

Meeting Local, State, and Federal
Instructional Improvement System Requirements
**A Resource Document for LEAs:
Illustrated through the
Galileo K-12 Online
Instructional Improvement System**

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**Assessment Technology Incorporated
April 2010**

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**I. The Importance of Instructional Improvement Systems
in Elevating Student Achievement**

Continual change and progress is a hallmark of education in the 21st century. And not surprisingly, this environment of continual change is having a profound impact on the decisions and actions local educational agency (LEA) stakeholders across the nation are being called upon to make. For example, while *No Child Left Behind (NCLB)* is still with us, we are already being influenced by the emergence of the *Race to the Top (RTTT)* initiative. With it, the previous focus on grades three through 10 is being expanded to Pre-K through college. Moreover, the goal of leaving no child behind has been broadened to include elevating student achievement.

In the *Race to the Top (RTTT) Application for Initial Funding CFDA Number: 84.395A*, one of the four areas of education reform is to build data systems that measure student growth and successes and that inform teachers and principals about how to improve instruction. These systems are being called instructional improvement systems.

An instructional improvement system is generally conceived of as a web-based, data-driven, standards-aligned, integrated system comprised of assessment, reporting, and instructional tools that can be used to support LEA efforts to elevate student achievement. Effective implementation of an instructional improvement system typically occurs within the context of an instructional improvement model. A successful model is one that can facilitate a collaborative, continuous and systemic cycle of: 1) goal setting and planning; 2) implementation and management; and 3) evaluation activities.

Specifically, the federal initiative calls for:

- an increase in the acquisition, adoption, and use of local instructional improvement systems that provide teachers, principals, and administrators with the information and resources they need to inform and improve their instructional practices, decision-making, and overall effectiveness;

- state support of participating LEAs and schools that are using instructional improvement systems in providing effective professional development to teachers, principals and administrators on how to use these systems and the resulting data to support continuous instructional improvement; and
- making the data from instructional improvement systems, together with statewide longitudinal data system data, available and accessible to researchers so that they have detailed information with which to evaluate the effectiveness of instructional materials, strategies, and approaches for educating different types of students.

State department of education decision-makers and RTTT guidelines for LEAs illustrate the importance of a local instructional improvement system as part of the overall goal of an LEA to elevate student achievement. These guidelines are presented as follows:

- **Instructional Improvement Systems** are technology-based tools and other strategies that provide teachers, principals, and administrators with meaningful support and actionable data to systemically manage continuous instructional improvement, including such activities as: instructional planning; gathering information through formative assessments, interim assessments, summative assessments, and looking at student work and other student data; analyzing information with the support of rapid-time reporting, using this information to inform decisions on appropriate next instructional steps, and evaluating the effectiveness of the actions taken. Such systems promote collaborative problem-solving and action planning; they may also integrate instructional data with student level data such as attendance, discipline, grades, credit accumulation, and student survey results to provide early warning indicators of a student's risk of educational failure.
- **Interim assessment** means an assessment that is given at regular and specified intervals throughout the school year is designed to evaluate students' knowledge and skills relative to a specific set of academic standards, and produces results that can be aggregated (e.g., by course, grade level, school, or LEA) in order to inform teachers and administrators at the student, classroom, school, and LEA levels.
- **Formative assessment** means assessment questions, tools, and processes that are embedded in instruction and are used by teachers and students to provide timely feedback for purposes of adjusting instruction to improve learning.
- **Rapid-time**, in reference to reporting and availability of locally-collected school and LEA level data, means that data are available quickly enough to inform current lessons, instruction, and related supports.

For the second round of RTTT funding, a Memorandum of Understanding (MOU) will be signed by LEAs as a condition for participating in and receiving an allocation of funds under the RTTT program. The MOU requires that the LEA must enter into an agreement with the state that will describe specifically the mutual responsibilities of the state and LEA for planning and implementing the state's plan.

The agreement will include a final scope of work and must be produced in collaboration with the state. The agreement must be provided to the state within 90 days of the RTTT award to the state and must be approved by the state. The state will approve the LEA for funding based on

the scope and quality of the work plan and the LEA's capacity to implement the plan and address at the local level significant elements of the state's approved plan.

This resource document has been prepared by Assessment Technology Incorporated (ATI) to assist LEAs in addressing the challenges and opportunities cited above. It is intended to be used to:

- assist LEAs currently using an instructional improvement system, such as Galileo K-12 Online, to clearly define for themselves and in grant writing the attributes of the system and the contributions the system can make to LEA instructional improvement efforts.
- assist LEAs seeking to select, adopt, or replace a technology-based instructional improvement system by providing useful information for that purpose.

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II. An Illustration of an Instructional Improvement System

The resource material in this section provides a brief overview of Galileo K-12 Online as an illustration of an instructional improvement system. ATI services are outlined here as an illustration of the kinds of supportive services that may accompany a system of this type.

The Galileo K-12 Online Instructional Improvement System (IIS) is a fully integrated, web-based instructional improvement system aligned to *state specific* standards. The system fully addresses the needs of LEAs for using a technology-based instructional improvement system. The system offers interim, formative, and summative assessments that provide reliable, valid, and actionable data to systemically manage continuous instructional improvement. An integrated suite of online tools make it possible to: 1) measure student growth and success; 2) inform teachers, parents and administrators about how they can improve instruction and elevate student learning; and 3) document and evaluate the impact of instruction, re-teaching, and enrichment on student learning. Galileo K-12 Online IIS utilizes an *Instructional Improvement Cycle* comprised of goal setting, planning, implementation, management and evaluation.

Tools and features within Galileo K-12 Online include:

- online implementation planning tools and monitoring and management tools to facilitate district-wide collaborative problem-solving and action planning.
- the system, in conjunction with ATI's professional development, research, and support services, is designed to promote collaborative problem-solving and action planning.
- the *Assessment Planner*, currently comprised of *state specific* standards, will include the RTTT Common K-12 Standards once approved.
- locally customized, research-based interim benchmark assessments, aligned to *state specific* standards and Common K-12 Standards once approved.
- a *state specific*, statewide test blueprint-aligned interim benchmark series.
- online tools for creating standards-aligned summative and end-of-course assessments.
- standards-aligned formative item banks and *Test Builder* tools to support locally (e.g., teacher, school) designed and shared formative assessments
- standards-aligned formative assessments and embedded instruction through *Instructional Dialogs*.
- online, offline and high-speed scanning assessments with online aggregation and handheld wireless devices.
- real-time, multi-level reporting tools including drill-downs and dashboards for statewide tests and local assessment data.
- report filtering (e.g., student demographics, professional development, intervention, attendance, and grade variables) to evaluate subgroup performance-based district interests.

- *Curriculum, Calendar, Gradebook and Report Card* tools.
- online, interactive multimedia *Instructional Dialogs* and resource alignment tools for instruction, intervention, re-teaching and enrichment.
- online *K-12 Student/Parent Center* for engaging parents and students as active participants, consumers, and users of information to promote student learning.

The Galileo IIS is supported by ongoing research and development, professional development offerings, LEA-focused field and technical support services, data importation and analysis of LEA student information and external tests (e.g., statewide tests), and data exportation to support LEA analyses of data in data analysis programs (e.g., SPSS). ATI also makes data from the Galileo IIS available to researchers, pending appropriate local approval of such data requests.

The overall design of the Galileo K-12 Online IIS and accompanying ATI services help LEAs set actionable educational goals, assess student learning in relation to those goals, develop, implement, and manage plans to achieve goals, and document mastery of standards as called for in local instructional improvement system initiatives and the RTTT initiative.

III. Research to Support Instructional Improvement Systems

The resource material in this section provides illustrations of the range of research activities that might be considered to validate an instructional improvement system as a research-based system. The illustrations presented here provide an overview of the research and evaluation initiatives accompanying Galileo K-12 Online and include: 1) the ATI research program; 2) ongoing research with LEA partners; 3) independent third-party research by MAGI Services; and 4) review and approval of Galileo as an Electronic Learning Resource (ELAR) by the California Learning Resources Network (CLRN).

1. The ATI Research Program

ATI's ongoing research program focuses on questions that have been brought to the forefront by the accountability requirements of NCLB, RTTT, state level and school district/charter school initiatives. These include: 1) development and maintenance of standards-aligned item banks that can be used to build reliable and valid interim assessments; 2) forecasting of student performance on statewide measures of standards mastery (e.g., statewide testing) to determine student risk of not meeting state standards; 3) the construction of interim assessment instruments that are sensitive to growth and provide information that can be used by LEAs to rapidly link interim assessment results to instructional improvement activities; and 4) the possibility of using a combination of district and statewide assessments to determine student competence.

- A sampling of ATI research and technical references are available at <http://www.ati-online.com/galileoK12/K12Research.html>.
- The Galileo K-12 Online Technical Manual is also located on the ATI website and can be directly accessed at: <http://www.ati-online.com/pdfs/researchK12/K12TechManual.pdf>.

In addition to the Technical Manual, ATI provides annual *Correlation and Forecasting Analyses* to each district indicating how well the previous year's interim assessments forecast student performance on the statewide assessment. With each analysis of an interim benchmark assessment during the year, the reliability and item parameter estimates are made available to districts.

One of the features of the Galileo K-12 Online IIS is its ability to forecast student performance on statewide measures of standards mastery (e.g., statewide tests) from LEA customized interim benchmark assessments. In order to ensure forecasting accuracy of interim assessments, it is important to establish the predictive validity of the assessments used in forecasting. Since investigations of validity take place in the context of continually changing statewide and interim assessments, it is necessary to gather validity information on a continuous basis. The results of continuous validity investigations examining the relationship between Galileo interim assessments and statewide test performance indicate that the correlations between the two are at an acceptable level to support effective forecasts of performance on statewide tests with the average correlation being .75. ATI's most recent research related to these correlations was conducted with 674 Galileo assessments. Since standards mastery is ultimately determined by statewide test performance, it is important to ensure that interim assessments used to guide instruction are providing information regarding the likelihood that students will meet standards, based on their performance on the statewide test. Research on Galileo interim assessment classification accuracy was recently conducted

for 184 forecasts of statewide standards mastery involving 674 interim assessments. For students who met the standard on all interim assessments, the average classification accuracy was 95 percent. For students who failed to meet the standard on all interim assessments, the mean classification accuracy was 89 percent. The mean for overall forecasting accuracy was 85 percent.

2. Ongoing Research with LEA Partners

ATI's ongoing research program ensures that the Galileo K-12 Online IIS continues to provide reliable and valid data that serves as a guide for monitoring and informing instruction in the LEA. For example, establishing the psychometric characteristics of an interim assessment with a one-time study of a normative sample is inadequate to address the goals of the RTTT initiative or the goals of an LEA as they relate to using an instructional improvement system. Student body characteristics and curriculum requirements are changing too rapidly to justify a one-time approach. Research must be done on an ongoing basis with the LEA's own students. ATI's ongoing research in collaboration with LEAs provides the following benefits:

- **Current Psychometric Data.** Psychometric data for assessments will reflect the current curricular emphasis and student body of the LEA.
- **Validation of the Relationship between LEA Interim Assessments and State Tests.** Validation that district interim assessments are correlated with statewide tests is critical to ensuring that the data LEAs provide will be a useful guide to instructional decision-making. This is particularly important when standards have been modified.
- **Validation of Procedures to Guide Targeted Instruction.** Studies on the probability that students will meet state standards, based on performance on Galileo K-12 Online local interim assessments, have repeatedly shown that Galileo assessments can forecast standards mastery with sufficient accuracy to provide highly useful information for guiding instruction. The focus on forecasting standards mastery provides a useful alternative to research that is limited to only forecasting student scores on statewide tests. Test score forecasting studies typically provide a confidence interval around the forecasted score. The confidence interval indicates the range of possible scores within which the forecasted score can be reasonably expected to fall. Even when the correlation between the predictor test and the statewide criterion test is of substantial magnitude, the range of expected scores is generally so broad as to be of limited value in guiding instruction.
- **Validation of Procedures to Evaluate Intervention Success.** A major focus of ATI's current research is the continuous development and implementation of procedures that make it possible for LEAs to determine the impact of educational interventions on student learning. The evaluation of intervention success is a key component of an instructional improvement system intended to assist LEAs in accountability initiatives such as RTTT.

3. Independent Third-Party Research and Evaluation

Research on the Galileo IIS has been conducted through an independent evaluation by MAGI Services, commissioned by the Massachusetts Department of Education. The MAGI study

supports the view that student achievement is elevated when teachers use Galileo interim (benchmark) assessment results to guide instruction.

- The full MAGI reported can be accessed at:
http://www.ati-online.com/pdfs/researchK12/MAGI_FinalReport_Feb09.pdf.

Specifically, the report concluded that: 1) Benchmark assessment data used to drive instruction, results in increased mastery of learning standards by year end; 2) Galileo benchmark assessments are tied to and aligned with the Massachusetts Comprehensive Assessment System (MCAS) statewide assessments. Students who perform well on benchmark assessments are expected to perform well on the statewide assessment; and 3) teachers who participate in the development and review of the assessments and who value the system are likely to use the data to inform instruction in their classrooms.

Finally, the California RTTT initiative, when funded, calls for the State, building off previous work done by the California Learning Resource Network (CLRN), to provide a “Consumer Reports”-like guide to local instructional improvement systems in order to enable participating LEAs to make informed choices about what data system will work best for their needs.

In 2007, Galileo K-12 Online was reviewed and approved for inclusion as part of CLRN as an Electronic Learning Assessment Resource (ELAR). In 2010, the most recently updated features of Galileo were incorporated into the ELAR documentation on CLRN.

A detailed discussion and description of Galileo K-12 Online IIS can be found at the CLRN ELAR website: <http://www.clrn.org/elar/details.cfm?elarid=53>.

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IV. Experience and Capabilities in Instructional Improvement System Implementation

The effective implementation of an instructional improvement system depends, in part, on the kinds of experiences and capabilities needed to help LEAs facilitate the systematic and systemic rollout and maintenance of the instructional improvement system over time. The resource material in this section provides illustrative examples from ATI regarding the experiences and capabilities that may be needed to accomplish effective implementation.

1. Technological Innovation

Assessment Technology Incorporated (ATI) is a national educational technology corporation. Established in 1986, ATI fulfills the mission of creating, distributing, and supporting the use of technology to promote learning by providing services to Pre-K and K-12 clients throughout the United States. ATI's mission is addressed by a complete system of online applications designed to help teachers and administrators improve student performance via rapid and flexible access to assessment and instructional tools and reports. ATI technology assists educators in meeting the challenges of RTTT, NCLB legislation, and state accountability requirements by documenting student progress according to state and local academic standards and linking assessment to instructional planning. ATI was among the first companies in the nation to offer online assessment to school districts. ATI is a leading innovator in providing an integrated, research-based, adaptable online instructional improvement system to assist schools in their efforts to elevate student achievement. ATI's commitment to research and innovation helps ensure that ATI patented technology continues to evolve based on ATI research and development initiatives, client needs and changes in those needs over time, research in learning and education, advances in communications technology and measurement, independent research on ATI flagship products, and in response to government accountability policies and legislation. ATI's own research initiatives include the use of advanced statistical procedures associated with measurement theory to address issues associated with standards-based education.

Technological innovations already included in the Galileo IIS that provide LEAs with advantages in addressing the changing educational landscape, including standards and state, federal (e.g., RTTT) and local requirements include:

- **Assessment Planner and Assessment Review Tools.** These tools allow the LEA and ATI to work collaboratively to develop interim assessments that are aligned to LEA curriculum and standards
- **Integrated and Actionable Reports.** The Galileo K-12 Online IIS reporting system integrates information on state standards and learning objectives, student demographics, standardized test performance and interim assessments. Moreover, data from tests administered online, offline, and through handheld wireless devices can be combined for rapid access by users at all levels.
- **Advanced Statistical Techniques.** Item Response Theory (IRT) techniques are used to place interim assessment scores on a common scale making it possible to measure progress using a series of distinct interim assessments. In addition, because IRT places ability and item difficulty on the same scale, IRT can be used to determine what skills a student of a given ability is likely to be ready to learn next. This makes it possible to specifically tailor instructional recommendations from LEA customized assessments.

- **Test Building Tools.** The LEA is provided with the *Test Builder* tools used by ATI to add new items to the system and align them with standards as well as to create tests using existing items.
- **Curriculum Planning Components.** The LEA is provided with *Instructional Dialog* tools that make it possible to leverage existing instructional resources already in use by the LEA. These instructional resources may be searched and implemented based on the results from assessments.

2. Partnering with LEAs and State Departments of Education

ATI serves a broad diversity of clients varying in size, location, technology readiness, and need. Today, Galileo K-12 Online applications are used in hundreds of educational programs serving hundreds of thousands of children throughout the nation, as well as in statewide and multi-state initiatives. ATI client LEAs have ranged in size from 200 to 61,000 students. The current client retention rate for ATI exceeds 95 percent, with the vast majority of clients using ATI services over multiple years. The Galileo K-12 Online IIS is also currently utilized in state department of education initiatives which include “*The Galileo Instructional Data System Pilot*” in Massachusetts and the “*School Improvement through a Formative Assessment System Pilot*” in Colorado.

The ATI *Partnership Approach* in working with LEAs occurs through a coordinated team effort involving ATI Assessment and Instructional Content, Corporate Projects, Field Services, Information Technology, Instructional Development and Professional Development, Research and Development, and Operations/Administration departments. ATI staff members have received widespread recognition through awards and citations by professional organizations and educational institutions, serve on professional committees and participate in conferences.

ATI is a self-contained company with a focused mission, and a staff with extensive experience in implementing its *Instructional Improvement Model* and *Partnership Approach*. These elements afford program planning and management advantages for implementing an instructional improvement system and management success. A range of field services and technical support initiatives to discuss emerging implementation issues can be arranged and implemented quickly. Decisions involving resource allocations that invariably arise during the implementation of an instructional improvement system can be made quickly and efficiently in response to LEA’s needs.

3. Implementing an Instructional Improvement Model

Federal, state, and local instructional improvement initiatives call for the effective implementation and management of a system that will provide educators with the ongoing and timely information they need in order to differentiate instructional support for students, better target classroom instruction, plan their curriculum, plan and implement professional development, and monitor student learning and progress over time. Effective implementation and management of an instructional improvement system can be facilitated through collaboration between ATI and the LEA using the ATI *Instructional Improvement Model* (IIM). The model can support a cyclical process of delivering and managing standards-based education. The cyclical phases comprising the ATI IIM are outlined below.

- **IIM Phase 1.** The first phase of model implementation involves collaborative goal setting, planning, and start-up activities between the LEA and ATI in preparation for implementation of the Galileo K-12 Online IIS. This includes, for example, design and delivery of professional development to identified LEA groups, initial importation of the LEA student database into Galileo and scheduling import updates, and the preparation of district-customized interim assessments by ATI for use by the LEA throughout the school year.
- **IIM Phase 2.** The second phase is the actual implementation of the Galileo K-12 Online IIS and associated LEA-ATI monitoring and management activities to support LEA assessment, reporting, instructional, and professional development efforts designed to increase student learning.
- **IIM Phase 3.** The third phase is evaluating implementation impact on learning. Within the *Instructional Improvement Model*, the evaluation phase provides the LEA with critical information to inform planning in the next phase of implementation including goal setting, planning, instruction and intervention. For example, the model may be applied short term to manage LEA differentiated instruction efforts to address the needs of students who need additional help and when they have not yet mastered something that has been taught and need additional help. This type of work can be considered a re-teaching intervention. The approach may also be applied long term as a means of addressing LEA interests in managing the delivery of instruction and monitoring progress over time, such as a grading period, year, or multiple years.

The overall goal of this type of endeavor is to elevate the achievement of all students by careful evaluation of what is and is not working with regard to instruction and the subsequent adaptation of the plan based on the results of that tracking. ATI's experience in working with school districts of all sizes and needs is that use of this model not only helps to facilitate and sustain implementation, but also provides a vehicle for building consensus within the LEA for instructional improvement system adaption within the LEA culture and community.

For example, in building district-wide consensus for the initiative, it will be important to provide clarity to district stakeholders in response to such fundamental questions as "What are our goals?" "Why are we doing this?" "How will this occur?" "What is the expected outcome?" "How will this initiative affect me, my time, and my responsibilities in the district?" The ATI *Instructional Improvement Model* can be effectively used to assist the LEA in addressing these issues. The model supports consensus building activities at the very start of the initiative by encouraging the identification of common ground for the importance of LEA efforts to improve student learning

and the important contributions that can be made to this effort by each stakeholder. Moreover, the model supports consensus building activities in the LEA by supporting a collaborative context for: 1) identifying realistic and relevant goals; 2) developing an agreed to set of plans and procedures for achieving these goals; 3) managing and monitoring implementation over time; and 4) evaluating and utilizing results of implementation to inform further decision-making.

4. Implementing a Partnership Approach

As part of planning, implementation and the management of the Galileo K-12 Online IIS, ATI approaches its work with the LEA using the *ATI Partnership Approach*. As a company with a long history of specialized experience in working with a broad diversity of school districts, ATI has found this approach to be highly effective in supporting district-wide implementation of an instructional improvement system for the purpose of elevating student achievement. The *ATI Partnership Approach* is the core of ATI's commitment to build a collaborative, responsive, and enduring relationship with its LEA partner. One of the benefits to the LEA, inherent in the *Partnership Approach*, is ATI's commitment and ability to accommodate changes in LEA needs over time is essential in ensuring the long-term success of an instructional improvement system initiative.

Implementation of the *ATI Partnership Approach* occurs in several ways. The first involves responsive collaboration to address current LEA needs. The second involves sensitivity to changing LEA needs. The third is reflected in the ongoing research conducted by ATI to ensure that the psychometric properties of ATI interim assessments demonstrate adequate reliability and validity, and that these properties are updated each time the assessments are administered. The fourth way that ATI implements its *Partnership Approach* is by continuously updating Galileo technology. The Galileo K-12 Online IIS that is available today is vastly different from the Galileo K-12 Online IIS available a year ago, and the technology available next year will be vastly different from today's technology. The fifth way that ATI implements the *Partnership Approach* is through its proactive Field Services and Technical Support teams. These interrelated components of ATI's *Partnership Approach* to planning and implementation bring a number of benefits to an LEA. Illustrations of some of these benefits are presented below.

- ***LEA Stakeholders Have a Voice.*** Active involvement provides LEA stakeholders the opportunity to take ownership of the system, creating support for the instructional improvement system initiative at all levels.
- ***Features of the Galileo IIS Accommodate LEA Needs.*** ATI works collaboratively with the LEA in the utilization of the Galileo K-12 Online IIS to meet LEA needs specifically related to local, state, and federal initiatives. This includes:
 - ***Customized Standards-Aligned Interim and Formative Assessments.*** ATI works collaboratively with the LEA to produce and provide on-time delivery of various types of interim and formative assessments. Implementation of ATI's *Standards Builder, Assessment Planner, Test Generator, and Test Review* tools ensures that assessments closely match LEA needs, are aligned with *state specific* standards and with National Core K-12 Standards (once they are approved and released). These tools will also make it easy to modify LEA assessments over time.

- **Accommodation of LEA Instructional Content.** The Galileo K-12 Online IIS includes modules that allow LEAs to input existing assessment and curriculum materials. For resources being used effectively by the LEA, Galileo provides online *Instructional Dialog* and *Curriculum* tools that allow the LEA to input these resources.

5. Collaboration with Organizations to Create Systemic Change

Since 2003, ATI has worked closely with WestEd's Comprehensive School Assistance Program and in particular, the [Local Accountability Professional Development Series](#) (LAPDS) project to enhance standards-based, data-driven instruction in schools and provide districts with a comprehensive solution to local accountability. The integration of data from Galileo K-12 Online with WestEd's LAPDS helps districts succeed in using standards-based, data-driven decision making to benefit students, teaching and administrative staff on a daily basis. The ATI-WestEd partnership (see for example, http://www.wested.org/online_pubs/brochures/local-accountability-professional-development.pdf) has had an important impact on elevating student achievement in LEAs over the years (see for example, <http://www.ati-online.com/pdfs/CMS-0605-MesquiteSuccess.pdf>). Most recently, ATI and WestEd have partnered in responding to requests by state departments of education to be listed as *School Turnaround Providers*. Organizations selected for inclusion on the list must offer research-proven services to assist schools in implementing effective, intensive turnaround interventions and measuring their progress toward achievable, sustained outcomes. Several of the WestEd and ATI requests for inclusion on state lists have already been approved.

6. Measurement and Educational Research

ATI has expertise and decades of experience in measurement and educational research. This expertise and experience guides the ongoing development of the Galileo K-12 Online IIS. ATI's research initiative includes the use of advanced statistical procedures associated with measurement theory to address issues associated with standards-based education. One central focus of the research program is the development and maintenance of item banks that can be used to build reliable and valid interim assessments. An important statistical tool in these investigations is IRT (e.g., Thissen & Wainer, 2001). Application of IRT procedures allows for investigation of validity and reliability. Use of IRT also allows for the generation of an ability score that indicates the position of the student on a developmental progression. This developmental conception of ability leads to the construction of interim assessment instruments that are sensitive to growth and provide information that can be used by LEAs to rapidly link interim assessment results to both standard setting and instructional improvement activities.

7. Item Construction and Alignment to Standards

ATI has significant experience in item construction and the alignment of assessments to state standards. ATI item banks currently contain over 79,000 items which are expanding at the rate of over 800 items per month. The items are constructed, reviewed, and certified to align to state standards via specifications that lay out the format, content, and target skill. The specifications both ensure high quality consistent items, and make it possible to readily deal with changes to standards. The strength of the Galileo K-12 Online IIS lies in the quality of the items used in Galileo assessments. Therefore, the item development process for assessments in Galileo has been carefully designed to produce high quality items and includes the development of item specifications, item construction, and item review with certification. The rationale for the adopted

item development procedures is informed by industry standards outlined by the American Educational Research Association, the American Psychological Association, and the National Council on Measurement in Education in *The Standards for Educational Testing*, 1999. The unique characteristics and purposes of interim and formative assessments, and a continuing research program that examines the psychometric properties of items used in ATI assessments also contribute.

V. Key Components of an Instructional Improvement System

The resource material in this section provides a detailed description of the key components of an instructional improvement system as defined by the federal government in the RTTT initiative. Examples from the Galileo K-12 Online IIS are used to illustrate the components.

1. Instructional Improvement System Interface with Other Databases.

- **Interface with Student Information Systems.** Two options are available within the Galileo IIS to interface with student information systems (SIS). The first choice is a module that is capable of importing data that has been exported from the LEA's SIS in a flat delimited format. Files of this type can be readily produced by most SIS systems. The second option is the *Galileo School Interoperability Framework (SIF)* module. The SIF initiative represents a significant effort within the educational software industry to address the issue of transferring information among databases. Participants in the SIF initiative have written a precise and extensive set of protocols and specifications for data transfer. These protocols can be thought of as a common language governing how data should be moved between participating software programs. Educational software businesses are also writing software modules to support and utilize this data transfer language. Data importation may be done as frequently as nightly in the case of the text file importation and in real-time in the case of SIF. The frequency of importation will depend on the consistency with which data files may be generated. The flat file importation module has been used by ATI to import demographic and roster data for districts with enrollment in excess of 60,000 students on a nightly basis.
- **Interface with LEA and State Data Warehouses.** Galileo includes the ability to export data for importation into different software systems for the purpose of analysis. ATI has produced files containing a wide variety of assessment and demographic data for districts and states to import into a system of their choosing for the purpose of analysis.

2. Test Administration and Student Response Data Entry Options

The Galileo K-12 Online IIS provides several methods for administering assessments, including offline administration using plain-paper or pre-printed answer sheet forms that can be scanned for online scoring and data aggregation, online assessment, assessment with handheld wireless devices, and student scores/item responses keyed-in online by teaching staff.

- **Offline Assessment Using Plain-Paper and High-Speed Scanning.** Interim, formative and other types of assessments (e.g., summative, placement, end-of-course, short quizzes) can be printed from the Galileo IIS and assessments can be readily completed offline and the response entered into Galileo for test scoring and aggregation. Offline administration may be combined with online administration within a single assessment. Galileo processes bubble sheets for offline test administration through *Scanline*. *Scanline* is an ATI application that enables offline assessment with online scoring and data aggregation. The plain-paper version of *Scanline* currently supports multi-function units manufactured by Brother. The high-speed version supports the Scantron OpScan and Scantron iNSIGHT 4 scanners.
- **Online Assessment.** Online assessment with the Galileo IIS occurs through the *Galileo K-12 Online Student/Parent Center*. At the beginning of each online assessment the

student is provided with instructions explaining how to navigate through the assessment, indicate her/his response, and review questions at the end. Instructions may vary depending on the item format and with different contextual material. Each time a student responds to a question and clicks “*Save My Answer*,” Galileo will automatically take the student to the next question. While taking an online assessment, a student may wish to select and look at items in the order of her/ his choosing. This is made possible in two ways. The student can click the down arrow in the question box on the assessment screen and choose a question by clicking on it or the student has the opportunity of clicking the question number to see a question. At any time during the test a student can access the review/exit test link. This page will display the questions the student has answered and the questions needed to be answered. A student may view, answer or edit any of the questions by clicking on them. Once the student has completed the test, he/she can click on the “*Exit Test*” button to log out of the test.

- **Handheld Wireless Devices.** Through ATI partnerships with *eInstruction* and *Promethean*, and with the Galileo K-12 Online IIS *Mercury* component, assessments can be administered using handheld wireless devices. Any assessment can be administered in this way, from interim assessments to classroom quizzes, or Galileo *Instructional Dialogs*, which are interactive classroom lessons that include student responses to questions. When using *Mercury*, all student responses are recorded into the Galileo K-12 Online IIS and can be reported in the same way as assessment data administered using more traditional methods, such as scanned-in paper-and-pencil assessments or assessments taken online by students. With Galileo, teachers can monitor the progress of students online as they take the assessment using handheld wireless devices. The *Test Monitoring* feature provides the teacher with a continually updated, real-time view of which questions each student has answered, what the student’s answers were, and whether the student got the answer right or wrong.
- **Keyed-In Responses.** Student scores and answers to items can be keyed in directly to the Galileo K-12 Online IIS by teachers using the *Score Tests* feature. In addition, teachers can use this feature to easily enter in student scores for items such as rubric scored open response items. The Galileo IIS also supports the scoring of open response items by providing an online view of student written work or essays, which can be scanned in to the system, viewed by the teacher along with associated scoring rubric, and stored as part of the student’s *Assessment History*.

3. Assessments Available through an Instructional Improvement System

The Galileo K-12 Online IIS makes it possible for the LEA to generate and administer a wide variety of assessments that are standards-aligned and accommodate LEA and teacher needs. These include interim, formative, summative, end-of-course, placement, and short quiz assessments. The process for generating interim and formative assessments is described below. Summative, end-of-course, placement exams, and short quizzes can be developed using processes similar to those described for interim and formative assessment.

- **Formative Assessments.** ATI creates formative assessments for clients. In addition, school-based teachers, specialists, and administrators can create formative assessments within the Galileo IIS. The process is completed using Galileo K-12 Online web-based interfaces. Formative assessments may be created directly by using *Test*

Builder. *Test Builder* makes it possible to create items for formative assessments from scratch or utilize existing ATI formative item banks.

Items from formative banks may be combined with teacher-constructed items to produce formative tests. Items from these banks may also be copied and edited to modify formative assessments. Users may access formative bank items aligned with a selected performance objective using the *Search Item Bank* tool. The *Search Item Bank* tool allows the user to search the formative item bank based on the selection of a performance objective, view the resulting items, and easily include the desired questions on a formative assessment.

The *Generate Questions* tool allows users to search item banks based on specification of performance objectives and then automatically generate the number of questions requested for each selected performance objective. The process involves selecting the performance objective and indicating how many questions to cover each. The search engine then randomly selects that number of items from the available questions measuring that performance objective and adds them to the test.

Formative assessment with Galileo K-12 Online IIS is designed to accommodate a broad range of item formats. Teachers can construct items that are multiple-choice, true/false, yes/no, short answer, essay, and submission of work samples. Assessment items may also be accompanied by images, text, and links to a variety of visual media (e.g., graphs, pictures, short stories, informational readings). *Test Builder* uses a rich-text editor and includes spell-check capabilities compatible with Microsoft Word. *Test Builder* also includes an *Equation Editor* feature that makes it possible for teachers to construct mathematics items containing equations, scientific notation, formulae, and symbols in ways that create consistency across items. *Galileo Instructional Dialog* tools make it possible for the LEA to administer standards-aligned formative assessments embedded instruction. *Dialogs* are online lessons/assignments covering specific standards and generally take the form of interactive multimedia activities with practice item feedback and optional five item assessment measuring learning.

One of the interests expressed by LEAs as well as in the RTTT and state initiatives involves the ongoing construction, review and sharing of formative items among educators. “Educator-authored” items can be incorporated into the Galileo K-12 Online IIS in two primary ways. In one approach, pre-existing assessments containing the items are attached to and administered via the Galileo IIS. In the other approach, the educator-created items are recreated as new items in the Galileo IIS using the *Test Builder* interface. This work may be done either automatically so that large quantities of items may be imported in bulk, or manually. The automatic approach requires that items meet ATI format specifications. As part of ATI’s collaboration with the LEA, ATI staff works with the LEA to explore the utility of these options so that educator-authored items may be placed in the Galileo IIS database efficiently.

- ***Interim Assessments.*** Interim assessments are created by ATI using its secure interim benchmark item bank. The process for the creation of interim assessments in the Galileo IIS includes the specification of the desired assessment blueprint, review of assessment drafts, and publication of the final version. Using the Galileo K-12 Online *Assessment Planner*, district staff participates in the design of district interim assessments aligned to state standards and sequenced according to district curriculum

and pacing guides. The *Assessment Planner* allows the LEA to determine how many interim assessments there will be during the year, when interim assessments will occur, which standards will be covered in instruction and interim assessment, and how many items will be included for each standard on each interim assessment. ATI Educational Management Services staff works closely with LEA personnel during the design phase to ensure high quality interim assessments.

4. Item Bank Adaptations to Accommodate Changing Standards

The Galileo K-12 Online IIS is designed to adapt to future changes on state and national standards. The flexibility of the Galileo IIS to adapt to changing standards is accomplished first, by the continual refreshing of Item Response Theory item parameter estimates for items in the Galileo K-12 Online IIS item bank. The second way adaptation occurs is through the use of item specifications. State and national standards tend to be fairly broad, containing multiple skills within each, even at the finest grain of analysis such as the *performance objective*. A new set of standards often involves, in large part, a re-organization of these skills under a new structure. In order to adapt to new standards, ATI re-maps the existing items to whichever standard the target skill appears under within the new system. The organizational structure provided by Galileo *Item Specifications* simplifies and quickens this process. When a re-mapping is done, the specifications are aligned to the new standards. All items under the specification are automatically re-mapped as well.

5. Reporting Tools Provide Data to Inform Decision-Making

The Galileo IIS reporting engine makes it possible for LEAs to run a variety of reports immediately once test administration has been completed. The reports can be printed or viewed online. In addition, parents and students may access reports of student assessment data using the Galileo K-12 Online IIS *Student/Parent Center*, which is available on the ATI home page. In the *Student/Parent Center*, both students and parents may also access assignments, class notes, and teacher information.

In order to accommodate LEA needs for rapid access to actionable information, data within the Galileo K-12 Online IIS are organized in a hierarchical structure that allows for *aggregation at the student, class, grade, school, and LEA (e.g., district) levels using real-time data*. Moreover, customizable *Student Demographic Filters* and the *Intervention Groups* feature make it possible to generate reports involving disaggregated data for customized groups. For example, with the Galileo IIS *Report Filtering* tool, assessment data can be analyzed in the context of a range of variables that may impact achievement (e.g., attendance data, interventions, teacher training and other variables that may impact achievement). “Team level” access to reports can be accommodated by assigning the relevant level of access to team members and/or through the use of filters in the generation of reports. Many charts and graphs suitable for presentations are included in the reports. In addition, with the use of Galileo *Form Builder* and *Report Builder*, users have the option of designing their own customized reports. Each user also has the option of selecting PDF, Microsoft Excel, or RTF as the default format for reports. Once the data is in Microsoft Excel, the user can manipulate and analyze it within that application or use it to generate comma-separated or other delimited files for exportation into other reporting, analysis, and graphing tools such as SPSS. A summary of the major reports available in the Galileo K-12 Online IIS is presented below.

- **Development Profiles.** The Galileo IIS *Development Profiles* provide counts and percentages regarding student performance on each of the performance objectives included on an assessment. Specifically, the *Development Profile* report lists, for each performance objective that has been tested on the selected assessments, the number of students who are classified at each level of achievement with regard to that performance objective. The LEA decides what percent of questions a student must answer correctly in order to be classified at each achievement level. The LEA also decides how the achievement level information will be presented (e.g., proficient, approaches standard, advanced, etc.). The *Development Profile* is ideal for monitoring progress in mastering specific performance objectives. It facilitates the monitoring of progress when multiple assessments have been administered that assess the same objectives, for example, in a re-teaching intervention that is followed by a second assessment. By comparing the number or percent of students at the various performance levels for each objective, progress between assessments can be identified. The *Individual Profile* lists the degree of student mastery of each performance objective that has been assessed. This report is useful for parent-teacher conferences and is also available to parents in the Galileo K-12 Online *Student/Parent Center*. The *Class Development Profile Grid* lists the performance level of each student in a class on each performance objective that was tested on a selected assessment.
- **Development Summaries.** The Galileo IIS *Development Summary* report presents a series of four scores that summarize development. They are the Standard Score, the Percentile Rank, the Normal Curve Equivalent Score, and the Developmental Level (i.e., the Item Response Theory - IRT Score). The *Development Summary* is ideal for monitoring progress in terms of the relative standing of a student, class, or school. For example, the degree of success of an intervention program can be ascertained by monitoring the norm-referenced scores for the program participants as presented in the *Development Summary* report. If the program is successful, the participants' norm-referenced scores will increase, indicating that they are showing accelerated progress relative to their peers. The *Development Summary* report can be run at all levels of aggregation.
- **Multi-Test Reports.** The Galileo IIS *Aggregate Multi-Test Report* tracks progress across multiple assessments, serves as a progress report, and forecasts student risk of not meeting standards as measured by statewide tests.
 - **Tracking Growth Across Multiple Assessments.** Initiatives focused on elevating student achievement call for assessing growth within the year and from year to year. ATI uses IRT and equating techniques in order to place assessments on a continuous ability scale in order to accomplish this goal. This means that the progression of student scores across assessments is a direct measure of growth and can be viewed on the *Aggregate Multi-Test Report*. This report shows progress reflected in performance on a series of interim assessments that have been placed on a common scale. Since the assessments have been placed on a common scale, the scores can be directly compared. An *Aggregate Multi-Test Report* can be run for at the LEA, school and class levels. The report also provides the user the capability to drill-down into the results for each assessment displayed until the individual student scores are displayed. Tracking the performance of individual students over time and across multiple assessments is also possible in the Galileo IIS using the

Assessment History report. The *Assessment History* report presents the raw score and percent correct on all assessments that are listed. For interim assessments, the report also lists the student's development level (IRT) score and percentile rank. The student's scaled score obtained on external tests such as a statewide test, when such data has been provided by the LEA, are presented on this page as well. With the *Assessment History* report, a global view of the student's performance on all assessment types is available.

- **Forecasting Risk of Not Meeting Standards Measured by Statewide Tests.** ATI engages in an ongoing research program, including research regarding forecasting risk of not meeting standards mastery as measured by statewide tests. The results of this research have been implemented in the Galileo IIS to provide information for guiding instruction. If a student's score on interim assessment indicates that they will likely not meet the standard on the statewide test, instruction can be targeted toward the acquisition of skills that will lead toward meeting the standard. Statewide test forecasting is available by selecting the *Display Risk Levels* option on the *Aggregate Multi-Test Report*. This display option provides parents, teachers and LEA administrators with the ability to forecast standards mastery on the statewide tests based on patterns of performance on interim assessments in a format that facilitates instruction and intervention. LEAs use this information to identify intervention groups and the specific performance objectives on which each group, or each student, should focus.
- **Intervention Planning with Multi-Test Reports.** The *Intervention Planning Report* presents a list of performance objectives tailored for that particular group of students. The performance objectives show which intervention efforts should be focused on, in order to increase the students' likelihood of passing the statewide assessment. The order in which the performance objectives are listed is determined by their mastery probabilities. The *mastery probability* for a performance objective is the probability that a student at a particular risk level has mastered the objective. Mastery probabilities are generated using IRT. IRT estimates the probability of mastering an assessment item based on the ability of the student and item characteristics, such as the difficulty of the item and the ability of the item to discriminate between students of differing ability levels. The mastery probability for a performance objective is the average probability of mastering the items in the selected benchmark assessments that measured that objective. Performance objectives are listed in ascending order of mastery probability so that attention is drawn to the objectives that will provide the greatest available risk reduction for the group first.
- **Testing Reports.** Galileo *Testing Reports* provide various types of information about tests, including item analysis (the pattern of student answers for each question), test scores aggregated at various levels, and IRT parameters for each item on the test.
 - **Class Profile Grid.** The *Class Profile Grid* provides both a breakdown of the raw scores obtained by each student at the item level as well as a summary of the results for the class. Each student is listed along with the total points that they obtained for each item.

- **Item Analysis Report.** The *Item Analysis Report* provides a summary of results obtained for each item including the percentage of students who selected each distracter. The *Item Analysis Report* can be run at student, class, school and LEA levels. In addition to showing the summary data, this report also displays the performance objective covered by a given item. The *Item Analysis Report* can also be run with the display option to show the *Detailed Analysis*. This view yields a breakdown of how students responded to the item according to percentile rank. This data is useful for instruction in that it identifies the kind of mistake students at different ability levels are likely to make.
- **Administrative Reports.** Galileo *Administrative Reports* provide monitoring information on Galileo system activity, such as implementation of interim assessments. The *Development Profile*, *Development Summary* and *Aggregate Multi-Test* reports are most directly relevant to the goal of monitoring and reporting student and group progress. The *Testing Reports* provide teachers and LEAs with details about how students responded to assessment items in order to help address any areas of concern identified when student progress is monitored. The *Administrative Reports* also monitor progress, in that they allow the LEA to monitor the administration of the assessments that provide the data in the first place.
- **Test Monitoring Reports.** The *Test Monitoring* report makes it possible to see each student's responses to test items as they occur. A teacher will also see aggregate scores updated as new responses occur. Final results available when the test is completed provide a permanent record of student responses to the assessment.
- **Dashboard Reports.** Galileo K-12 Online includes several dashboard interfaces which allow users to view data from multiple sources in one location. These are described below:
 - **Class Dashboard.** The *Class Dashboard* makes it possible for teachers to act in a timely fashion in order to implement re-teaching and/or enrichment activities based on interim assessment information. The right half of the *Dashboard* alerts teachers to upcoming events. The left half alerts teachers to formative and interim assessment results. The *Intervention Alert* report on the left side identifies students who have not met standards and enables the teacher to schedule re-teaching activities to bring students on course. Specifically, the *Intervention Alert* report shows the achievement of the students on the individual standards reflected on a given assessment. It also provides information about which students have taken the assessment. An LEA administrator can use it to view the performance of all classes within the district simultaneously. The report also indicates the percent of students who have demonstrated mastery of each concept within each school or class. When generated by a classroom teacher, the report presents the performance of individual students in the class. Check boxes next to each performance objective are used to automatically schedule instructional materials and/or five-item follow-up quizzes aligned to the selected performance objective(s).
 - **Benchmark and Formative Results Reports.** The *Benchmark* and *Formative Results* reports are designed to provide classroom teachers with access to the most commonly used reports from a central location. The *Benchmark Results*

report, for example, provides teachers with access to both aggregated and individual student data for the students in their class simultaneously. At the bottom of the *Benchmark Results* page is the *Benchmark Summary*, which lists the scores on all interim assessments administered within the current year for each student in the class individually. The top of the *Benchmark Results* report contains aggregated data and links to more detailed reports. The number of students at each level of risk for not demonstrating mastery on the statewide assessment is listed. In addition, the *Benchmark Results* report contains direct links to the *Class Development Profile Grid*, the *Detailed Item Analysis*, and, via a drill-down in the *Risk Level* table, to the *Intervention Planner*. Finally, the *Benchmark Results by Group* report breaks out students who met benchmark standards by subgroup. The report makes it possible to compare the scores of different subgroups in one display. The *Formative Results* report contains similar information as the *Benchmark Results* report except that it focuses on formative assessments that have been administered. Data from assessments that are developed from educator-created items are also available in the *Formative Results* report.

6. Curriculum Tools Supporting Instruction

Galileo IIS Curriculum tools help teachers, specialists, and administrators link standards to instructional resources, create online *Instructional Dialogs* with students, build lesson plans and assignments, and ensure adequate inclusion of standards in instruction.

- ***Instructional Dialogs.*** Instructional content can be housed in the Galileo IIS in the form of online *Instructional Dialogs*. *Instructional Dialogs* are online lessons and/or assignments that address a particular standard or set of standards. Dialogs generally take the form of interactive multimedia activities. However, existing offline content such as teacher lesson plans can be uploaded into Dialogs. An *Instructional Dialog* typically contains a statement of goals, the lesson with illustrated examples, and practice questions. The practice questions contain feedback, so that if students select an incorrect answer they will be given prompts that guide them toward the correct answer. An *Instructional Dialog* may also contain an optional quiz, administered following instruction. The optional quiz does not contain feedback, and thus serves as a measure of the degree of mastery of the material presented. Teachers can access Dialogs aligned to standards targeted for instruction by searching available Dialog banks. They can also build and/or edit online *Instructional Dialogs* using *Dialog Builder*.
- ***Dialog Books and Book Builder.*** The full range of instructional content including both online and offline activities can be sequenced in the Galileo IIS using *Dialog Books*. *Dialog Books* are comprised of a series of lessons and/or assignments aligned to the district curriculum. For example, a teacher might use a *Dialog Book* to provide instruction related to standards on an upcoming interim or formative assessment. *Dialog Books* can be selected from the Galileo IIS online *Dialog Bookstore* or constructed using *Dialog Book Builder*. The user may browse through books in the store by previewing the available books. *Dialog Book Builder* allows users to create their own *Dialog Books*. *Dialogs* may be selected for inclusion in a book by searching ATI Dialog banks. Offline instructional sequences, such as a unit plan, may be imported into a *Dialog Book*.

- **The Dialog Monitoring Report.** The *Dialog Monitoring Report* provides real-time information on student responses to Dialog questions. This information allows the teacher to immediately identify students who are mastering instructional content and those who are not. The *Dialog Monitoring Report* provides a permanent record of instruction when the Dialog is completed. Analysis of the permanent record can provide useful diagnostic information that may lead to improvements in instructional effectiveness.
- **The Intervention Portfolio.** The *Intervention Portfolio* documents the mastery of standards associated with each of a series of Dialogs contained in a *Dialog Book*. The report not only indicates the outcomes of instruction, but also the level of participation in the assessment of intervention outcomes. The report can be run at the district, school, class, or customized group levels and provides actionable information in that additional instruction may be scheduled from the report for students requiring more instruction.
- **Curriculum Mapping.** *Curriculum Mapping* tools in the Galileo IIS allow the user to track the implementation of unit plans, lessons, and assignments. These tools make it possible to monitor if instruction has been implemented as planned.
- **Class Calendar and Bulk Scheduler.** The Galileo IIS provides a several ways to schedule instruction. The first approach is to provide a uniform protocol and location for scheduling a variety of types of instructional activities. Scheduling from the Galileo *Class Calendar* makes this possible. Through the Calendar, users can schedule tests, lessons, assignments, and special events. The second approach is to schedule participation in an instructional activity or an assessment for a large numbers of students at one time. This is accomplished through the *Bulk Scheduler*. The third approach is to make scheduling an option when presenting actionable information, such as reports.
- **Curriculum, Gradebook and Report Card Tools.** The Galileo IIS *Curriculum* and *Gradebook* features make it possible for LEAs to document and report academic information derived from homework, assignments, lessons, projects, quizzes and other sources of student performance. Galileo *Report Cards* and *Form Builder* features make it possible for LEAs to design letter, grade, or standards-based report cards. The online *Curriculum Planner*, for example, is used to create, implement, update, and share resources, lesson plans and actions to address special needs. *Lesson* and *Assignment Maps* help identify gaps in standards coverage and ensure curriculum delivery. The *Unit Planner*, *Lesson Planner*, *Assignment Builder* and *Resource Builder* provide planning templates enabling LEAs to develop school level plans based on Galileo IIS interim, formative, and external test data.

7. Professional Development and Support

- **Focused Professional Development.** Ongoing professional development is important in the implementation of the Galileo K-12 Online IIS. ATI professional development options include: 1) on-site professional development at LEA designated sites equipped with an Internet-connected computer lab; and 2) online webinars and pre-recorded video tutorials accessed through the ATI online *Professional Development Forum*. Prior to an on-site or online session, ATI Field Services Coordinators provide complete setup instructions to ensure that all technical requirements are in place for a smooth professional development program.

In on-site professional development, ATI typically employs a train-the-trainer model which prepares instructional and technology services staff to transfer skills by serving as trainers for additional staff. Ongoing professional development support is provided to district staff and other stakeholders through both live and recorded webinars. Together, LEA staff and ATI's Professional Development and ATI Field Services teams identify the topics, format, and frequency of webinars. Additionally, online tutorials are available to access in the ATI online *Professional Development Forum*. LEA staff can find the *Professional Development Forum* a valuable resource when seeking individual help, assistance, and training. The *Galileo Professional Development Forum* is a discussion board that allows teachers, curriculum specialists, site administrators, district-administrators and all other Galileo end-users, to post questions, share experiences and expertise, and connect with other educators. In the *Professional Development Forum* there is also a *Resource Library* where users may access the professional development manuals, quick reference guides and short video tutorials on how to use specific Galileo tools.

- ***Continuous Service and Technical Support.*** ATI utilizes a proactive approach to provide service and technical support for client LEAs. This support staff is available Monday through Friday via the ATI toll-free phone and e-mail support systems. ATI maintains 24-hour server response capability and automated notification of any service outage to ensure maximum availability of the Galileo K-12 Online IIS.

Various methods are utilized to provide client support. For example, a telephone support session may include file review, desktop sharing, or remote control of the user's PC. One of the advantages of Galileo K-12 Online IIS being a web-based application is that the need for on-site technical support is eliminated. ATI staff addresses all server hardware issues within the ATI data center. Any client-side Galileo application issues can be addressed by telephone support, using remote control of the client PC on occasions where the support technician requires direct access to the user interface. Because the Galileo K-12 Online IIS is a web-based application, ATI provides maintenance, upgrades and enhancements on an ongoing basis at no extra charge. As a web-based application, no installing of upgraded software is necessary. When the application has been modified, users are automatically working in the upgraded version the next time they log in to the system. In addition to the support discussed above, LEAs have access to a range of support mechanisms through *ATI Online Technical Support Tools*.

- ***A Partnership with ATI from Start-Up to Roll-Out.*** Implementation planning from start-up to full roll-out in the LEA is coordinated through several ATI departments. The department directors work collaboratively with the LEA and provide oversight for ATI department staff assisting in the LEA initiative. For example, ATI Field Services Coordinators will be directly responsible for: (1) assisting and coordinating the development of an online *Implementation Plan* with the LEA; (2) interacting on a continuous basis via phone and e-mail with LEA administrative, technical, curriculum, assessment, and teaching staff; and (3) coordinating tasks with the ATI Professional Development department to arrange training sessions for LEA staff.

VI. References

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