



Company Overview

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About Us

Pacific Metrics is a full-service, privately held corporation that offers sophisticated and innovative online assessment systems designed for formative, interim, and summative testing.

The company is headquartered in Monterey, California, and is led by nationally recognized psychometricians and assessment experts. Our staff includes technology and programming experts skilled in the design and delivery of software solutions that incorporate the latest technology. We are well known for providing an intelligent, nimble, and flexible approach for building and supporting valid and trustworthy assessment systems. Pacific Metrics delivers thoughtful and timely solutions designed for today's challenging assessment environments that demand clear information and data.

Pacific Metrics provides content development services, item banking, psychometric software, and automated scoring applications that can be integrated into a complete solution or used separately in support of existing assessment components. We create, deliver, and fully support products, and solutions for state departments of education, districts and other organizations that develop, administer, score, analyze, and report on assessments at multiple levels.

Products and Solutions

Our products and solutions fall under four primary service categories:

- **Software and Online Services**
- **Scoring and Reporting Services**
- **Psychometric Services**
- **Content Development and Design Services**

Software and Online Services

Pacific Metrics develops Web-based software delivery systems for formative, interim, and summative assessments. We are experienced in the design and delivery of assessments that reside in a highly robust and secure infrastructure with best assessment practices to ensure a high level of success and customer satisfaction. The full suite of products and solutions that fall under our Software and Online Services includes the Pacific Metrics Online Remoting Customizable Assessment (ORCA™) Platform, as well as our customized software-development services for creating a variety of Web-based diagnostic and/or practice assessment systems.

The Online Remoting Customizable Assessment (ORCA™) Platform



ORCA is an easy-to-use and secure online environment with seven distinct components that, combined, enable users to secure, author, develop, deliver, score, customize, and report on assessments. ORCA components can be mixed and matched or used as stand-alone applications. All ORCA components can be easily integrated or coupled with external, third-party applications, such as data warehouses and instructional resource banks.

The seven ORCA components are:

- **ORCA™ Secure**
An online delivery platform for large-scale assessments that require maximum online security.
- **ORCA™ Connect**
A next-generation online delivery platform that operates in three modalities: connected, disconnected, and interrupted.
- **ORCA™ Interim**
An online delivery platform for benchmark or interim assessments.
- **ORCA™ Classroom**
An online delivery platform for classroom-based formative assessments, with learning tools that can link to external instructional resources.
- **ORCA™ Development**
An online item development and publication environment.
- **ORCA™ Reporting**
Provides informative reports and data online.
- **ORCA™ Bank**
An online repository for item storage and selection.

ORCA Secure

ORCA Secure is utilized for the delivery of, and access to, assessments at the state and/or large-district levels, where tests must be administered within a maximum security environment. Through the use of a locked Web browser environment that is mandatory for high-stakes tests, ORCA Secure prevents test takers from accessing any websites outside of the test environment. The overall security architecture of the ORCA Secure platform is maintained and monitored by users at the network, application, database and data-center levels, ensuring system integrity. The ORCA Secure application also facilitates high levels of storage and data reliability, along with effective and fast input and output performance levels.

ORCA Connect

ORCA Connect is a next-generation online delivery platform that compensates for Internet connectivity issues that can affect standard online assessment delivery systems and alleviates concerns about the possibility of losing test data when Internet connections have been lost. ORCA Connect provides a rich user experience that supports formats ranging from simple text to 3D graphics and interactive elements. Unlike ordinary browser-based systems, ORCA Connect operates in three modalities: connected, disconnected, and checkpoint. When ORCA Connect is connected to the network, it operates normally, communicating test responses through the server. If the network becomes disconnected for an extended period, the platform caches the test responses and delivers them once the network is restored. The checkpoint mode is enabled when the test administration is interrupted (a brief disconnection). In this mode, ORCA Connect begins recording test responses as soon as it detects an interruption and restarts the test administration when the connection is restored. ORCA Connect works seamlessly in both on- and off-line environments, ensuring that assessment data remain secure under all administrative conditions, even during a network failure, guaranteeing a consistent testing experience.

ORCA Interim

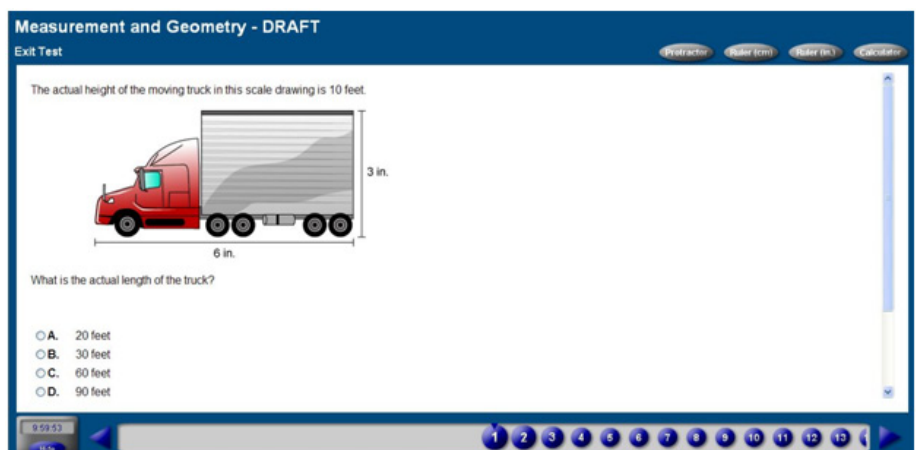
ORCA Interim enables users to access a secure environment for creating and administering benchmark assessments typically given at the end of a grading period.

ORCA Interim gives teachers and administrators the ability to gauge student achievement at intervals of time based on curriculum sequences. It supports educational administrators and teachers, helping to identify those areas in which more attention needs to be directed toward specific subject matter. Like ORCA Classroom, it supports immediate reporting and analysis capabilities and provides information targeting student learning needs. ORCA Interim can also be used to help prepare students for high-stakes summative assessments.



ORCA Classroom

ORCA Classroom is an ideal assessment solution for teachers at the class level. It is a formative assessment platform designed to assist teachers in discerning whether or not their students have understood elements of the curriculum being taught. ORCA Classroom allows teachers to create their own test items or to utilize a test item bank to select and administer a wide variety of test items. ORCA Classroom gives teachers the ability to administer tests that can inform them about the learning progress of their students on a short-term basis (daily, weekly, monthly). ORCA Classroom also features immediate reporting and analysis capabilities for making real-time adjustments. For example, links to appropriate instructional resources—such as databases with lessons, activities, and other educational materials—can be provided based on a student's performance.



Measurement and Geometry - DRAFT

Exit Test

The actual height of the moving truck in this scale drawing is 10 feet.

3 in.

6 in.

What is the actual length of the truck?

A. 20 feet

B. 30 feet

C. 60 feet

D. 90 feet

Sample test item in ORCA Classroom delivery environment.

ORCA Development

The ORCA content development environment is a scalable online assessment content editing and management system provided through an intuitive Web-based interface. It includes a user friendly HTML editor for authoring and editing test content, along with a fully functional equation editor and other flexible data and content display tools. ORCA Development supports XHTML and also features real-time reporting and customizable printing capabilities to support content development needs. Users are able to create multiple-choice, constructed response and essay items with easy-to-use HTML editing tools in an end-to-end assessment process in a fully online environment that includes the development, publication, administration, reporting, and analysis of tests and test results.

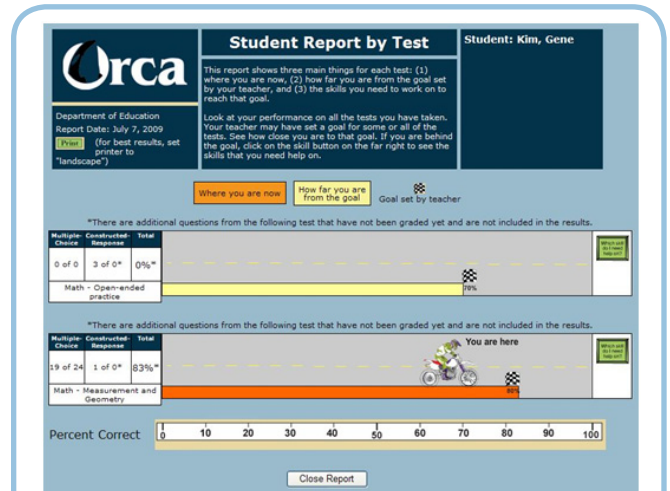


ORCA Reporting

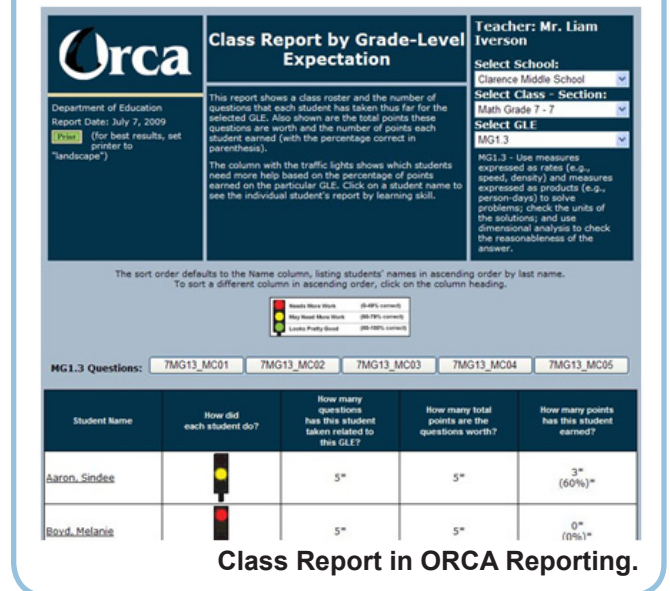
With ORCA Reporting, teachers and administrators can quickly and easily view, analyze, and compare performance levels at the individual, class, school, district, and state levels using reports that have attractive visuals and easy-to-read graphic displays. Users of ORCA Reporting can access data and information that reveals strengths and weaknesses in students or groups of students. This data informs decision-making processes that can be geared toward making changes to instructional practices and the selection of appropriate lesson content.

ORCA Bank

ORCA Bank is an item banking repository that stores items for use in the ORCA assessment delivery environment. With ORCA Bank, teachers can access items by various categories (e.g., grade, content area, strand, and benchmark) and select them for use in formative assessments. Security features and user privileges can be used to restrict access to items designated for interim or summative assessments. ORCA Bank can be licensed with a pre-loaded set of items, or it can be loaded with a customer's own items. Users can access a variety of tools to manipulate the content of the item bank (e.g., select, copy, edit, delete, and upload item data).



Student Report in ORCA Reporting.



Clarence Middle School
Welcome Liam Iverson
July 7, 2009 1:10:18 am

Class Roster
Message Center
Test Administration
Overview
Create a Test
Edit a Test
My Tests
Promote Tests
Other Teachers' Tests
Schedule a Test
View/Edit Schedule
Enter Hand Scores
Reports
Help

Grade Level of Items: 7th
Selection Method: Content Standards

Edit 'Measurement and Geometry - DRAFT' (a 7th grade Math test)

Step 4: Select the ITEMS you want to add to the test

Content Standard: GLE

- Number Sense
- Algebra and Functions
- Measurement and Geometry
- Statistics, Data Analysis, and Probability
- Mathematical Reasoning

MG1.3 - Know and understand the Pythagorean theorem and its converse and use it to find the length of the missing side of a right triangle and the lengths of other line segments and, in some situations, empirically verify the Pythagorean theorem by direct measurement.

MG1.4 - Demonstrate an understanding of conditions that indicate two geometrical figures are congruent and what congruence means about the relationships between the sides and angles of the two figures.

Items Aligned to Selected GLE

Item ID	Description	Scoring Method	Current Usage
<input type="checkbox"/> 7MG13_MC01	right triangle?	MS	Measurement and Geometry - copy
<input type="checkbox"/> 7MG13_MC02	value of x	MS	Measurement and Geometry - DRAFT
<input type="checkbox"/> 7MG13_MC03	length of the missing side	MS	

Add Items to Test

Scroll down to see current items on the test

Item ID	Description	Scoring Method
7MG13_MC01	length of missing side	MS

Teacher View in ORCA Bank.

Customized Software Services for Creating Dependable Web-based Assessment Systems

Pacific Metrics customizes Web-based diagnostic assessment systems, practice assessments, and teaching and learning systems to meet the demanding needs and challenges of our customers.



We customize Web-based assessment systems for states, districts, and schools. These can include components that support teacher-student communications, test assembly, test selection and options for teacher and automated scoring of constructed response items.

For example, Pacific Metrics is the developer behind a Web-based diagnostic system that assists Louisiana's students and teachers in mastering the state's comprehensive curriculum. This content and technology-based system provides formative assessments that link the flow of information regarding student performance and achievement to targeted instructional resources.



Pacific Metrics also creates custom Web-based practice assessment systems that provide immediate instructional feedback to the student.

These systems include a variety of features to motivate and engage students.

Custom online teaching and learning systems and tools can be created to address student needs relative to state and national standards.

These systems and tools incorporate a variety of rich media and audio content, facilitating an enhanced, interactive teaching and learning environment.

All of these systems can benefit students by providing:

- The opportunity to learn content and skills specified by state standards in an engaging, encouraging environment.
- Standards-based instructional feedback offering positive reinforcement as motivation to learn.
- The opportunity to practice and improve test-taking skills throughout the year.
- Instantaneous feedback and scores for multiple-choice items.
- The use of the Pacific Metrics Automated Scoring System to instantaneously score constructed response items.
- Links to external educational resources.
- Experience with an interactive Web-based solution to learning.
- Interactive test items and scenarios.

Scoring and Reporting Services



Our online automated scoring solution, CRASE™, provides immediate, accurate, and cost-effective scoring of short answer and essay responses. We also provide advanced reporting and analysis tools to support continuous improvement initiatives, performance metrics, and process analytics. Our reporting and analysis capabilities provide data to assist with planning and modifying instructional practices.

New Information Technology Scientifically Engineered to Score Student Responses

CRASE is a highly reliable and cost-effective online alternative to handscoring student responses to constructed response items. It can be used in formative, interim, and summative assessments. When used in conjunction with ORCA Classroom, CRASE can minimize or eliminate the time teachers spend on grading, allowing them to allocate more time to teaching. For summative online assessments, it can be used to supply immediate scores that are equal to, or more reliable than, human reader scores. CRASE can also be used in conjunction with handscoring to provide score validation for human-assigned scores.

CRASE utilizes the latest advances in information technology to easily and accurately score open-ended test questions in a variety of content areas, including essays produced in response to writing prompts. The system essay scoring solution is based on Education Northwest's (formerly Northwest Regional Educational Laboratory) 6+1 Trait writing framework (see <http://educationnorthwest.org/traits>). It can instantly deliver holistic or trait-based feedback for essays and can identify unusual and non-scoreable responses.

Numerous Benefits

CRASE reduces the time and costs incurred in handscoring processes. In addition, it saves time by providing scores in seconds, with actionable data available in virtually real-time.

The system is consistent and reliable, with studies demonstrating that it scores as accurately as human raters. Used in conjunction with human readers, the data can identify and correct human rater drift **as it occurs** (in real-time) rather than after the fact during a later review of assigned scores.

CRASE is a Web service that integrates easily with testing platforms using a standardized API.



Customized Scoring Services

Our scoring services include the development of customized rubrics, scoring codes, scoring guides, training materials, and computer-based scoring products and solutions for multiple-choice and short answer items. We can integrate our scoring solutions with virtually any online applications so that student responses, scores, and reports can be routed and handled efficiently.

Customized Reporting Services

Pacific Metrics offers customized system-usage, score, and data reports to meet a variety of specifications and needs. Our reports reveal student performance individually and by groups; we also offer item analysis reports. Reports can be disaggregated in multiple ways, e.g., by content standards, instructional needs, etc. Reports can be viewed online by users with the appropriate authorization, and users can also print reports at their discretion.

Psychometric Services

A comprehensive suite of software tools, technical consulting services and a wide variety of customized research studies are provided by our psychometric services group.

Psychometric Software

Our industry-specific software products—I-Vault™, FormBuilder™, ParTrans™, and TranScale™—are available to large-scale assessment users. I-Vault is a secure Web-based item management system. FormBuilder is equating software. ParTrans creates, edits, and transforms parameter files. TranScale equates parameter files linked by common item designs.

I-Vault

Web-based item management system for large-scale assessment needs

I-Vault is a secure, Web-based, test-item management system specifically designed to store items and statistical data for large-scale assessment needs. This flexible solution is available in a full-service model hosted and managed by Pacific Metrics, or as an internal solution managed by a state education agency or assessment provider.



In the state-level application, data-based item images and their attributes, such as item statistics, are shared among state education department working groups, vendors and review committees. I-Vault establishes a standard interface for information exchange used by vendors to build test forms, by reviewers to edit test items, and by education department personnel to review and manage the material that is central to all assessment programs. The base system can be easily customized to meet client-specific needs.

FormBuilder

For test construction, item selection and pre-equating

FormBuilder is an assessment tool that can be used “as is” or customized for a client’s specific use. Assessment organizations use this software to create statistically equivalent test forms for high-stakes assessments. Test development staff can create pre-



equated test forms by utilizing a user friendly graphical interface coupled with item-data and test-characteristic curves. FormBuilder can be customized to establish raw score to scale score relationships.

ParTrans Software

For creating, editing, and transforming parameter files

In educational measurement, it is often desirable to have the scale of measurement linked to the number-correct (raw) score and to know how accurately a test measures in various regions of the score scale. Pacific Metrics has developed the ParTrans program to accomplish this psychometric function.



The ParTrans program computes number-correct-to-scale-score (NCSS) tables along with conditional standard errors of measurement (SEMs) for each score. Both multiple-choice and constructed response items may be used. Two methods for computing NCSS tables are included: 1) The inverse test characteristic curve (TCC) method with exact SEMs, and 2) Expected a-posteriori (EAP) theta estimates with SEMs computed as posterior standard deviations. This program handles both multiple-choice and constructed response items. The input is a set of equated Item Response Theory item parameter estimates.

TranScale

For equating parameter files linked by common item designs

TranScale performs equating to put multiple forms of a test on the same scale of measurement. TranScale equates test forms using Item Response Theory (IRT) methods and will handle both multiple-choice and constructed response items. Three types of equating are possible using this software:



1. Mean/Sigma IRT equating
 2. Stocking-Lord IRT equating
 3. Nicewander IRT equating (equating by parameterized test characteristic curves)
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The goodness of the equating are summarized by: a) The average, weighted distance between anchor and equated Testing Characteristic Curves; b) The correlation between p-values predicted by the anchor and equated item parameters; c) The bias in predicted item p-values (the difference in the means of the two sets of predicted, p-values; d) The root mean square difference in the two sets of p-values; and e) A statistical test

(F-ratio) that the best line relating the two sets of predicted p-values is the identity line (slope=1, intercept=0). The inputs to this program are Item Response Theory parameter estimates for a set of “anchor” data and a set of “target” data.

Psychometric Consultants

We are proud to have a talented and nationally recognized staff of psychometricians and practitioners. These professionals are highly knowledgeable in all aspects of test development, administration, scoring, and reporting. They bring a breadth and depth of experience that is unparalleled in the assessment industry.

Our psychometric team has published widely in the area of educational assessment and measurement, and their work is frequently cited in the scholarly literature on testing. They have a keen understanding of their professional responsibility to comply with the highest professional standards governing the development, administration, and use of tests.

Customized Psychometric Services

Clients can take advantage of a wide variety of customized services offered by our team of psychometricians. These services run the gamut from custom software design and services and technical design for large-scale assessments, to consulting for high-stakes policy development and decision-making processes, simulation studies, and validity and reliability studies. In addition, we provide the following psychometric services:



- Item Response Theory (IRT)-based calibration and test equating services, including the development of multi-dimensional IRT and scoring applications.
- Computer-adaptive testing design.
- Standard-setting services, including design, implementation and evaluation services.
- Creation of innovative technical procedures.
- Expert-level services in psychometric research and design for assessment programs.
- Production of technical studies and reports.
- Assessment policy consultation.
- Field test design.
- Support services related to inquiries about research issues.
- Other professional research services, including summaries of relevant literature, design of comparability studies, analysis of test forms and data, development of protocols, and the synthesis of such information and analysis into relevant reports and studies.

Content Development and Design Services

We provide a comprehensive content development and design service for assessments, incorporating both traditional and innovative item types. We also provide interactive Web-based teaching and learning tools and resources.



Our multi-talented group of content experts can:

- Create test items, stimuli, and other test content.
- Create teaching and learning tools and resources in multiple content areas.
- Enhance content with dynamic graphics informative instructional feedback scripts and multi-media elements.

- Provide test and blueprint-design services.
- Conduct studies on the alignment of standards to curriculum.
- Assist with leadership of committee reviews.
- Create remediation materials and resources.
- Provide editorial services.
- Provide text form construction and production services.
- Utilize our online ORCA™ content development software to create and manage item development activities and seamlessly move the items into a bank or delivery environment.



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