyze Causes
SP 2.1-1 Implement the Action Proposals
SP 2.2-1 Evaluate the Effect of Changes
SP 2.3-1 Record Data
GP 1.1 Perform Base Practices
GP 2.1 Establish an Organizational Policy
GP 2.2 Plan the Process
GP 2.3 Provide Resources
Direct Artifact
Enter description, or select from drop-down list (with the ability to modify your selection)
Hyperlink for Direct
Hyperlink Caution
Indirect Artifact
Hyperlink for Indirect
Affirmation
Save Artifact Information for next practice
Save
Cancel
Please note: Be sure to Save before exiting, or you will lose your last changes.

Appraisal Preparation and Collaboration

- Special feature
  - The tool automatically displays a list of those specific practices that may have common work products (see next slide)
  - By checking the check box marked "Save Artifact Information for next practice", all user entries on the screen are preserved so they can be re-used without having to be re-entered


Project
P1
P2
P3
for Organization Home
Organizational Process Definition
Organizational Process Focus
Organizational Process Performance
Organizational Training
Process and Product Quality Assurance
Product Integration
Project Monitoring and Control
Project Planning
Quantitative Project Management
Practice
SP 1.1-1 Objectively Evaluate Processes
SP 1.2-1 Objectively Evaluate Work Products and Services
SP 2.1-1 Communicate and Ensure Resolution of Noncompliance Is
SP 2.2-1 Establish Records
GP 1.1 Perform Base Practices
GP 2.1 Establish an Organizational Policy
GP 2.2 Plan the Process
GP 2.3 Provide Resources
GP 2.4 Assign Responsibility
Enter description, or select from drop-down list (with the ability to modify your selection)
Similar Practice(s) for PPQA - SP 1.1-1
REQM SP 1.5-1 Corrective actions
PPQA SP 1.2-1 Evaluation reports
PPQA SP 1.2-1 Noncompliance reports
PPQA SP 1.2-1 Corrective actions
PPQA SP 2.1-1 Evaluation reports
NOTE: If the checkbox below is checked, this list will remain unchanged. To refresh or hide the list, first uncheck the checkbox then select a Practice.
Save Artifact Information for next practice

Appraisal Preparation and Collaboration *Reporting*

- Reports are available to show
  - the entire framework for reference
  - the appraisal artifacts to determine readiness for an appraisal
  - lists of interviewees and questions to ask them during the appraisal

Appraisal Execution

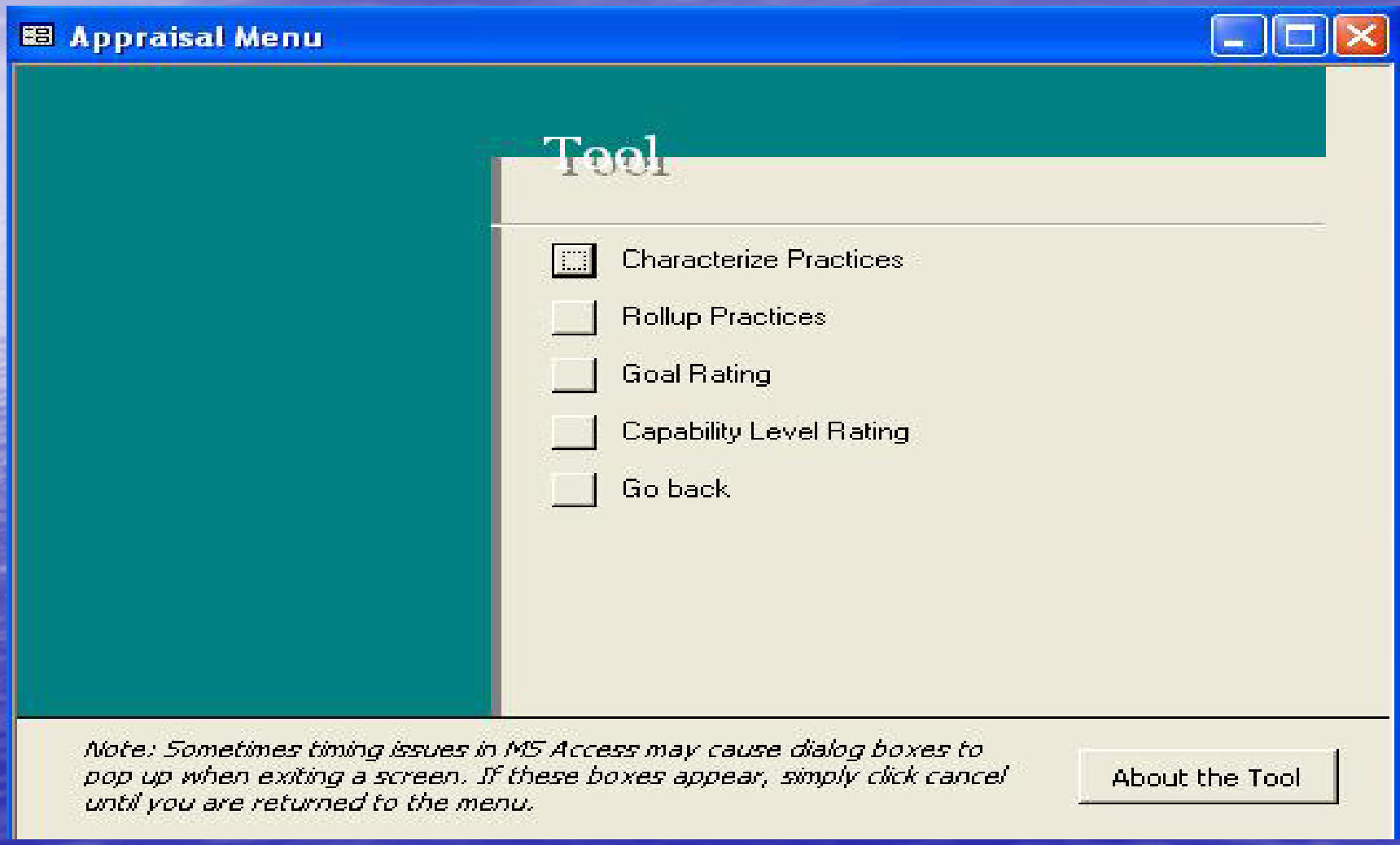
Appraisal Execution

- An appraisal involves
  - determining what people do
  - verifying that people do what they say they do
- The tool can be used during an appraisal and for storing appraisal results (NOTE: SCAMPI non-attribution requires special care be taken with data)

OR

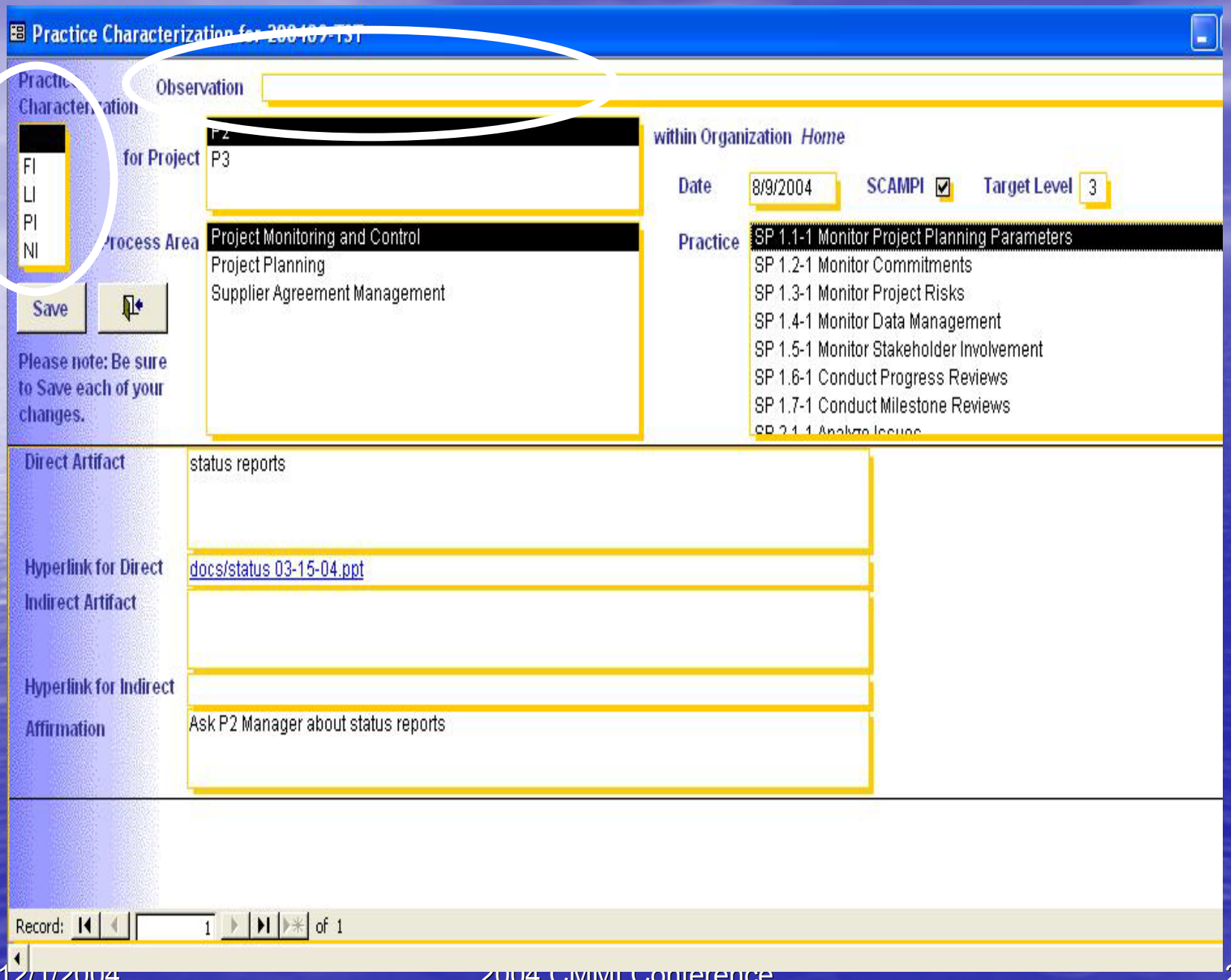
- The tool also has a function to export data to the traditional PIID spreadsheet for appraisal execution (simple MS Excel macro is available that may be needed for restoring hyperlinks)

Appraisal Execution
Menu



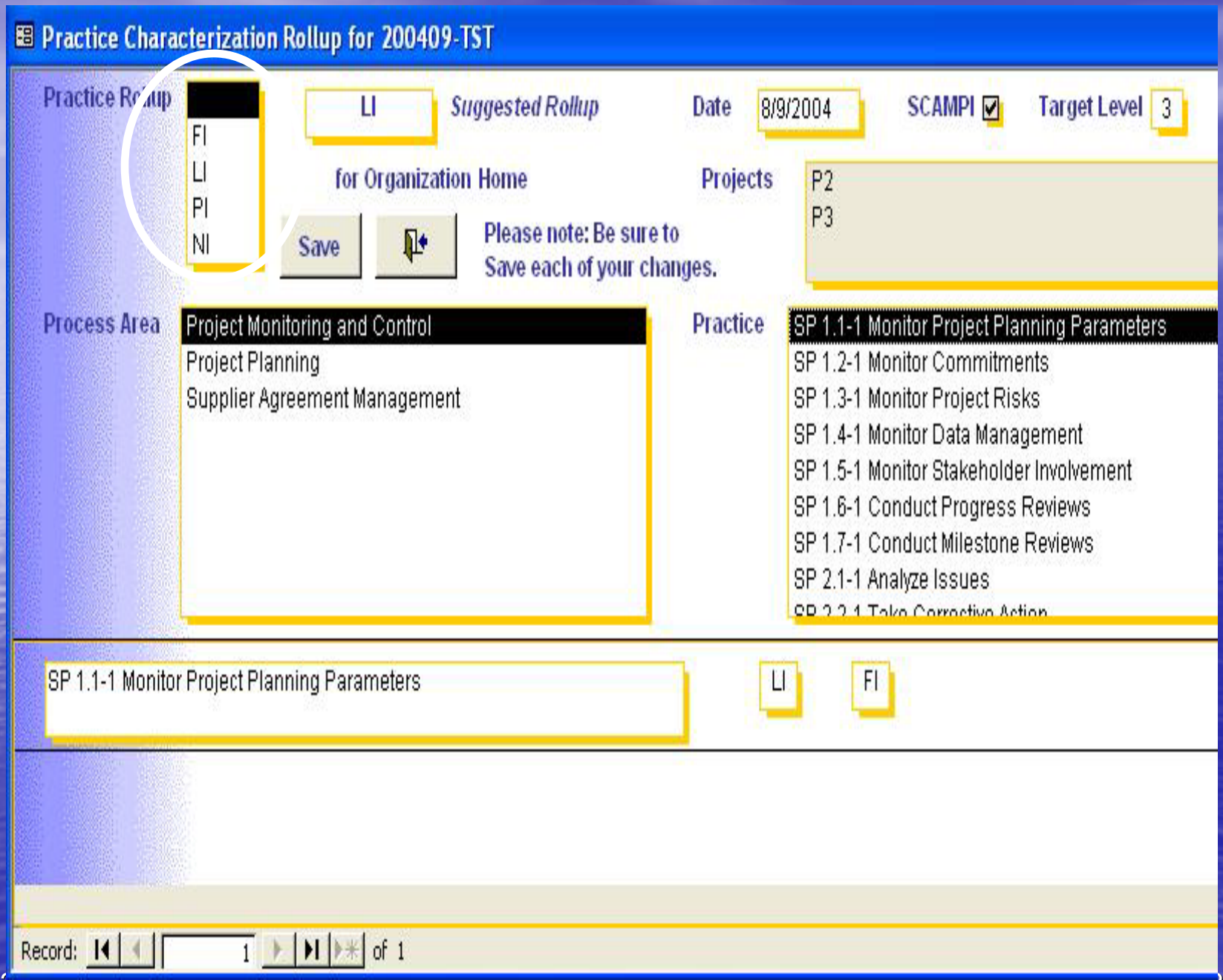
Appraisal Execution
Characterize Practices

- Decide whether the practice is fully implemented (FI), largely implemented (LI), partially implemented (PI) or not implemented (NI)
- Reach team consensus and select the corresponding entry from the next screen
- Optionally: enter observations that can later be exported as strengths or improvement opportunities


Practice Characterization for 200409-TST
Practice Characterization
FI
LI
PI
NI
Observation
for Project
P2
P3
within Organization Home
Date
8/9/2004
SCAMPI
Target Level
3
Process Area
Project Monitoring and Control
Project Planning
Supplier Agreement Management
Practice
SP 1.1-1 Monitor Project Planning Parameters
SP 1.2-1 Monitor Commitments
SP 1.3-1 Monitor Project Risks
SP 1.4-1 Monitor Data Management
SP 1.5-1 Monitor Stakeholder Involvement
SP 1.6-1 Conduct Progress Reviews
SP 1.7-1 Conduct Milestone Reviews
Save
Please note: Be sure to Save each of your changes.
Direct Artifact
status reports
Hyperlink for Direct
docs/status 03-15-04.ppt
Indirect Artifact
Hyperlink for Indirect
Affirmation
Ask P2 Manager about status reports
Record:
1
of 1

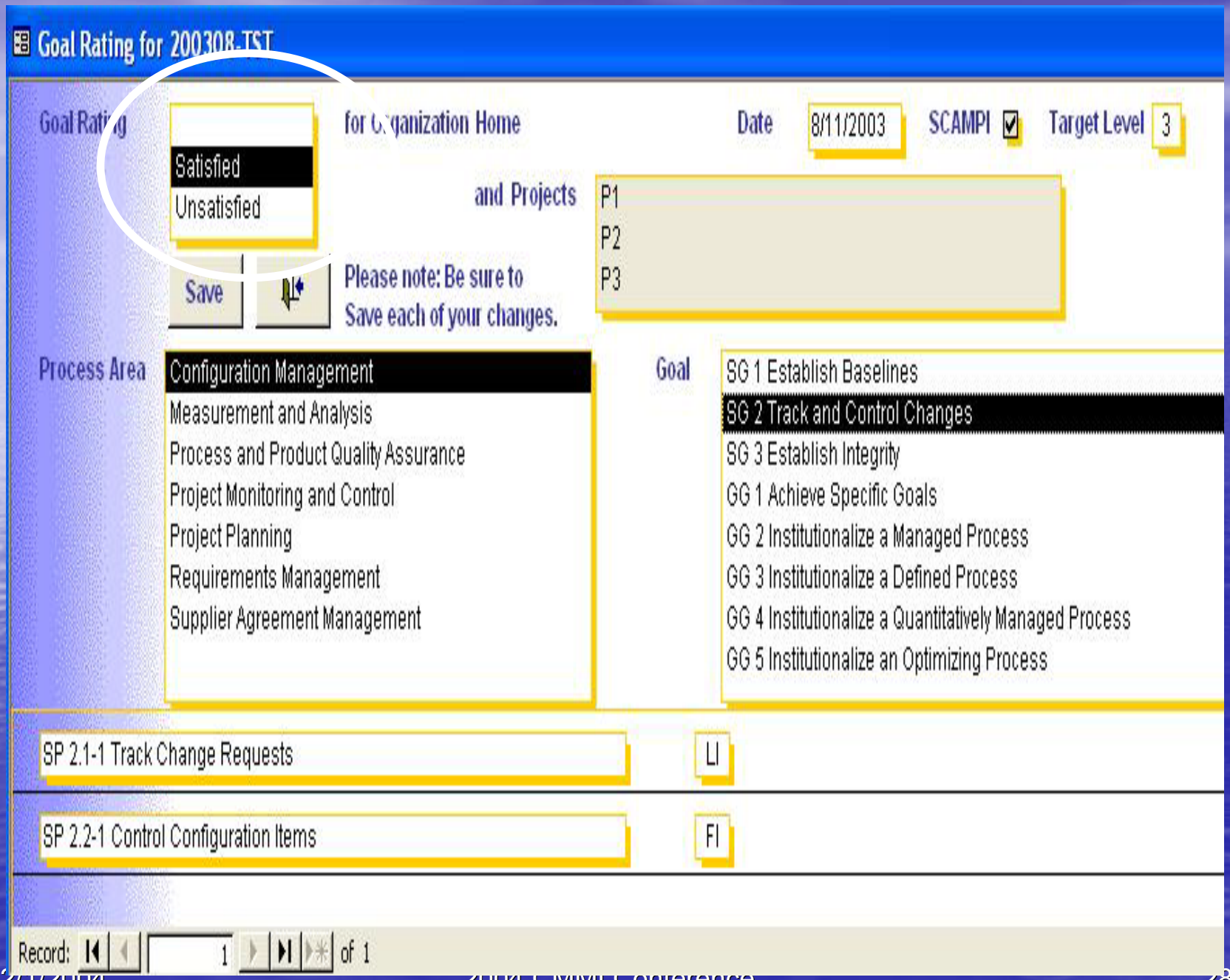
Appraisal Execution
Rollup characterizations

- If multiple projects are being appraised for an organization, practice characterizations need to be rolled up to obtain organizational level practice characterizations
  - The tool provides suggestions for rollups based on guidelines in place in July of 2003
- Reach team consensus and select the Rollup from the next screen


Practice Characterization Rollup for 200409-TST
Practice Rollup
FI
LI
PI
NI
LI
Suggested Rollup
Date
8/9/2004
SCAMPI
Target Level
3
for Organization Home
Projects
P2
P3
Save
Please note: Be sure to
Save each of your changes.
Process Area
Project Monitoring and Control
Project Planning
Supplier Agreement Management
Practice
SP 1.1-1 Monitor Project Planning Parameters
SP 1.2-1 Monitor Commitments
SP 1.3-1 Monitor Project Risks
SP 1.4-1 Monitor Data Management
SP 1.5-1 Monitor Stakeholder Involvement
SP 1.6-1 Conduct Progress Reviews
SP 1.7-1 Conduct Milestone Reviews
SP 2.1-1 Analyze Issues
SP 1.1-1 Monitor Project Planning Parameters
LI
FI
Record:
1
of 1

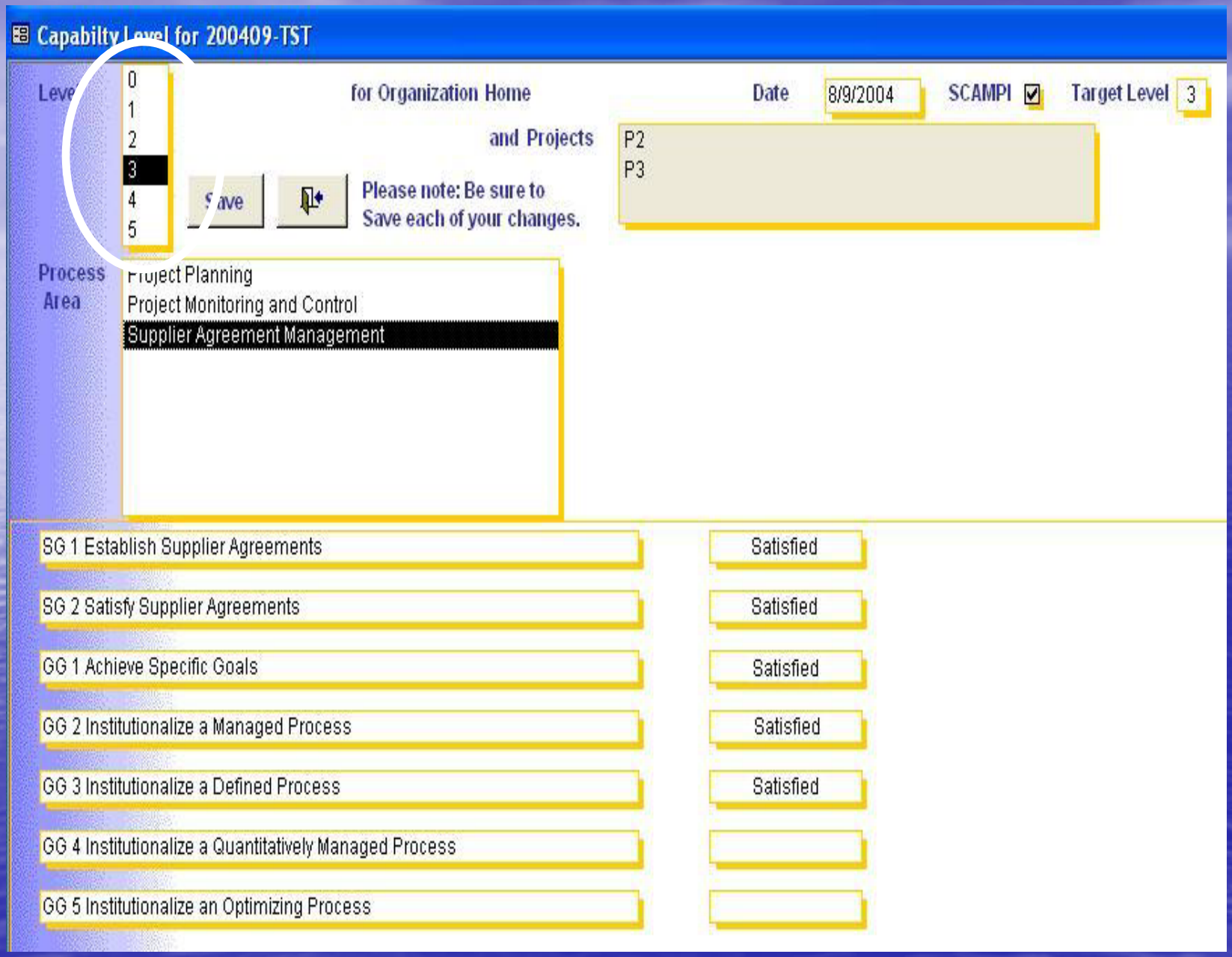
Appraisal Execution
Rate Goals

- If all practices for a goal are fully implemented (FI) the goal is satisfied
- If all practices for a goal are fully or largely implemented (FI or LI), the team may rate the goal as satisfied
  - The tool does not offer suggestions during this phase of the appraisal
- Reach team consensus and select the Goal Rating from the next screen

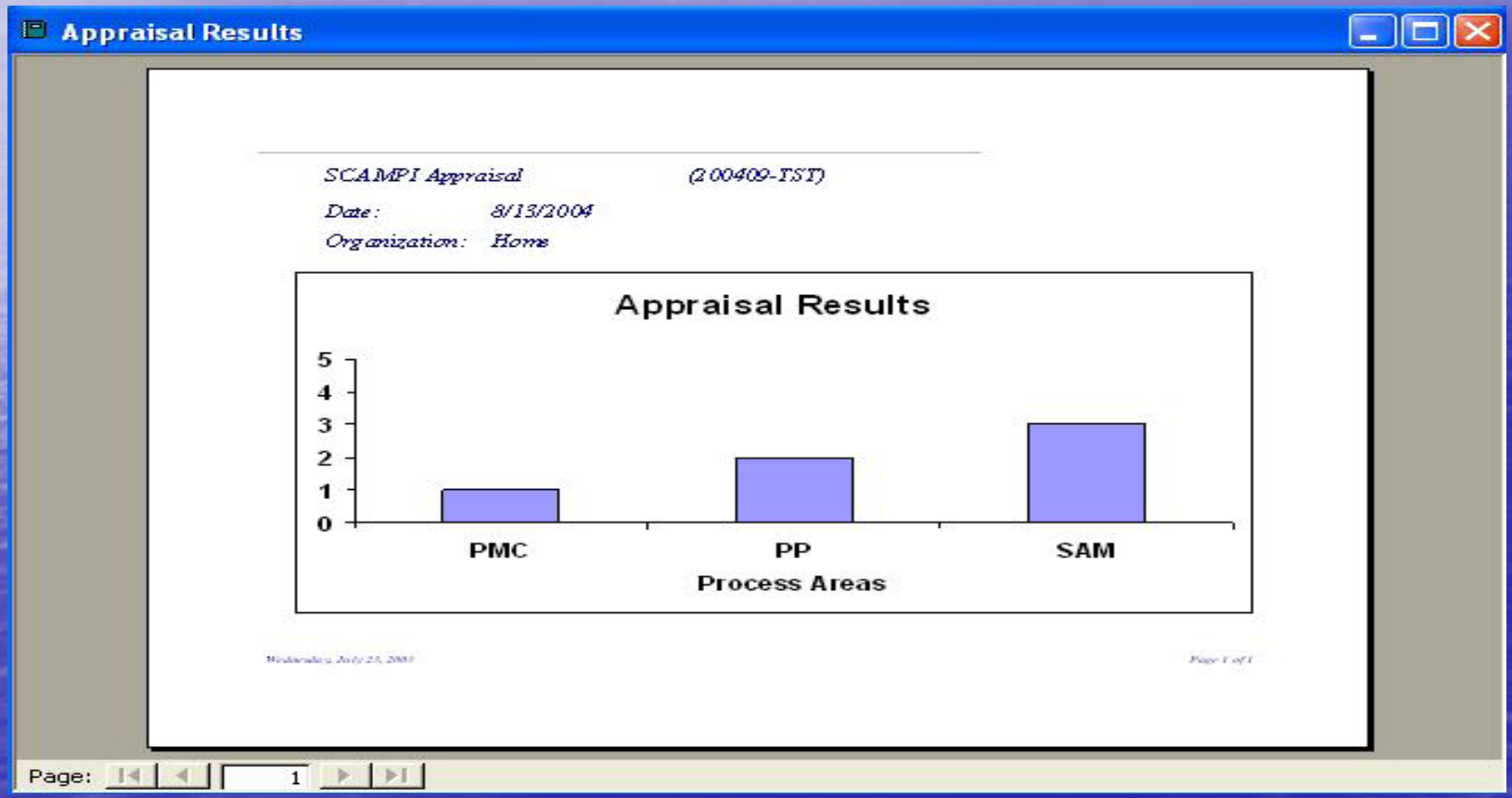

Goal Rating for 200308-TST
Goal Rating
Satisfied
Unsatisfied
for Organization Home
Date
8/11/2003
SCAMPI
Target Level
3
and Projects
P1
P2
P3
Save
Please note: Be sure to
Save each of your changes.
Process Area
Configuration Management
Measurement and Analysis
Process and Product Quality Assurance
Project Monitoring and Control
Project Planning
Requirements Management
Supplier Agreement Management
Goal
SG 1 Establish Baselines
SG 2 Track and Control Changes
SG 3 Establish Integrity
GG 1 Achieve Specific Goals
GG 2 Institutionalize a Managed Process
GG 3 Institutionalize a Defined Process
GG 4 Institutionalize a Quantitatively Managed Process
GG 5 Institutionalize an Optimizing Process
SP 2.1-1 Track Change Requests
LI
SP 2.2-1 Control Configuration Items
FI
Record:
1
of 1

Appraisal Execution
Assign Capability Levels

- Select the Capability Level from the next screen


Capabilty Level for 200409-TST
Leve
0
1
2
3
4
5
for Organization Home
and Projects
Date
8/9/2004
SCAMPI
Target Level
3
P2
P3
Save
Please note: Be sure to
Save each of your changes.
Process
Area
Project Planning
Project Monitoring and Control
Supplier Agreement Management
SG 1 Establish Supplier Agreements
Satisfied
SG 2 Satisfy Supplier Agreements
Satisfied
GG 1 Achieve Specific Goals
Satisfied
GG 2 Institutionalize a Managed Process
Satisfied
GG 3 Institutionalize a Defined Process
Satisfied
GG 4 Institutionalize a Quantitatively Managed Process
GG 5 Institutionalize an Optimizing Process

Appraisal Execution
Report Results



Tool Limitations and Workarounds

Tool Limitations and Workarounds

- Limitation
  - For practice characterization rollup, no more than three projects may be evaluated
- Workaround
  - If you have more than three projects, limit the appraisal to three

Tool Limitations and Workarounds

- Limitation
  - Hyperlinks in the database (or exported to MS Excel) may not work if the database (or exported Excel spreadsheet) is moved to a new folder
- Workaround
  - Store the database and exported spreadsheet at the root level of the directory structure
  - Use absolute hyperlinks or http hyperlinks whenever possible

Tool Limitations and Workarounds

- Limitation
  - "Typical work products" in the model are all transferred into the tool as direct artifacts
  - Some "Typical work products" are really indirect artifacts
- Workaround
  - Modify the database tables as needed to reflect which "Typical work products" are indirect artifacts, AND/OR be aware of the SEI guidance on this topic

Obtaining the free* tool

** For Government-related use only pending permission from the SEI for public release*

Obtaining the tool

- Contact NASA SW Release Authority and complete the paperwork
  - Email: Bandele.W.Young.1@gsfc.nasa.gov or young@pop500.gsfc.nasa.gov
- Contact me after you receive NASA approval and I will send you the tool
  - Email: Wesley.D.Sweetser@nasa.gov or WesleySweetser@netscape.net

Backup Slides

System requirements

- The tool was developed using Microsoft Access 2002 and Visual Basic for Applications (VBA). References required include the following:
  - VBA
  - MS Access 10.0 Object Library
  - OLE Automation
  - MS ActiveX Data Objects 2.1 Library
  - MS Windows Common Controls-2 6.0 (SP3) [if using MS Access 2000]
  - MS Excel 10.0 Object Library [MS Excel 9.0 if using Access 2000]

References

- Capability Maturity Model®Integration (CMMI[SM]),Version 1.1 for Systems Engineering and Software Engineering (CMMI-SE/SW V1.1, CMMI-SE/SW/IPPD/SS V1.1, CMMI-SE/SW/IPPD V1.1) Continuous Representation

- CMMI Team Training for SCAMPI Appraisal at NASA Ames Research Center, June 2003

Acronyms

CMMI	Capability Maturity Model Integration
FI	Fully implemented
HTML	Hypertext markup language
HTTP	Hypertext transfer protocol
IPPD	Integrated Product and Process Development
LI	Largely implemented
MS	Microsoft
NI	Not implemented
PI	Partially implemented
PII	Practice Implementation Indicators
SCAMPI	Standard CMMI Appraisal Method for Process Improvement
SE	Systems Engineering
SEI	Software Engineering Institute
SS	Supplier Sourcing
SW	Software Engineering
VBA	Visual Basic for Applications