The Evaluation Center
Western Michigan University
1913 W. Michigan Avenue
Kalamazoo, MI 49008-5237

The National Science Foundation's Advanced Technological Education Program

2005 ATE Survey Technical Report: Processes, Procedures, and Results

Chris L. S. Coryn
Carl E. Hanssen

Contributors

Principal Authors..Chris L. S. Coryn

....Carl E. Hanssen

Principal Investigator .... Arlen R. Gullickson

Senior Associate/Co-Principal Investigator.. Frances Lawrenz

Project Manager/Co-Principal Investigator ....Carl E. Hanssen

Research Assistant/Data Analyst...Chris L. S. Coryn

Technology Specialists ....Joe Fee

Editor .... Sally Veeder

Table of Contents

List of Figures

Preface

This technical report presents the processes and procedures employed by The Evaluation Center in its annual survey of National Science Foundation (NSF) Advanced Technological Education (ATE) program grantees; using the sixth annual survey[1] (2005) as a point of departure. Thus, while the 2005 ATE survey is referenced throughout, the processes and procedures outlined herein are representative of those employed by The Evaluation Center in conducting its evaluation of the ATE program since its inception in 2000.

This report is presented in four main parts, which are the primary phases conducted annually by The Evaluation Center and other resource/work groups in its evaluation of the ATE program: 1.0 Evaluation Planning and Preparation, 2.0 Data Collection, 3.0 Data Analysis, and 4.0 Reporting. Four resource/work groups play various roles in the annual ATE survey: (i) The Evaluation Center, (ii) the National Science Foundation, (iii) Western Michigan University Department of Computer Science, and (iv) ATE grantees. The Evaluation Center resource/work group consists of (a) a principal investigator, (b) a co-principal investigator, (c) a project manager, (d) a research assistant, and (e) a technology specialist. The National Science Foundation resource group consists of (a) program officers. The Western Michigan University Computer Science work group consists of (a) a technology specialist and (b) one or more technology research assistants. The ATE grantees resource group consists of one or more ATE *project* principal investigators.

Each of the four primary parts of this report (1.0, 2.0, 3.0, and 4.0) are preceded by a short introductory section and a process map illustrating the tasks that make up the annual survey phases and the resource/work groups that complete those tasks. Following the section introduction are summaries of the key tasks which outline the processes and procedures used in The Evaluation Center's annual survey of ATE grantees. These tasks are presented as (i) the task and/or its process and/or purpose, (ii) the work group(s) that complete the task(s) and (iii) the general time frame when the task is completed or undertaken.

Two appendices accompany this report. Appendix A presents the quantitative results from the 2005 ATE survey, and Appendix B presents the qualitative results from the 2005 ATE survey.

---

[1] The first survey was conducted in May 2000. Subsequent surveys were conducted in February 2001, 2002, 2003, 2004, and 2005.

1.0 Evaluation Planning and Preparation

The first phase of the Evaluation Center's annual survey of ATE grantees is Evaluation Planning and Preparation which begins in August of each year and concludes near the end of December. The purposes of this phase of the evaluation include identification of NSF's needs, survey design and development, internal and external evaluation of the survey, development and selection of the sample, construction of the survey in the Web-based platform, and testing of the Web-based survey. Using the legend displayed in Figure 1, the process map (see Figure 2 on the next page) illustrates the 13 key tasks of the Evaluation Planning and Preparation phase of the annual survey, including the resource/work groups that complete the tasks and is followed by a brief description of each task. As much as possible these tasks are presented in the temporal order in which they occur. Many tasks have been collapsed (i.e., tasks grouped together) to conserve space and/or for simplicity.
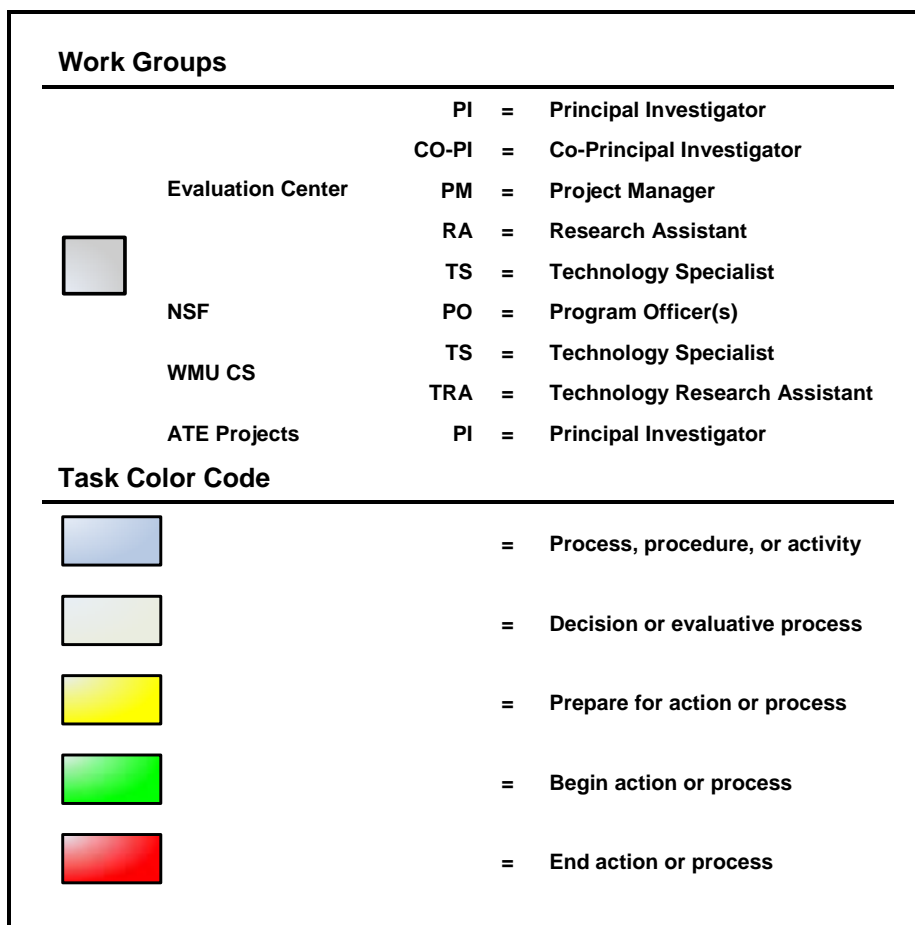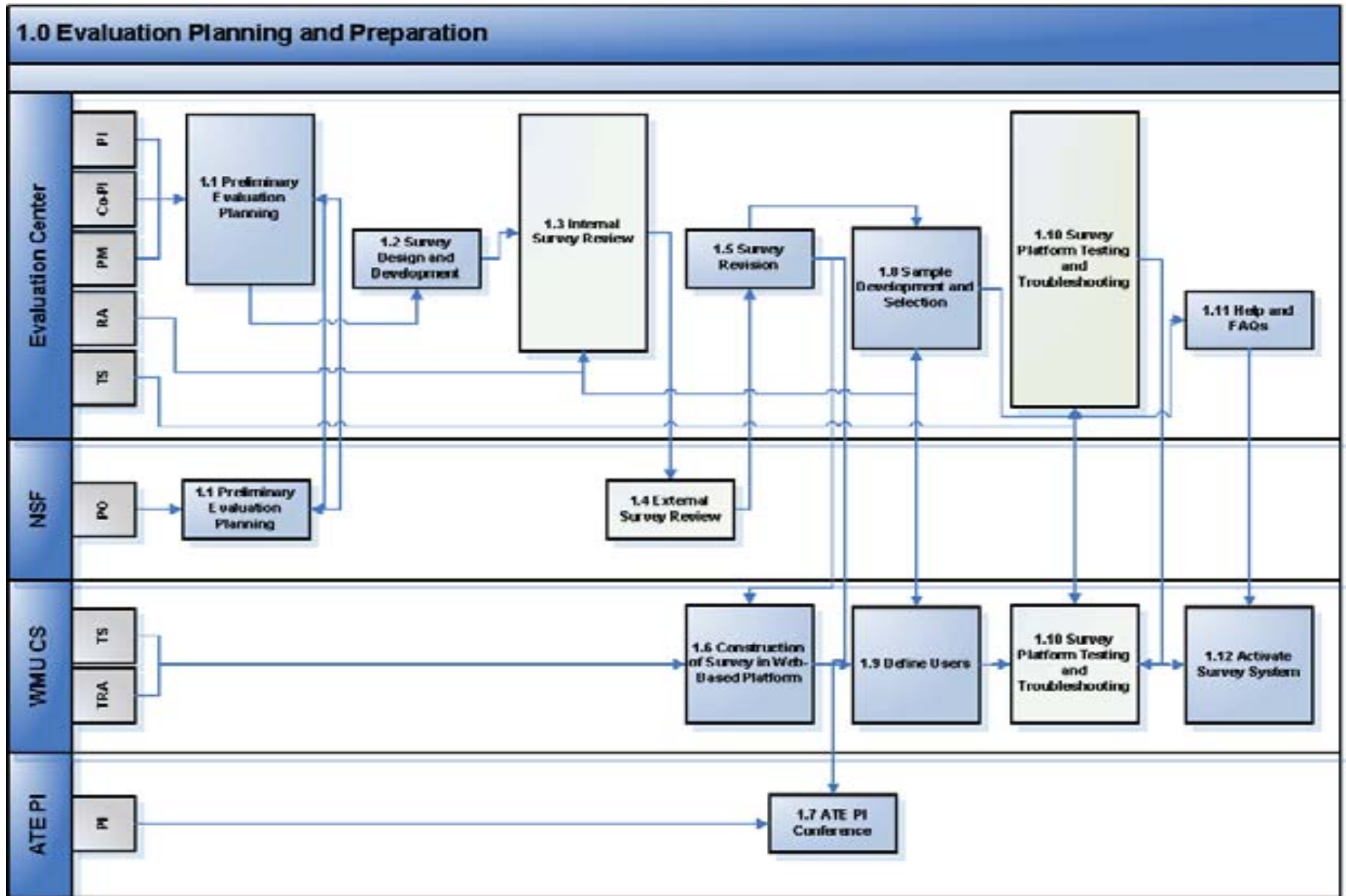

Figure 1. *Process Map Legend*

Figure 2. *Evaluation Planning and Preparation Process Map*

1.1   Preliminary Evaluation Planning

Task: The first task of the Evaluation Planning and Preparation phase of the annual ATE survey is preliminary evaluation planning, which is for the purpose of identifying NSF's needs and purposes (e.g., GPRA reports to Congress) for the evaluation and the annual survey. These needs and purposes are identified via direct and indirect communiqués between NSF program officers and The Evaluation Center's ATE principal investigator, co-principal investigator, and project manager, and serve as the reference point for developing the annual survey.

Work groups: Evaluation Center (PI, CO-PI, and PM) and NSF (PO).

Time frame: August through September.

1.2   Survey Design and Development

Task: The second task of the Evaluation Planning and Preparation phase of the annual ATE survey, which begins shortly following the preliminary planning phase, is the survey design, or redesign, and development phase. Based upon NSF's needs and purposes identified in Task 1.1, the survey undergoes revisions intended to capture those needs and purposes. In most instances this has generally consisted of minor additions or revisions to the prior-year survey.

Work groups: Evaluation Center (PM).

Time frame: August through October.

1.3   Internal Survey Review

Task: Once the survey has been revised, it is reviewed internally for content, clarity, validity, and alignment with NSF's needs. This process is ongoing and occurs simultaneously with and following Task 1.2.

Workgroups: Evaluation Center (PI, CO-PI, PM, and RA).

Timeframe: September through October.

1.4   External Survey Review

Task: Following internal review the draft survey is sent for external review. This review is intended to allow NSF the opportunity to offer comments and/or concerns regarding the survey instrument as a whole or the items contained therein.

Work groups: NSF (PO).

Time frame: October.

1.5   Survey Revision

Task: After review by NSF the survey undergoes the final revision process based upon NSF's suggestions for changes, modifications, and/or general revisions.

Work groups: Evaluation Center (PM).

Time frame: October through November.

1.6   Construction of Survey in Web-Based Platform

Task: During the survey review process (Tasks 1.4 and 1.5), the draft survey instrument is constructed in the Web-based platform that is used to host the survey. Upon completion of Task 1.5, the final survey is constructed in the Web-based survey platform.

Work groups: WMU CS (TS and TRA).

Time frame: October through December.

1.7   ATE Principal Investigators Conference

Task: The annual ATE Principal Investigators Conference is an opportunity for ATE *projects*' principal investigators to become familiar with the newly revised survey and the Web-based platform used to host the survey. While the primary work group here is the ATE project PIs, various Evaluation Center and NSF work groups participate in or facilitate sessions at the conference to disseminate information on the survey and the survey platform/interface.

Work groups: ATE Projects (PI).

Time frame: October.

1.8   Sample Development and Selection

Task: The first step in the development of the annual ATE survey sample is downloading the current list of all ATE grantees from the NSF awards database.[2] The downloaded list is used to add new grantees to the Evaluation Center's ATE Master Database, including information such as start and end dates of award, award amount, name and contact information of the project principal investigator, and so forth. This database is updated annually at the time of survey development as an ongoing record of active and inactive ATE grantees. The second step in the survey development process is to assess each of the new ATE grantees for purposes of identifying possible work streams.[3] Finally, the sample is constructed using two criteria: active for at least one year at the time of

---

[2] National Science Foundation. *Award search*. Available at http://www.nsf.gov/awardsearch/
[3] "Work streams" are grantees whose work is interrelated. That is, new awardees are checked for linkages with prior awards, if it can be reasonably determined that a new award is a continuation of a previous award, they are linked in the Evaluation Center's ATE Master Database via an ID. The ID connects projects within the same work stream.

survey administration or new projects which are linked to a work stream. Each of these steps is presented briefly below.

1. Download NSF ATE award database.

2. Append new awards to Evaluation Center ATE Master Database (i.e., "refresh" the Evaluation Center ATE Master Database).

3. Link new awards to work streams and/or start new work streams for awardees with no connections to other/antecedent awards.

4. Select (using a Microsoft Access select query) *projects* that were active for at least one year (e.g., for 2005, those with a funding start date on or prior to February 1, 2004) at the time of the survey AND new *projects* that were continuations of past NSF awards (e.g., for 2005, those with a funding start date after February 1, 2004, but linked to an antecedent award [see #3]) AND *projects* that will still be active at the time the survey is administered.

Work groups: Evaluation Center (PM and RA).

Time frame: November.

At the time the 2005 survey sample was selected in November 2004, the NSF awards database showed that ATE had 248 active *projects* (i.e., projects, centers, and articulation partnerships). Of these, 171 ATE *projects* were active for at least 1 year at the time of the survey and/or were continuation *projects*, having received a precursor ATE award.

1.9   Define Users

Task: Two user groups are defined for the annual ATE survey: administrators and general users (i.e., ATE *project* PIs). Survey administrators have access to all general users' surveys and can view and make changes to responses,[4] reassign the survey to another user, and monitor user activity. This task also consists of developing and assigning user IDs and passwords for administrators and general users.

Work groups: WMU CS (TS and TRA).

Time frame: November.

1.10   Survey Platform Testing and Troubleshooting

Task: This task consists of testing and troubleshooting the Web-based survey system using various combinations of Web browsers (e.g., Internet Explorer, Safari, Netscape) and operating systems (e.g., Windows XP, 98, Macintosh) to identify potential problems and to test the Web-based platform's interface and functionality.

---

[4] While generally frowned upon as acceptable survey practice, the ability to modify individual survey responses once they have been submitted was important for this project in order to correct user errors. Mostly, though, this capability was used to view individual survey responses or print responses in cases where the respondent neglected to create a record of what was reported.

Work groups: Evaluation Center (PI, CO-PI, PM, RA, and TS) and WMU CS (TS and TRA).

Time frame: November through January.

1.11   Help and FAQs

Task: ATE survey help and FAQs documents are updated annually and available from several locations to assist ATE PIs in completing the survey. These documents can be found in the Web-based survey system interface as well as at several of The Evaluation Center's ATE Web site pages. A page on the ATE Program Evaluation Web site (http://www.wmich.edu/evalctr/ate/) devoted to the annual survey is also developed and uploaded at this point, which provides survey login access, customer service and technical assistance contact information, and help and FAQs documents. The survey Web page also has a printable (.pdf) version of the survey.

Work groups: Evaluation Center (RA).

Time frame: December.

1.12   Activate Survey System

Task: Once the Web-based platform has been satisfactorily tested (Task 1.10) the survey system is activated, although ATE PI access information is not sent until a later time (see Task 2.7).

Work groups: WMU CS (TS and TRA).

Time frame: January.

2.0 Data Collection

The Data Collection phase of the annual survey of ATE PIs begins following activation of the survey system (Task 1.12) and ends at the deactivation of the survey system (Task 2.13). Data collection encompasses all of the activities, processes, and procedures (i.e., tasks) that enable data collection from the ATE PIs, including sending survey access information, providing customer service and technical assistance, and monitoring survey progress. This phase of the annual survey begins in December and concludes in March of each year and consists of 13 key tasks. Figure 3 on the next page illustrates the tasks and the work groups that perform those tasks during the Data Collection phase of the annual ATE survey.
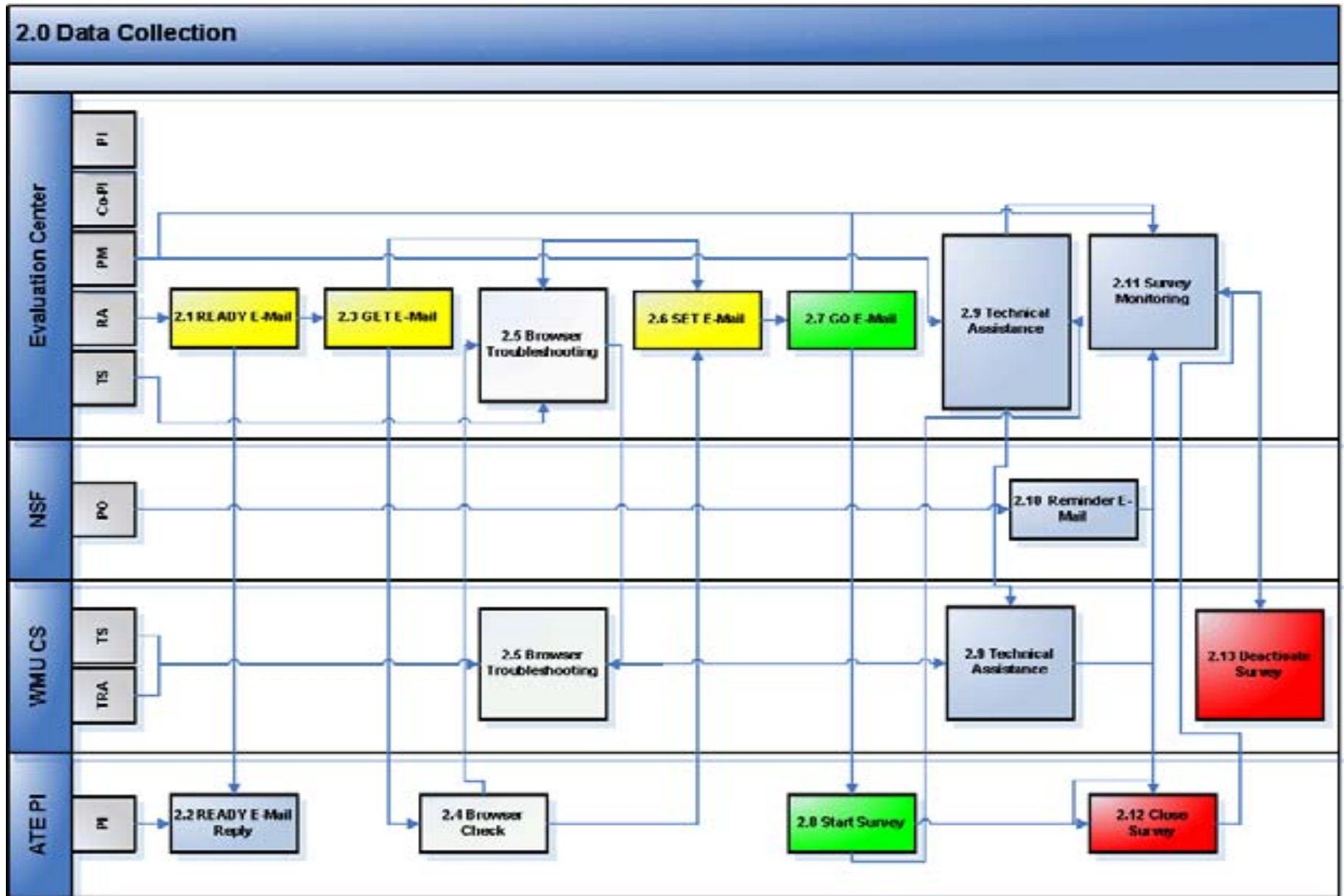
Figure 3. *Data Collection Process Map*

2.1 READY E-Mail

Task: The READY, or test, e-mail[5] is sent to ATE PIs to (i) inform those in the sample that they had been selected to participate in the survey and provide them with the approximate time frame of the survey and (ii) determine for which principal investigators The Evaluation Center staff has incorrect and/or correct e-mail/contact information.

Work groups: Evaluation Center (RA).

Time frame: December.

The READY e-mail (see Figure 4) was sent to the 2005 ATE sample on December 8, 2004. ATE PIs were asked to reply to this e-mail and indicate whether the information (e.g., NSF ATE award number, ATE project name, principal investigator) contained therein was correct (see Task 2.2).

To: ATE Principal Investigator

From: Chris L. S. Coryn

E-MAIL TEST FOR SURVEY 2005—REPLY NEEDED BY FRIDAY, DECEMBER 17, 2004

The Evaluation Center at Western Michigan University is funded by the National Science Foundation (NSF) to assess the impact and effectiveness of NSF's Advanced Technological Education (ATE) program. As part of the evaluation effort, we are conducting an annual Web-based survey of active ATE projects/centers.

NSF will use the information gathered through this survey for its Government Performance Results Act (GPRA) report to Congress. This e-mail is the first step in the Survey 2005 process**.**

1. Verification of PI and Contact Information

We need to verify that we have reached the person assigned as your ATE project's Principal Investigator (PI). Our records indicate the following for your ATE award:

NSF ATE Award Number: 0000000

ATE Project Name: ATE Project

Principal Investigator: First Middle Last

** IF THIS INFORMATION IS CORRECT, we ask that:

    1. You click on the "Reply" mail option

    2. Type "Information is ok"

    3. Send the e-mail

By doing so, you will confirm the accuracy of the e-mail address we have to reach you throughout the survey process.

** IF THE INFORMATION IS NOT CORRECT, we ask that:

    1. You click on the "Reply" mail option

    2. Make any corrections to our information. If the PI name is not correct, please also provide the correct name, e-mail address, and telephone number of the current PI

    3. Send the e-mail

Receiving your reply by December 17, 2004, would be most helpful. At that time, we will make any necessary adjustments to our records.

2. Survey 2005 Available for Viewing

A paper/pencil version of Survey 2005 is available at our Web site (http://www.wmich.edu/evalctr/ate/survey2005.htm). We suggest printing this document to use as you collect data for inputting into the Web-based survey, and we have left enough white space on the document for this purpose. The schedule and helpful hints document are also available at this Web site.

---

[5] All mass e-mails to principal investigators were sent using a mail-merge function, which personalized all e-mails by connecting them to the appropriate principal investigator information.

---

3. Survey 2005 Time Line

The Web version of Survey 2005 will be activated and ready to receive your responses starting February 11, 2005, and will be available until March 18, 2005. A detailed time line is available at http://www.wmich.edu/evalctr/ ate/2005_ATE_Evaluation_Timeline.pdf. Additional details will follow in subsequent e-mail messages.

If you have any questions, please contact me at christian.coryn@wmich.edu or by phone at 269-387-5920. Thank you very much for your assistance with this important project.

Figure 4. *READY E-Mail*

2.2 READY E-Mail Reply

Task: ATE PIs who are selected to participate in the annual survey are asked to respond to the READY e-mail (see Task 2.1) so that The Evaluation Center staff can update contact information for PIs and/or locate contact information for those PIs whose information may have changed or differs from that obtained from the NSF award database.

Work groups: ATE PI (PI).

Time frame: December.

For the 2005 annual ATE survey, 112 (65%) of the 171 ATE PIs selected to participate in the survey replied that the information they received was correct. Twelve (7%) indicated that their e-mail addresses had changed, and 7 (4%) e-mails were returned as undeliverable. The other 40 (23%) did not reply. The 7 undeliverable e-mail addresses were located by conducting Internet searches or contacting the *project's* sponsoring institution.

2.3 GET E-Mail

Task: The GET e-mail is sent to the ATE PIs to provide them with a means of testing their preferred Internet browser's compatibility with the ATE survey system.

Work groups: Evaluation Center (RA).

Time frame: January.

For the 2005 annual ATE survey, the GET e-mail (see Figure 5) was sent to participating ATE PIs on January 3, 2005, to provide them with a means for testing their Internet browser compatibility with the ATE survey system.

To: ATE Principal Investigator

From: Chris L. Coryn

BROWSER TEST FOR SURVEY 2005

The Evaluation Center at Western Michigan University is funded by the National Science Foundation (NSF) to assess the impact and effectiveness of NSF's Advanced Technological Education (ATE) program. As part of the evaluation effort, we are conducting an annual Web-based survey of active ATE projects/centers.

NSF will use the information gathered through this survey for its Government Performance Results Act (GPRA) report to Congress. You should have already received the first e-mail on December 1, 2004, requesting verification of your e-mail address. This e-mail is the second step in the Survey 2005 process**.**

1. Verification of Browser Compatibility with 2005 Survey System

> We need to verify that your browser is compatible with our survey system. To check your browser please follow the URL given below. Instructions for checking your browser are provided on this Web page.

> Survey 2005 Browser Check: http://ateserver.cs.wmich.edu/ate/browsercheck.html

If you experience problems with your browser or need technical assistance, please contact Joe Fee by telephone at 269-387-5918 or by e-mail at joe.fee@wmich.edu

Figure 5. *GET E-Mail*

2.4 Browser Check

> **Task:**   While Task 2.3 provides the ATE PIs the means for testing their browser's compatibility with the survey system, this task requires that the ATE PIs log in to the support page (see Figure 6) and test their browser.

> **Work groups:** ATE PI (PI).

> **Time frame:**   January.

Several browser configurations were reported as problematic by a small number of ATE PIs, notably the Macintosh Safari OS X and NetScape Communicator V4.74 browsers.

2.5 Browser Troubleshooting

> **Task:**   The browser troubleshooting task occurs in conjunction with tasks 2.3 and 2.4 and consists of technical assistance provide by The Evaluation Center and WMU CS.

> **Work groups:** Evaluation Center (RA and TS) and WMU CS (TS and TRA).

> **Time frame:**   January through March.

ATE PIs who experienced browser/survey compatibility problems were asked to switch to the most recent release of the Internet Explorer browser. This changing of browsers generally resolved any problems that the ATE PIs experienced with compatibility.

2.6 SET E-Mail

> **Task:**   The SET e-mail is a reminder sent by NSF to all ATE PIs who were selected to participate in the annual survey prior to the official launch of the survey (see Task 2.7).

Work groups: NSF (PO).

Time frame: February.

Figure 6 displays the 2005 SET e-mail.

To: ATE Principal Investigator

As you are aware, the National Science Foundation (NSF) has made a grant to The Evaluation Center at Western Michigan University to assess the impact and effectiveness of our Advanced Technological Education (ATE) program. As part of the evaluation effort, The Evaluation Center is conducting an annual survey of ATE projects/centers via the Web. This is the fifth year of the survey, which began in 2000. Many of you have participated in the past and we appreciate your help. At this time, we are asking for your continued support of this data collection and program evaluation effort by participating in this year's survey.

We will use the information gathered through the survey for the Government Performance Results Act (GPRA) report to Congress. This information is also valuable to us as the ATE program reports to Congress on program progress.

You will receive an e-mail on Friday, February 13, 2004 from The Evaluation Center that will provide you with the details on the web location and access information for the survey.

The survey system will be available beginning **Friday, February 11, 2005 at 5:00 p.m. EDT** and will close on **Friday, March 18 at 5:00 p.m. EDT (4 weeks)**.

As the Principal Investigator for an ATE project/center, we encourage you to assist The Evaluation Center in collecting valuable information about the ATE program by completing the survey. If you have remaining questions or concerns about this survey, you may contact the evaluation project directly (Chris L. Coryn, Project Research Assistant at christian.coryn@wmich.edu or 269-387-5920). We greatly appreciate your assistance.

Sincerely,

Dr. Elizabeth J. Teles

Lead Program Director
Advanced Technological Education
Division of Undergraduate Education (DUE)

Figure 6. *SET E-Mail*

As a result of survey platform problems during Task 1.10, The Evaluation Center's ATE evaluation team decided to delay the official launch of the 2005 survey (February 14, 2005) by 7 days (February 21, 2005). The ATE PIs were issued an e-mail (see Figure 7) explaining the delay and the new survey time frame. The official launch then became February 25, 2005; and the deadline for completion was extended by 7 days to March 25, 2005.

Dear ATE Principal Investigators:

We had scheduled to begin the 2005 survey for the ATE program yesterday. In final checks of the system we ran into a problem that has taken longer to fix than anticipated. We keep thinking the problem will be fixed "momentarily," but already we are delayed by a day. As a result, we decided to set back the start of the survey by a week.

The added time before we initiate the survey will enable us to double-check the whole system and make sure that it is running properly before we ask for your responses. Our new plan is to send you the login information for the survey next Monday, February 21. Due to this change, we will extend the deadline by a week—the survey system will be open to receive your responses through Friday, March 25. As in the past, we will track your progress and send regular follow-up e-mails during the administration period. We will also be on call during business hours to respond to any questions you might have.

For those of you who want to get started now, you can print a copy of the form at http://www.wmich.edu/evalctr/ate/survey2005.htm. We encourage you to do that. It will help you pull together information needed to complete the survey and should help you respond more quickly and accurately once the online forms are available.

Thank you for your patience.

Sincerely,
Arlen Gullickson, Project Director
ATE Program Evaluation

Figure 7. *Survey Delay E-Mail*

2.7 GO E-Mail

Task:　　　　The GO e-mail is the official launch of the annual survey and provides the ATE PIs selected to participate in the survey with all of the information necessary for accessing and completing the survey.

Workgroups: Evaluation Center (RA).

Timeframe:　February.

The 2005 GO e-mail (see Figure 4 on the next page) was the official launching point of the survey and provided ATE PIs with all of the necessary information (e.g., username, password) to access the survey system, including additional resources to assist in completing the survey such as FAQs, help pages (see Task 1.11), and contact information for questions and customer service.

To: ATE Principal Investigator

            NSF#: 0000000

From: Chris L. S. Coryn

ATE SURVEY 2005 AVAILABLE ONLINE—ACTION REQUIRED

The Evaluation Center at Western Michigan University is funded by the National Science Foundation (NSF) to assess the impact and effectiveness of NSF's Advanced Technological Education (ATE) program. As part of the evaluation effort, we are conducting an annual Web-based survey of ATE projects and centers.

NSF will use the information gathered through the survey for its Government Performance Results Act (GPRA) report and other reports to Congress and other key stakeholders. As such, this survey is a critical information gathering effort, and we need your assistance.

1. Confirmation of Receipt of This E-mail Please

Please confirm that you have received this e-mail by clicking on Reply. Having this reply by February 25 would be most helpful. It's surprising how often e-mail addresses change, and bouncebacks do not occur. We want to ensure that you have the maximum time to complete the survey.

2. Completion Date (Start Early)

As the one identified to complete the survey for the project named above, we are asking you to assist us by completing the survey by **5:00 p.m. EST on March 25, 2005—about 4 weeks from now.**

From our past experience, we encourage you to start early so that we are able to better provide you assistance when needed (Please see 5 below).

3. Login Information (Print this information)

You will need the following information to login and complete the survey:

URL: http://lenny.cs.wmich.edu/ate2005

NSF #:   0000000

Username: principalinvestigator@ate.edu

Password: 1234567

NOTE: You must enter the full 7-digit NSF# to gain access to the survey system.

Please make a note of the information above and then go to the URL above in a Web browser to start work on the survey. There you also can delegate others to complete all or parts of the survey.

We strongly recommend that you log in by February 25 and fill out one section (e.g., Basic Information) to ensure that there are no technical problems that could prevent you from using the Web-based version.

If you do experience technical problems and you would like to complete the survey on paper, please contact me directly at christian.coryn@wmich.edu, and I can provide you a Word version of the survey. Alternatively, a PDF version is available online at http://www.wmich.edu/evalctr/ate/survey2005.htm.

4. General Information, Helpful Hints, and Answers to Frequently Asked Questions
Detailed information on how to work your way through the survey is available online at
http://www.wmich.edu/evalctr/ate/survey2005.htm

Select Survey 2005 Helpful Hints. We encourage you to print this information and share it with everyone involved in completing the survey. We have also provided links and instructions throughout the survey to help clarify the completion steps. You may also obtain a hard copy version (with lots of white space for notes) by selecting the Survey 2005 PDF Version for Printing option. This version is helpful as you are collecting data.

5. Contact Information for Questions and Customer Service

If you have questions or need assistance with this survey, you may contact me at christian.coryn@wmich.edu or by phone at 269-387-5920.

Thank you very much for your assistance with this critical information-gathering effort.

Figure 8. *GO E-Mail*

2.8 Start Survey

      Task: After receiving the GO e-mail the ATE PIs are able to begin the survey.

      Work groups:ATE PI (PI).

      Time frame: February through March.

Figure 9 on the following page illustrates The Evaluation Center's ATE survey system logic. The PI for sampled projects was asked to respond or assign another person(s) to respond for the grant. All grantees in the sample were asked to complete three sections: (1) Grantee Characteristics—confirming general information collected from other sources [e.g., name of principal investigator and the nature and duration of grant], (2) Organizational Practices—addressing efforts to monitor and evaluate the grant, and (3) Collaboration—addressing ongoing relationships that provide other forms of support to grantees.

Each grantee was also asked to complete one or more additional sections focusing on the primary categories of work that the ATE program supports: Materials Development, Professional Development, Program Improvement, and Articulation Agreements. A large and diverse project or center (i.e., one that engages in all identified types and levels of effort) would be expected to complete all seven sections. The smallest and narrowest of projects would complete the three required sections and at least one additional section.
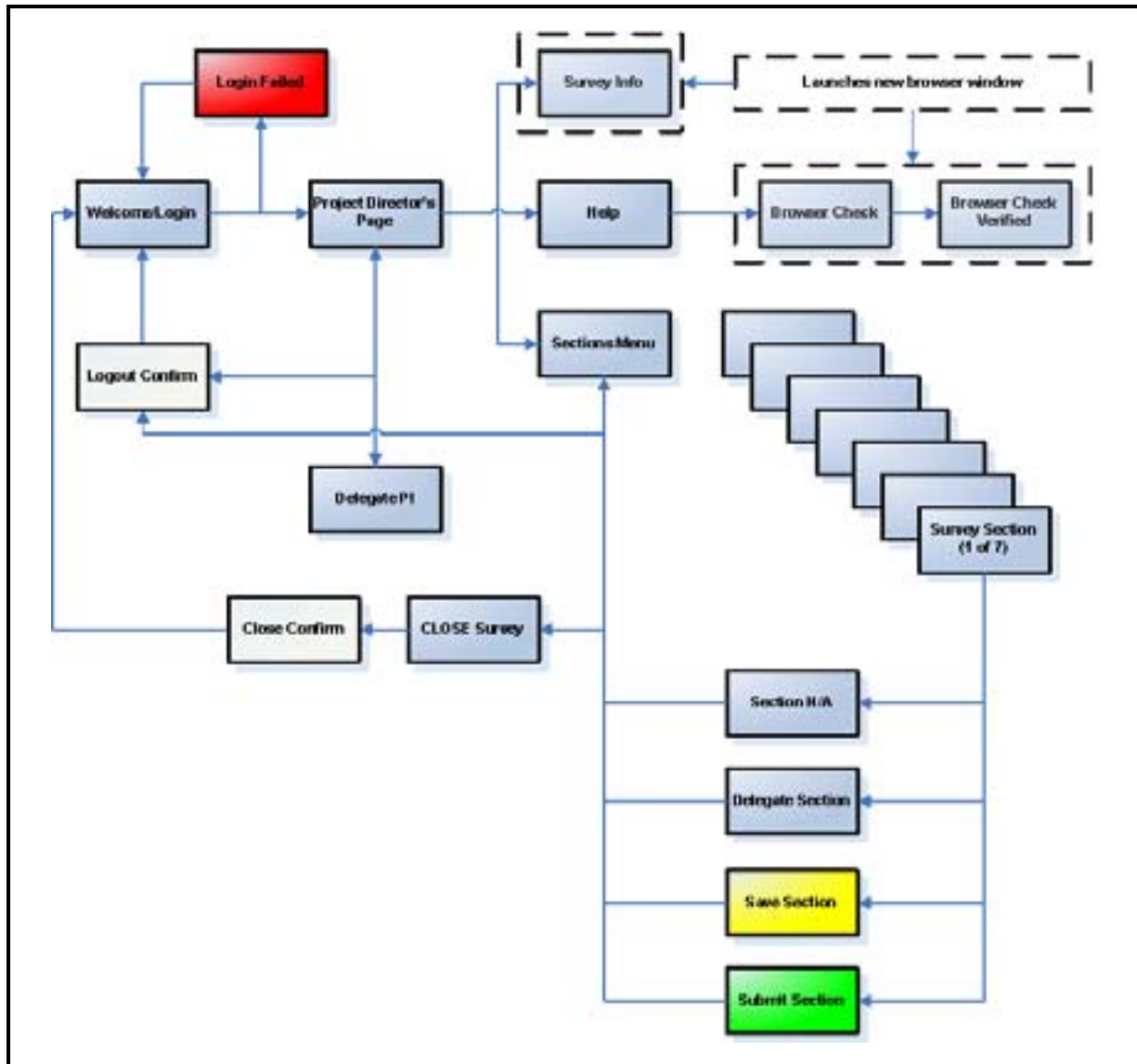
Figure 9. *Survey System Logic Map*

2.9 Technical Assistance

Task: In addition to the technical assistance provided for the browser check (Tasks 2.4 and 2.5), customer service and support and technical assistance is provided to ATE PIs from the survey's launch (Task 2.7) through its close (Task 2.12).

Workgroups: Evaluation Center (PM, RA, and TS) and WMU CS (TS and TRA).

Timeframe: February through March.

2.10 Reminder E-Mail

Task: During the survey administration process (between Task 2.7 and Task 2.12), NSF e-mails ATE PIs who have either not started or completed (see Task 2.11) the survey to urge their participation.

Work groups: NSF (PO).

Time frame: March.

The 2005 reminder e-mail (see Figure 10) was sent approximately two weeks prior to the survey's close to ATE PIs who had not yet logged in (i.e., started) or completed (i.e., closed) the survey.

March 11, 2005

As you are aware, the National Science Foundation (NSF) has made a grant to The Evaluation Center at Western Michigan University to assess the impact and effectiveness of the Advanced Technological Education (ATE) program. As part of the evaluation effort, The Evaluation Center conducts an annual survey of ATE projects and centers via the Web. This is the sixth year of the survey, which began in 2000. Many of you have participated in the past, and we appreciate your help. At this time, we are asking for your continued support of this important data collection and program evaluation effort by participating in this year's survey. I will also remind you that the award memo that accompanied your award letter contains the following clause:

"In addition to the annual report on your project that must be submitted via FastLane, you will also be required to collect data and participate in the ATE program's evaluation being conducted by the Evaluation Center at Western Michigan University. At your earliest convenience, please visit the center's ATE Web site at <http://www.wmich.edu/evalctr/ate/> and examine the survey to which you will be asked to respond each year."

We will use the information gathered through the survey for the Government Performance and Results Act (GPRA) report to Congress. This information is also valuable to us as the ATE program reports to Congress on the program's progress. You will probably find that much of the data you collect for the survey will also be useful to you for your annual reports.

This year's survey is currently underway. You should have received an e-mail from The Evaluation Center on Monday, February 21, that announced the survey launch and provided you with a link to the survey site and your unique login information.

As of today, nearly 30 of your colleagues have completed the survey and many more have begun work. If you have started working, thank you. If you have not, I encourage you to begin. The survey system will be available until Friday, March 25, at 5:00 p.m, which is 2 weeks from now. Let me remind you that NSF only gets summary data, not information on individual awards. The one exception is that The Evaluation Center does provide us information about who completes the survey and who does not.

We encourage you, as the Principal Investigator for an ATE project or center, to assist The Evaluation Center in collecting valuable information about the ATE program by completing the survey. If you have remaining questions or concerns about this survey, you may contact the evaluation project directly (Carl Hanssen, Project Manager at carl.hanssen@wmich.edu or 269-387-5909). We greatly appreciate your assistance.

Sincerely,

Dr. Elizabeth J. Teles
Lead Program Director
Advanced Technological Education
Division of Undergraduate Education (DUE)

Figure 10. *NSF E-Mail Reminder*

2.11 Survey Monitoring

Task: The survey monitoring task is comprised of a large number of subtasks (see below) mainly consisting of weekly checks of ATE PI progress in completing the survey.

Workgroups: Evaluation Center (PM and RA).

Timeframe: February through March.

From the survey launch through its close, ATE PIs' activities were monitored daily to ensure timely completion as well as to provide technical and customer service assistance to those participating in the survey. On each Monday of the survey administration period, data were downloaded from the survey administration pages (http://lenny.cs.wmich.edu/admin/) that provided information on three categories of progress: NEVER logged-in; STARTED, but not completed; and CLOSED. The data from the survey administration pages were imported into the Evaluation Center ATE Survey Monitoring database and

queried by the three status categories. Each category of progress had an associated e-mail response, which was sent on a weekly basis.

During the survey administration period more than 50 technical and nontechnical assistance services were logged (not including e-mail communications).

On Monday, February 28, 2005, 140 principal investigators had not yet logged in to the survey system. Each week, persons who had not yet started their survey received the NEVER logged-in e-mail (see Figure 11). At subsequent time periods the number of NEVER logged-in principal investigators dropped to 109, 81, 52, 18, 15, and finally 3 the day prior to the survey's close.

To:	ATE Principal Investigator
	NSF#: 0000000
From:	Chris L. Coryn
	ATE Program Evaluation

ANNOUNCEMENT: SURVEY DEADLINE EXTENDED TO FRIDAY, MARCH 25, AT 5:00 PM EST

Thank you for your time and effort to begin work on Survey 2005 for the ATE program. We truly appreciate it. This e-mail is to inform you that the survey deadline has been extended as indicated above.

The aggregate information collected through this survey is useful to NSF as it seeks appropriations from Congress and works with other key stakeholders. Thus, a high response rate is critical.

Our records that as of 8:00 AM EST this morning, you have NOT logged in to the survey system. If you are having problems accessing the system, please contact me directly so that we can provide any necessary assistance.

By beginning work on the survey now, you will provide us with sufficient time to address any technical problems or answer any questions you might have regarding the survey. As a reminder, your login information is indicated below.

URL:	http://lenny.cs.wmich.edu/ate2005
NSF #:	0000000
Username:	principalinvestigator@ate.edu
Password:	1234567

If you have remaining questions or concerns about this survey or the evaluation process, you may contact me at christian.coryn@wmich.edu or 269-387-5920.

Again, thank you for your assistance with Survey 2005.

Figure 11. *NEVER Logged-In Reminder E-Mail*

On Monday, February 28, 2005, 27 surveys were STARTED. Each week, persons who had started, but not yet completed the survey received the "Thank You for STARTING" e-mail (see Figure 12 on the next page). At subsequent time periods the number of new surveys STARTED were 45, 61, 61, 21, 21, and 5 the day prior to the survey's close.

To: ATE Principal Investigator

           NSF#: 0000000

From: Chris L. Coryn

           ATE Program Evaluation

FINAL DAY TO COMPLETE AND CLOSE ATE SURVEY 2005 IS FRIDAY, MARCH 25

IF YOU HAVE QUESTIONS ON FRIDAY, PLEASE CONTACT CHRIS CORYN AT 616-387-5920 OR VIA E-MAIL AT CHRISTIAN.CORYN@WMICH.EDU. THANK YOU FOR YOUR HELP.

THE SURVEY SYSTEM WILL BE DEACTIVATED AT 5:00 PM, FRIDAY, MARCH 25

Thank you for your time and effort to begin work on Survey 2005 for the ATE program. We truly appreciate it. This e-mail is to inform you that the survey deadline has been extended as indicated above.

Between now and then, we hope you will complete all the survey sections that pertain to your project and CLOSE your survey by selecting the "FINAL STEP" button on the Welcome page. Before closing your survey, we encourage you to print a copy of your submission. Additional details and instructions for completing the survey can be found on the Program Evaluation Web site at www.ate.wmich.edu

In addition to providing crucial information for the ATE program evaluation, the aggregate (and confidential) information gathered through Survey 2005 will be used for the National Science Foundation's (NSF) Government Performance Results Act (GPRA) report to Congress. This information is also valuable to NSF as it seeks appropriations from Congress for the ATE program.

Again, thank you for taking the time out of your project to assist us with the ATE program evaluation. If you have any questions, please do not hesitate to contact me directly.

Chris L. Coryn
The Evaluation Center
Western Michigan University
269-387-5920
christian.coryn@wmich.edu

Figure 12. *Thank You for STARTING E-Mail*

On Monday, February 28, 2005, 10 principal investigators had already successfully CLOSED their surveys. Each week, persons who had closed their survey received the "Thank You for CLOSING" e-mail (see Figure 13). At subsequent time periods the number of cumulative survey closes was 21, 32, 61, 135, 137, and 162 the day prior to the survey's close.

To: ATE Principal Investigator

           NSF Award #: 0000000

From: Chris L. Coryn

           ATE Program Evaluation

COMPLETION OF SURVEY 2005

Thank you for your time and effort to complete and close Survey 2005 for the ATE program. We truly appreciate it.

In addition to providing crucial information for the ATE program evaluation, the aggregate (and confidential) information gathered through Survey 2005 will be used for the National Science Foundation's (NSF) Government Performance Results Act (GPRA) report to Congress. This information is also valuable to NSF as it seeks appropriations from Congress for the ATE program.

Our plan is to have raw summary data available to you about one month after the close of the survey. You will be able to view your project's responses and this data on line. A comprehensive report based on the survey data will also be posted on our Web site, probably by early Summer 2005. When these become available, you will be contacted via e-mail.

Again, thank you for taking the time out of your project to assist us with the ATE program evaluation. If you have any questions, please do not hesitate to contact me directly.

Chris L. Coryn
The Evaluation Center
Western Michigan University
269-387-5920
christian.coryn@wmich.edu

Figure 13. *Thank You for CLOSING E-Mail*

2.12 Close Survey

Task: The close survey task occurs when ATE PIs save, submit, and close the survey (see Figure 9).

Work groups: ATE PI (PI).

Time frame: February through March.

2.13 Deactivate Survey

Task: The survey is deactivated at the end of business on the final day of the survey. At this point ATE PIs will be unable to login to the survey system, although survey administrators are still able to access the system.

Work groups: WMU CS (TS and TRA).

Time frame: March.

3.0 Data Analysis

The Data Analysis phase of the annual ATE surveys begins in March following the deactivation of the survey (Task 2.13). This phase consists of 9 key tasks. Figure 14 on the next page illustrates the tasks and the work groups who perform those tasks during the Data Analysis phase.
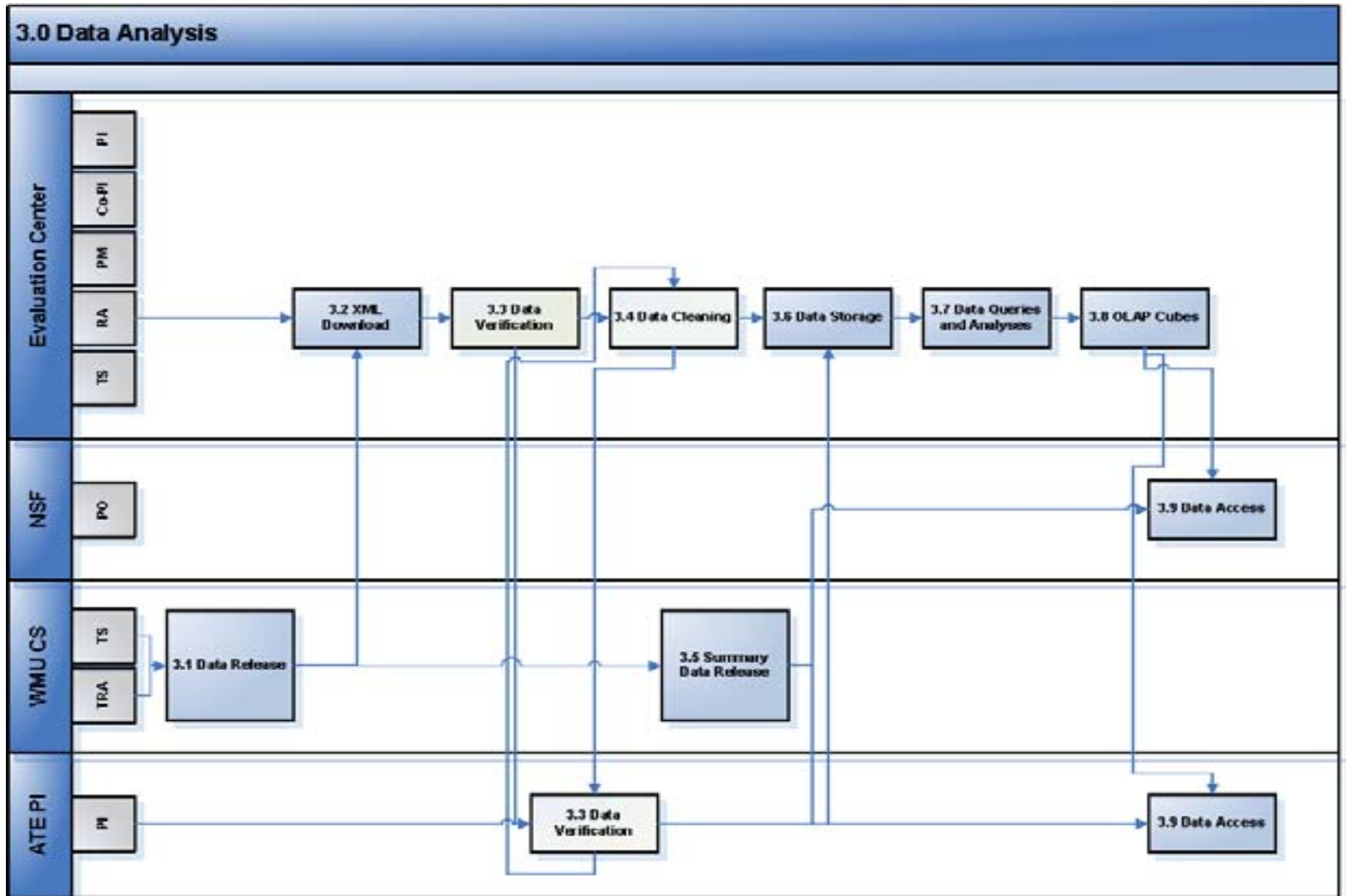
Figure 14. *Data Analysis Process Map*

3.1 Data Release

Task: Data release occurs following deactivation of the survey (Task 2.13).

Work groups: WMU CS (TS and TRA).

Time frame: March.

3.2 XML Download

Task: Following WMU CS's data release, the ATE survey data is downloaded from the survey administration pages in XML format.

Work groups: Evaluation Center (RA).

Time frame: April.

The final survey data were retrieved on April 18, 2005. These data were downloaded from the ATE survey administration pages (http://lenny.cs.wmich.edu/admin/) as an XML Zipped file. The XML files were then extracted from the Zipped file using WinZip, resulting in tab-delimited text files for each of the seven survey sections. The tab-delimited files were then imported into the ATE Import Database (see Figure 15) using preset import specifications in Microsoft Access. The import specifications allow for specification of the data type (e.g., numeric, text) and variable labels. Once the data import process is completed, the seven survey sections are exported from the ATE Import Database into SPSS and transferred to the ATE Raw Data files for the data verification (Task 3.3) and cleaning processes (Task 3.4).
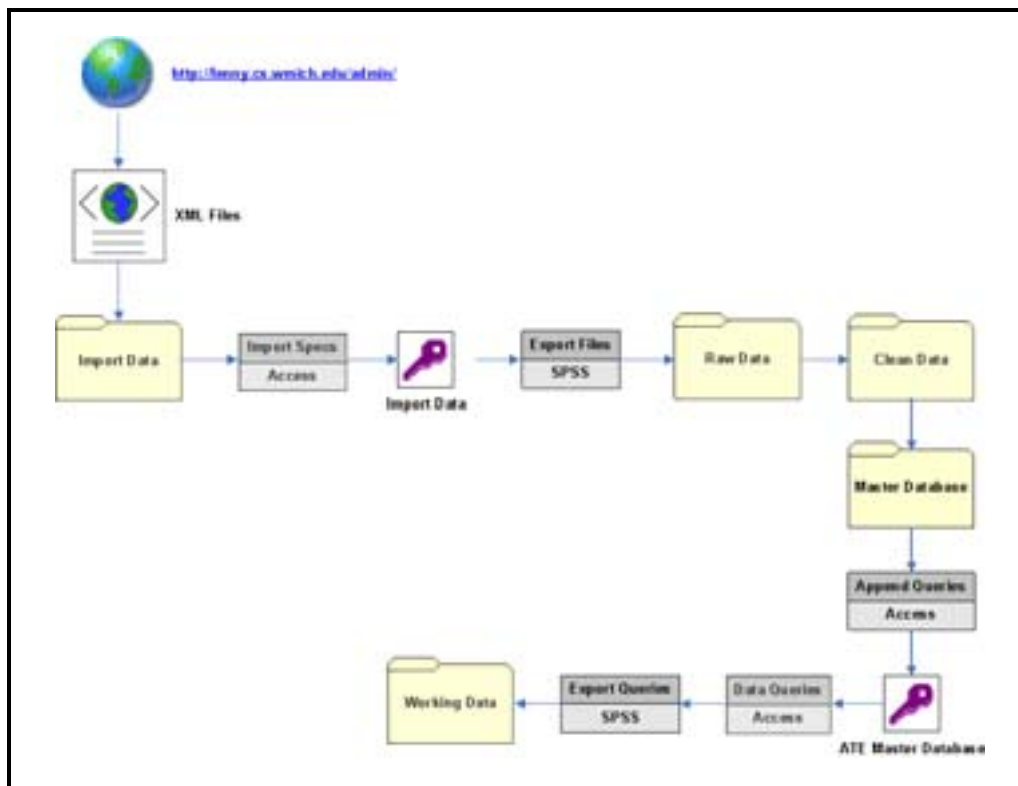

Figure 15. *Data Import/Export Process*

3.3 Data Verification

Task: ATE survey data retrieved in Task 3.2 are verified by randomly selecting 5-10 percent of completed surveys, locating them in the survey administration system, printing them, and verifying each piece of data with the raw data files.

Work groups: Evaluation Center (RA).

Time frame: April.

A random sample of 17 (10%) 2005 ATE completed surveys were retrieved and printed via the survey administration pages (http://lenny.cs.wmich.edu/admin/). These 17 surveys were then compared with the raw data exported from the ATE Import Database into SPSS files in Task 3.2. Each item and response from the 17 randomly selected surveys was cross-validated by carefully comparing it to the data in the SPSS raw data files.

3.4 Data Cleaning

Task: The data cleaning task involves several procedures, including identification of outliers and nonsense data, data recoding, and the computation of additional variables.

Work groups: Evaluation Center (RA).

Time frame: April through May.

The first task in the data cleaning process involves assessing the central tendency (i.e., mean, median, mode) and dispersion (i.e., minimum, maximum, standard deviation) of each survey variable to assess the distribution of each variable and to determine if outliers or nonsense values are present. Outlying and nonsense data points are then checked for accuracy by contacting the ATE PI who completed the survey and verifying the information in question. If an ATE PI made a mistake or entered an incorrect value, the data are replaced with the correct information.

The data cleaning task also involves recoding Likert-type and other variables (e.g., scales ranging from 1 to 5, where 1 = strongly agree and 5 = strongly disagree) so that the lowest unit represents a negative quality or statement (e.g., 1 = strongly disagree) and the highest unit represents a positive quality or statement (e.g., 5 = strongly agree). Data recoding is accomplished using "if" statements in SPSS, such as these:

- If 1, then 5
- If 2, then 4
- If 3, then 3
- If 4, then 2
- If 5, then 1

Following is a summary of the most commonly used computed variables. Many are those used for the online data displays (also referred to as Online Analytical Processing or OLAP cubes) for Task 3.8.

Survey Year. The survey year variable is a categorical variable assigned to each survey respondent, where 1 = 2000, 2 = 2001, 3 = 2002, 4 = 2003, 5 = 2004, and 6 = 2005.

General Award Category. The general award category is used to sort data by project, articulation partnership, and/or center, where 1 = project, 6 = articulation partnership, and 7 = center. This variable is derived from the Grantee Characteristics section item GC_2 where types of centers (e.g. National Center of Excellence) are grouped (i.e., recoded) into a single "general center" category.

Funding Category. The funding category variable separates grantees into one of four quartiles based on current total award amount (GC_3). These categories are 1 = $0-$299,999; 2 = $300,000-$499,999; 3 = $500,000-$849,999; and 4 = $850,000 +.

Age Category. The age category variable is the difference between the start date for current award (GC_4) and the start date of the annual survey in years. This age category does not take work streams into account (see Task 1.8); thus, the age category represents only the age of the current award. Once the *projects*' age has been determined, the age variable is then recoded into one of the following five categories: 1 = less than 1 year, 2 = 1-2 years, 3 = 2-3 years, 4 = 3-4 years, and 5 = 4 or more years.

Award Length. The award length variable is the difference between the end date for current award (GC_5) and the start date for the current award (GC_4) in years.

Annualized Award Amount. The annualized award amount for each project is determined by dividing the current total award amount (GC_3) by the award length variable.

3.5 Summary Data Release

Task: The summary data release is similar to the actual survey system itself in appearance (and it requires the same username and password required to access the survey system), but shows the users' (i.e., ATE PI) responses in comparison with all other ATE PIs who completed the survey.

Work groups: WMU CS (TS and TRA).

Time frame: June.

The summary data release has been completed in previous years (2000-2004), but was not done in 2005 due to technical difficulties.

3.6 Data Storage

Task: Following the completion of Tasks 3.3, 3.4, and 3.5 the clean data are transferred and appended to the ATE Master Database.

Work groups: Evaluation Center (RA).

Time frame: July.

Figure 16 illustrates the ATE data storage and retrieval system, including the general processes of moving imported data (Task 3.2) to raw data files for verification and cleaning (Tasks 3.3 and 3.4), to clean data (Task 3.4), and finally to the ATE Master Database and working data files (see Figure 16). As can be seen in Figure 16, three measures of security protect access to the ATE data files; (i) user ID and password to connect to the Intranet, (ii) user ID and password to connect to the ATE network drive, and (iii) password protection on the ATE Master Database itself.
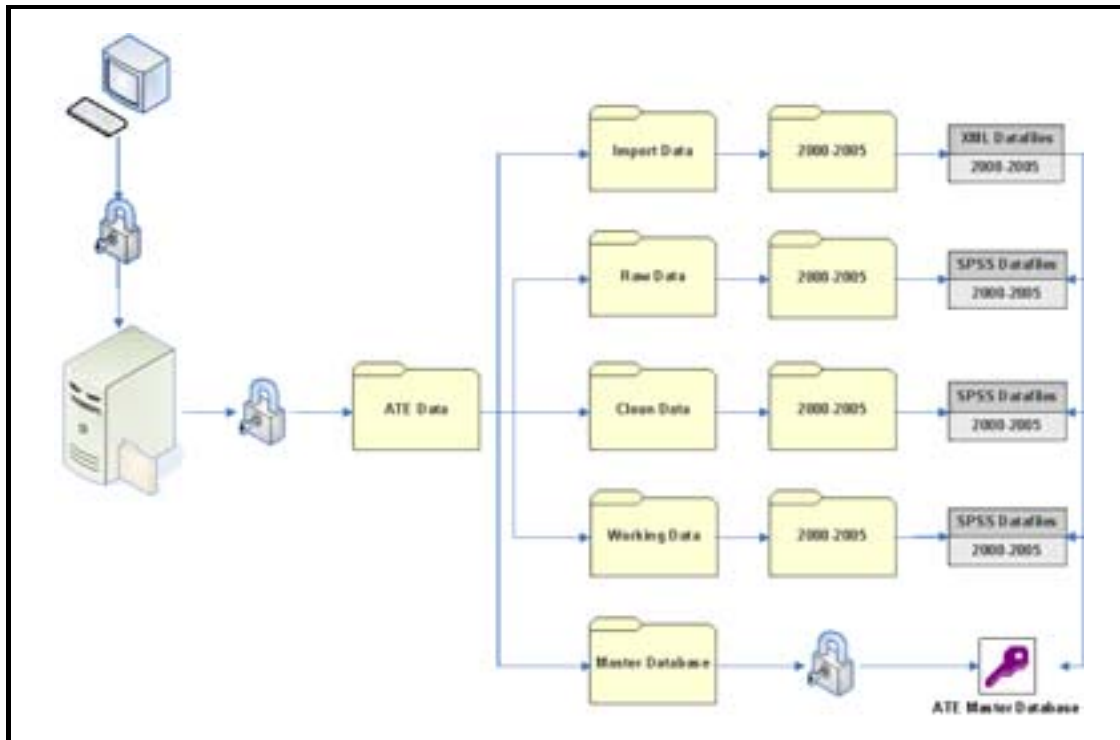
Figure 16. *Evaluation Center ATE Data Storage and Retrieval System*

The first procedure in this task is to append the cleaned data to the ATE Master Database (see Figure 15), which contains records for all *projects* that have completed the survey since 2000, the grantee work streams (see Task 1.8), and all active and inactive ATE grantees. All records in the ATE Master Database have two IDs that link all tables (with the exception of the "All Awards with ID" table, which identifies work streams and links all tables only by NSF award #) in the ATE Master Database (see Figure 17 on the next page): the seven digit NSF award number (e.g., 0023456) and survey year (where 1 = 2000, 2 = 2001, 3 = 2002, 4 = 2003, 5 = 2004, and 6 = 2005). This creates a 1:1 relationship between the grantee characteristics and the substantive survey data sections.
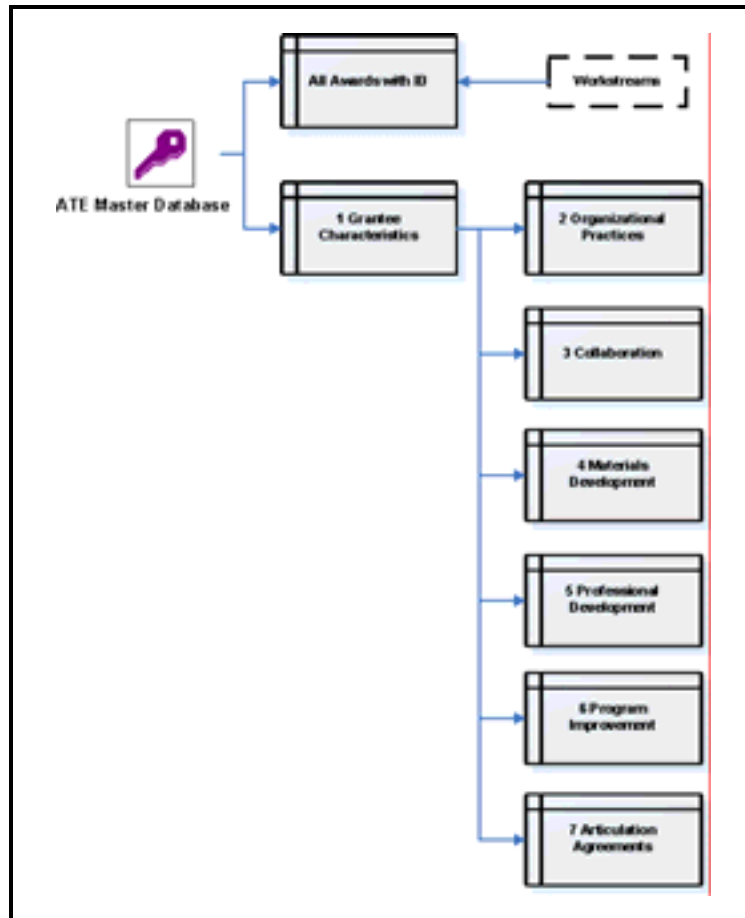
Figure 17. *ATE Master Database Table Structure*

3.7 Data Queries and Analyses

Task: Data queries are conducted in the ATE Master Database using Microsoft Access queries to obtain data for detailed analyses using SPSS (see Figure 15).

Work groups: Evaluation Center (RA).

Time frame: June through September.

3.8 OLAP Cubes

Task: OLAP (online analytical processing or online data displays) cubes are developed and published for the key variables of interest.

Work groups: Evaluation Center (RA).

Time frame: July.

Longitudinal survey results from 2000 through 2005 are available via The Evaluation Center's ATE Online Data Displays at http://www.ate.wmich.edu/sv/home. A quick-start guide for using and interpreting the ATE Online Data Displays is available at http://www.wmich.edu/evalctr/ate/ under the Evaluation Products link.

The Online Data Displays allow users (e.g., NSF, ATE PIs) to view longitudinal results from the annual survey. Data published to the Online Data Displays correspond directly with the ATE Survey, allowing users to examine items from the survey across several categorical variables. Data are generally presented in the form of OLAP (Online Analytical Processing) cubes, although static tables, charts, and graphs are also available. OLAP cubes allow users to select single or multiple categorical variables to generate tables within or across these variables. In most instances there are five categorical variables from which users can select: (1) *survey year*, (2) *funding category*, (3) *institution category*, (4) *funding quartile*, and (5) *age category* (see computed variables in Task 3.4). These categorical variables can be placed in either rows or columns or may be moved to layers (see Figure 18).
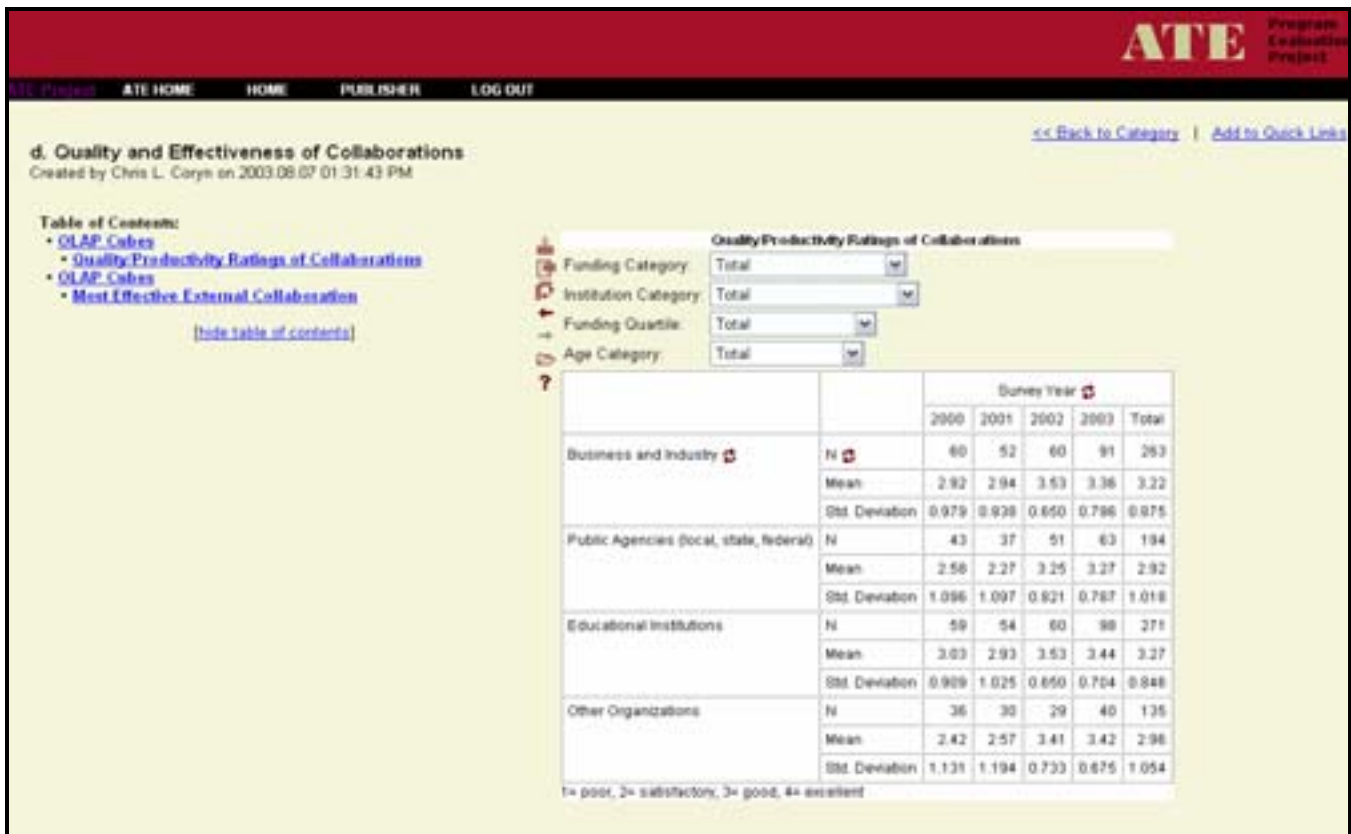
Standard/basic OLAP cube configuration: ATE survey variable in rows on the left, summary statistics in rows following ATE survey variables, and primary categorical variable (survey year) in columns across the top of the OLAP cube table.

Figure 18. *Standard OLAP Cube*

3.9 Data Access

Task: Data access for NSF and ATE PIs is provided via the summary data release (Task 3.5) and the OLAP cubes (Task 3.8).

Work groups: NSF (PO) and ATE PI (PI).

Time frame: August.

4.0 Reporting

The final phase of the annual ATE survey is Reporting. This phase consists of 10 key tasks and generally occurs from June through October. Figure 19 illustrates the Reporting processes and procedures.
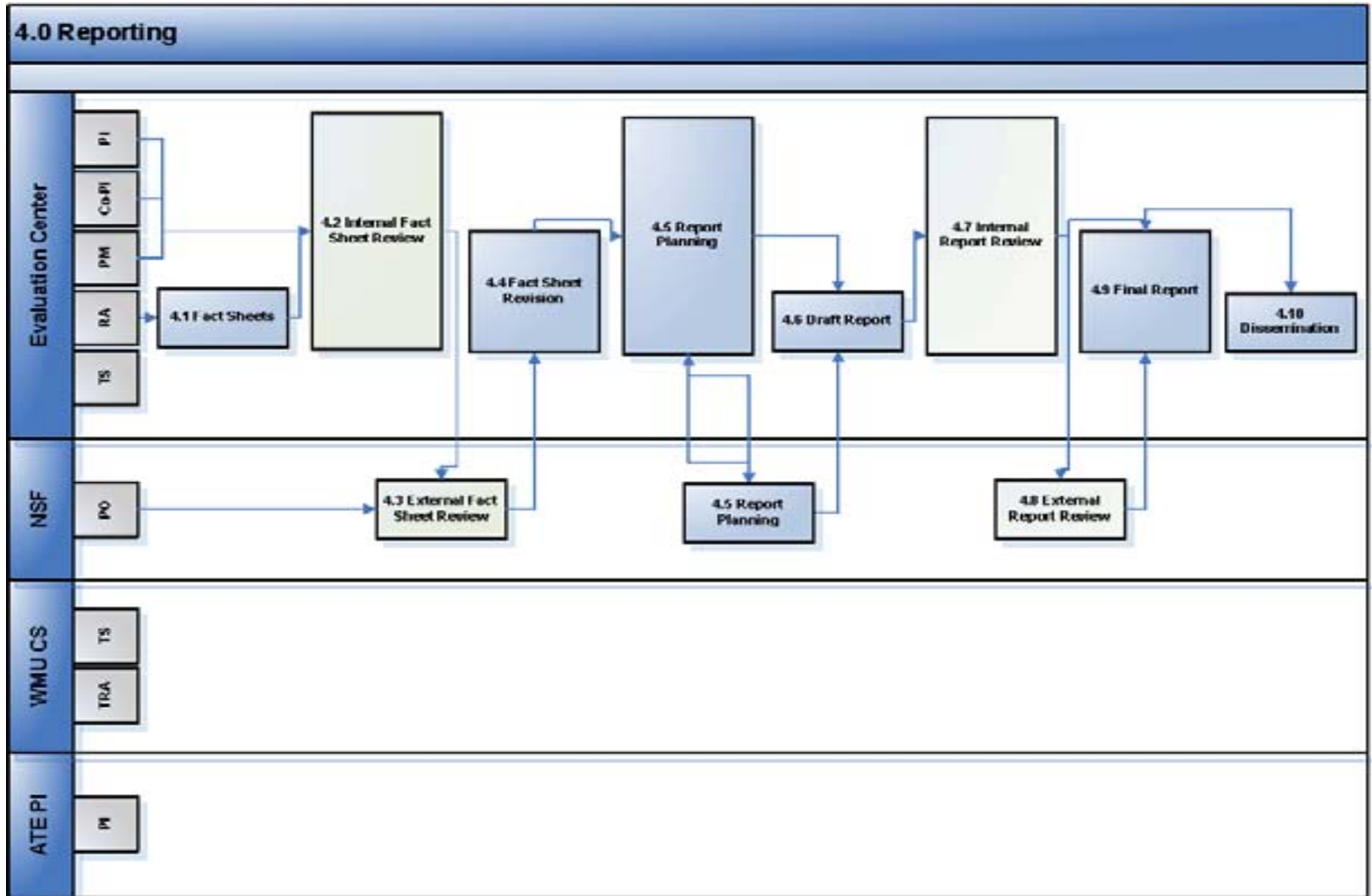
Figure 19. *Reporting Process Map*

4.1 Fact Sheets

Task: Fact sheets are brief summaries of preliminary survey findings, usually 2 to 3 pages in length.

Work groups: Evaluation Center (RA).

Time frame: June through July.

The 2005 ATE Survey Fact Sheets were completed in July 2005 and are available via the Evaluation Center's ATE Program Evaluation Web site Products page at http://www.wmich.edu/evalctr/ate/-evalproducts.htm. Fact Sheets for the 2005 survey were completed for all ATE *projects* sampled, its projects, and its centers.

4.2 Internal Fact Sheet Review

Task: Prior to submission to NSF, all fact sheets are reviewed internally for content and clarity.

Work groups: Evaluation Center (PI, CO-PI, PM, and RA).

Time frame: July.

4.3 External Fact Sheet Review

Task: Following internal fact sheet reviews (Task 4.2), the fact sheets are sent to NSF for review.

Work groups: NSF (PO).

Time frame: July through August.

4.4 Fact Sheet Revision

Task: After review by NSF, fact sheets are revised accordingly before being considered final.

Work groups: Evaluation Center (PM and RA).

Time frame: August.

4.5 Report Planning

Task: As with the preliminary evaluation planning task (Task 1.1), planning for the annual final survey report(s) is used to identify NSF's purposes, needs, and interests for the final survey report(s).

Work groups: Evaluation Center (PI, CO-PI, PM, and RA) and NSF (PO).

Time frame: August through September.

4.6 Draft Report

Task: The first drafts of the survey report are prepared during the report planning task (Task 4.5).

Work groups: Evaluation Center (RA).

Time frame: August through September.

4.7 Internal Report Review

Task: Once the draft report has been completed (Task 4.6), it is reviewed internally prior to submission to NSF.

Work groups: Evaluation Center (PI, CO-PI, PM, and RA).

Time frame: September.

4.8 External Report Review

Task: After review by NSF, the survey report is revised according to NSF's suggestions for modification or revision.

Work groups: NSF (PO).

Time frame: September.

4.9 Final Report

Task: After review by NSF the survey report undergoes final revisions and editing.

Work groups: Evaluation Center (PM).

Time frame: October.

4.10 Dissemination

Task: After review by NSF the survey is revised by The Evaluation Center's ATE principal investigator, co-principal investigator for alignment with NSF's suggestions for modification or revision.

Work groups: Evaluation Center (PM)

Time frame: July through October.

Survey results are disseminated in a variety of formats and media, including discussions and presentations at the annual ATE Principal Investigators Conference (Task 1.7), the summary data release (Task 3.5), OLAP cubes (Task 3.8), fact sheets (Task 4.1), and final report (Task 4.9). These reports and data summaries are available through the Evaluation Center's ATE Web site at http://www.-wmich.edu/evalctr/ate/ under the Breaking News and Evaluation Products pages.