BOLD SCIENCE
WLTR — TRANSFORMING DATA QUALITY

ESSE QUAM VIDERI

"TO BE, RATHER THAN APPEAR TO BE"

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INTRODUCTION

Analytical laboratories that produce chromatographic, spectrophotometric or other similar types of data which employ an initial calibration curve, as the root source for sample quantitation, place a high priority ensuring the initial calibration model determination is correct and the calibration has been properly reviewed and verified. Data confidence is paramount in the production of laboratory data, and the source of that confidence is the accuracy of the initial calibration. Consequently, the bedrock foundation of all analytical laboratories is the decisions made during the calibration of laboratory instruments.

Laboratories are generally required to develop in-house guidance procedures to construct, review and verify initial calibrations to meet method and/or program criteria that involve second source verification. Typically, these guidance procedures are in the form of a check list the analyst or data reviewer would use to step through this process. The common thread between guidance procedures, guidance documents, standard operating procedures or a check list is they all entail a manual procedure.

Analytical laboratories are in desperate need of a system that will automate the manual practices currently used in most laboratories. A system that can review, verify and validate initial calibrations produced from the instrument on-boarded CDS software, using a program that independently calculates and evaluates the initial calibration against user chosen calibration criteria.

WLTR was conceived and developed as a mathematically based Software as a Service (SaaS) platform specifically designed to:

- compute,
- construct,
- display,
- review,
- select,
- evaluate,
- verify,
- validate, and
- digitally store initial calibrations.

WLTR was designed, incorporating a novel architectural software data concept, empowering users to assimilate data through an intuitive data visualization deck (DVD). This architectural software design approach allows the user to objectively review, select, evaluate and verify initial calibration mathematical functions, while producing true data validation; technically defined as the confirmation by examination and provisions of objective evidence that the requirements for a specific intended use are fulfilled.

PURPOSE

WLTR was designed to provide the analyst with initial calibration modeling data, using an intelligent data assimilation approach, to make better, smarter and more informed calibration construction decisions. This design approach takes the guess work out of initial calibration construction; allowing the analyst and laboratory to generate data that are scientifically valid, defensible and of known and documented quality by providing a mechanism for standardizing this activity.

More specifically the reason behind the creation of WLTR is to:

- Provide a tool to help laboratories build a more consistent framework for the generation of analytical data in support of programs enforced by various regulatory agencies,
- Provide a mechanism to help laboratories standardize calibration techniques and evaluations to better permit the inter-laboratory comparison of data,

- Provide a standardized quality assurance (QA) approach for demonstrating analytical instruments are in-control,
- Provide a mathematically based software program that can independently compute, construct, display, review, select, evaluate and verify initial calibrations,
- Provide a mathematically based software program that can independently compute, display, evaluate and verify initial calibration verification (ICV) standards, as a second source comparison technique, against the chosen initial calibration that produces true mathematically based data validation, and
- Provide a mechanism for the historical preservation of initial calibration “raw” data and the data construction variables used in calibration modeling, to ensure calibrations can be digitally reconstructed and the calibration variables protected producing unmitigated data integrity.

GOALS

WLTR was initially designed as a calibration software tool to help aid laboratory analyst’s decision-making process. As the software program matured, goals were incorporated into this process helping drive the final design structure. Some of the more important developmental goals addressed during the construction of this application are as follows:

- Provide a uniform basis for instrument calibration, methods control, and analytical data generation and reporting that will help provide legally defensible results in a court of law,
- Estimate the quality of each initial calibration which includes precision and accuracy required to meet the needs of both analytical methods criteria as well as regulatory program criteria,
- Assist in the early recognition of initial calibration deficiencies which may affect the quality of generated data,
- Provide the analyst with a mechanism to identify and implement actions necessary to ensure the validity of laboratory data, and
- Produce a software program that enable laboratories to sufficiently document and verify the quality of initial calibrations used in the generation of analytical data.

OBJECTIVES

WLTR achieved the application design goals, using a multilayered smart-system data approach, to target and reach the program objectives.

The key to success was building a software program that could replicate on-boarded CDS calibration and quantitation software. Once the mathematics were determined, the design concept focused on user efficiency, giving rise to the data visualization deck (DVD). Software layering continued in this application build-out by adding initial calibration evaluation parameters and the automation of the review and validation process.

While laboratories have internally developed both paper and electronically based calibration review processes and attempt to ensure calibrations meet the spirit of the regulatory requirements; they are not mathematically based.

Question (1): *If initial calibrations are not independently verified using a program that can mathematically generate the concentration values produced by on-boarded CDS instrument software is the initial calibration truly validated?*

Answer: WLTR was designed as a mathematical program to independently calculate initial calibration concentration values as well as to independently calculate the second source standard for calibration comparison and produce true data validation.

The answer to the question posed above is simple in concept, but extraordinarily difficult to achieve. The primary objective presented numerous design challenges which required a multilayered system design approach to solve these problems.

So, the How, to unraveling these design issues, is accomplished through programming a series of evaluation parameters solving the primary objective. WLTR tackles these software design issues, making this program superior to the manual review process. Some of the more important evaluation parameters incorporated into WLTR are presented below.

INITIAL CALIBRATION REVIEW AND EVALUATION PARAMETERS

A. Independent Initial Calibration Data Computation

WLTR independently quantitates, in real-time, individual calibration points for all nine (9) possible mathematical calibration models, using the imported electronic “raw” data, collected by the on-boarded CDS software.

B. Independent Initial Calibration Construction

WLTR allows the analyst to choose any combination of possible calibration variables and build or construct initial calibrations for each target analyte, independent of the on-boarded CDS software.

C. Data Visualization Deck (DVD)

WLTR displays initial calibration modeling data through a novel data design structure known as the data visualization deck. The architectural design structure of this software allows the analyst to view all possible mathematical calibration models, for all calibration points, including extrapolated values extending from the lowest calibration point to a zero-response area for each target analyte.

D. Calibration Data Review

WLTR recalculates all chosen calibration points, in real-time, using the “raw” data imported into the program and displays that data in the DVD. This allows the analyst to make better informed method and/or analyte calibration construction decisions whether this is a new method, new analyte and/or simply calibration maintenance, i.e., recalibration.

E. Calibration Data Selection (Report Card)

WLTR has a feature titled the Report Card, wherein the calibration models are evaluated and ranked against user selected criteria. The report card is incorporated into the DVD and provides the analyst a quick evaluation of the initial calibration construction. As the analyst modifies

calibration construction variables, calibration points are recalculated on-the-fly; thus, affecting calibration parameters such as RSD, r, r^2, etc. Each modification to the calibration construction also affects the calibration model evaluation and ranking which is automatically updated, in real-time, and displayed on the report card.

F. Initial Calibration QA Evaluator

WLTR electronically evaluates the initial calibration against user selected method and/or program acceptance criteria and generates an Initial Calibration Evaluation Summary Table documenting the initial calibration evaluation criteria chosen by the analyst.

G. Initial Calibration QC Evaluator

WLTR electronically evaluates the initial calibration against user selected method and/or program acceptance criteria and generates an Initial Calibration Evaluation Table. The evaluation table consists of fifteen (15) discrete initial calibration evaluation parameters whose acceptance criteria are chosen by the analyst. As each target analyte is evaluated, it is scored for each evaluation parameter. The initial calibration evaluation table contains five (5) areas of evaluation as follows:

1) Reporting Limit (RL) Evaluation,
2) Calibration Model Evaluation,
3) Calibration Point Evaluation,
4) Curve Refitting Evaluation, and
5) Second Source, Initial Calibration Verification (ICV) Evaluation.

H. Initial Calibration Summary Evaluation

WLTR scores each of the five (5) evaluation areas and summarizes the information in the initial calibration summary table. The initial calibration summary table produces an over-all evaluation as either Acceptable or Unacceptable for each target analyte, verifying the initial calibration construction viability.

I. Instrument Software Validator

WLTR is a mathematically based SaaS program that independently validates the on-boarded instrument CDS software calibration modeling mathematics using uploaded electronic “raw” data.

J. Initial Calibration Data Validator

WLTR is a mathematically based SaaS program that independently calculates each initial calibration point, in real-time, for nine (9) calibration models, replicating the chosen calibration variables used with the on-boarded instrument CDS software using uploaded electronic “raw” data.

K. Initial Calibration Construction Validator

WLTR is a mathematically based SaaS program that independently verifies the analyst correctly selected the initial calibration variables used by the on-boarded instrument CDS software to produce quantitation reports, thus validating the calibration construction parameter settings.

L. Initial Calibration Electronic Digital Storage / Data Integrity

WLTR was designed to directly upload electronic “raw” data into this software application. Analytical instrument CDS software produces data in several formats such as text, excel, CSV or other comma delineated file types. Data uploaded into WLTR is the exact data used to build the initial calibration using the on-boarded instrument CDS software; therefore, there is a direct data comparison from the two programs.

Raw data directly uploaded into WLTR has the added benefit of protecting both the original “raw” data as well as the initial calibration construction parameters. The protection of highly sensitive initial calibration method data files as well as its calibration construction parameter settings are inherently important facets for analytical laboratories; it is the cornerstone to data integrity.

APPLICATION

There are five basic senses that we, as humans, use to interact with the world around us: touch, sight, hearing, smell and taste. Interestingly, everything we touch, see, smell, taste and hear all involve chemistry or chemicals defined as matter. Chemistry is not just limited to beakers in a laboratory; it is all around us, it is everything, and the better we know and understand chemistry the better we can understand our world.

Analytical chemistry plays an enormous role in our society, such as drug manufacturing, environmental monitoring, food production, process control, forensic analysis as well as many more industries too numerous to name. In addition, analytical chemistry is center to promoting environmental awareness and environmental stewardship as it is the foundational tool used to creating a brighter future for our children and the world in general. Because of this elevated importance to our society, analytical chemistry is making tremendous technological advances so chemical analysis can be improved upon to respond to these increasing new demands.

Analytical chemistry may be framed as one of the most important sciences that routinely affect our lives while taking a back seat to high tech and emerging technologies.

WLTR was originally conceived and designed as a mathematical program to ensure initial calibration construction was of the finest quality; it was designed for the laboratory.

WLTR is so much more than a SaaS program; its tentacles of use and sphere of activity extends significantly beyond the bounds of the analytical laboratory.

WLTR was designed to ensure data produced from the laboratory would pass scientific, legal, and auditing scrutiny.

WLTR was designed to independently validate initial calibrations while also acting as a data auditing tool.

WLTR was designed as an insurance policy, protecting the laboratory, the auditor, the auditing agency, and the consumer from mistakes or misuse.

WLTR was designed to help both the analytical bench chemist and laboratory increase data production by increasing efficiency.

WLTR was designed to provide the analytical bench chemist a mechanism for making better informed calibration model decisions resulting in higher data quality.

Question (2): *Who will want WLTR and how will they use it?*

Answer: Everyone!

- Laboratories owners will want this software to increase staff scientists bench efficiency by reducing the time to calibrate, review, validate and minimize potential data liability issues.
- Auditors will want this software to independently verify and validate initial calibrations and data quantitation in a non-biased environment, the ultimate auditing tool.
- Instrument manufacturers will want this software to independently validate their own internal mathematical calculations as well as to independently verify and validate competing manufacturers are honestly reporting their data used to market their products.
- Chemical production facilities will want this software to improve upon the quality of their products sold and as an analytical QC tool ensuring products they are receiving are of the designated quality.
- Corporations will want this software integrated into their business and corporate partnerships to help them align with global environmental, social and corporate governance and investing principles.
- Government agencies, government contractors, remediation companies, environmental engineering companies, non-chemical manufacturers will want to purchase laboratory data services from laboratories incorporating the use of this software into their quality systems.
- Consumers will be the ultimate winner.

Question (3): *Why will everyone want WLTR?*

Answer: WLTR will help protect:

- laboratories from internal fraud and integrity issues,
- auditors conducting on-site inspections as an oversight body,
- production facilities from mistakes,
- non-production facilities from environmental hazards, and
- the consumer by instilling confidence in the products they purchase.

WLTR is an insurance policy.

WLTR will increase analytical data quality across all industries and will act as a consumer product confidence tool.

SPHERE OF ACTIVITY

CORPORATIONS

Companies worldwide are incorporating Environmental, Social and Corporate (ESC) governance principles into their business philosophies which trickle down from the board room to the consumer. ESC governance principles are the three cornerstones used to measure the social impact of an investment in those companies. These business use ESC principles to establish internal criteria to help determine their impact and the future financial performance of their business.

In addition, there are two investing components to ESC governance principles which companies are incorporating into their business philosophies: a) socially responsible investing (SRI), and b) environmentally green investing (EGI). Environmentally green investing is particularly interesting as this investment philosophy focuses on companies that are committed to the conservation of natural resources and environmental stewardship.

CONSUMERS

The consumer has also matured regarding matters of corporate stewardship, which places additional stress points on manufacturing companies, product labeling, government regulators, auditors and finally the analytical laboratories producing the quantitative analysis for these industries.

And so, high-quality analytical data is an industry ESC multiplier- **better analytical data produces better corporate decision which produces higher corporate profits!**

LABORATORIES

Analytical laboratories are the engines that produce the data and are the epicenter to this software application discussion. It is also important to point out, WLTR was designed for a wide audience of instrument chromatographers whether they are a novice or a highly experienced professional as both will use WLTR as a tool to help verify and validate calibration decisions during the construction of an initial calibration.

BRINGING IT ALL TOGETHER

Summarizing the benefits of WLTR is an important discussion topic to bring clarity to such a novel software program. WLTR has the design qualities to impart a deep and profound effect on the following areas:

- a software program to prevent laboratory ethics and fraud violations,
- a software program to assure data integrity,
- a software program to assure data validation,
- a software program to aid in the development of new methods and / or analytes,
- a software program that increases laboratory staff efficiency,
- a software program that imparts data confidence to those in critical decision-making positions, and
- a software program that is an insurance policy for data producers, reviewers, users and consumers.

Each of these items affect one another and are entangled in a web of inquiry that deserves a deeper conversation to better understand their implications. The following discussion touches on those areas that WLTR will impact.

ETHICS, FRAUD PREVENTION, DATA INTEGRITY AND DATA VALIDATION

Most laboratory quality system programs include the necessary procedures to achieve acceptable data results under the assumption those data results were being generated under an umbrella of ethical behavior. Analytical methods, procedures and programs do not set standards for the ethical behavior in a laboratory and assumes that work performed in the analytical chemistry laboratory is of the highest integrity.

Essentially all ethics, fraud prevention and data integrity programs have four main topics that are central to establishing a robust system as follows:

- ethics, fraud prevention and data integrity training,
- signed ethics, fraud prevention and data integrity document, certifying the person has participated in training and will conduct themselves accordingly,
- in-depth, periodic monitoring of data integrity, and
- an ethics, fraud prevention and data integrity SOP.

Typically, along with this type of laboratory policy and training, a no-fault or whistle blower reporting policy is also incorporated into this program structure. Most whistle blower reporting policies are intended to:

- encourage personnel to report suspected violations of the fraud, ethics and data integrity policies,
- assures personnel a mechanism exists to report suspected violations are in confidence,
- assures personnel investigations that may be required will be carried out in a confidential manner, and
- assures personnel will not be punished for reporting their observations of improper, unethical or illegal activities to supervisory personnel.

The data integrity policies incorporated into these programs require laboratory staff personnel and management to document clearly and unambiguously how all analytical results were obtained and to assure the mechanism exists to supply data to the requestor all relevant information.

The protection of highly sensitive analytical data is an inherently important facet for analytical laboratories; it is the cornerstone to data integrity. There are many variables and parameters that must be diligently controlled and monitored at almost every stage of the analytical laboratory's workflow, particularly when the preservation of historical data is involved.

Storage of these invaluable initial calibrations and their associated data along with the proper functioning, maintenance and safeguards of electronic storage devices and equipment, are areas that require strict adherence to a multitude of industry specific guidelines to prove compliance.

With a myriad of stringent regulations to adhere to, establishing proper SOPs that mitigate the risk of malfunctioning storage devices and equipment is a critical practice for analytical laboratories. In the event of an analytical PC or other equipment failure, precious method files, data files, initial calibrations and other data assets and time can be lost as the organization tries to respond to the unexpected, adverse event. Without having readily available, comprehensive procedures in place, appropriate personnel might not be able to respond quickly and efficiently, increasing the potential for critical and unretrievable data loss.

The objective of most ethics, fraud prevention and data integrity programs is to prevent fraudulent or unethical behavior and to ensure ethics violations do not occur. The financial impact of unethical behavior and fraud could be devastating to a laboratory, the employees as well as to the data users.

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WLTR is the ultimate Fraud Prevention, Data Integrity and Data Validation Assistant (DVA).

WLTR is used by the analyst to compute, construct, display, review, select and verify the initial calibration meets method and/or program specified criteria.

WLTR is used by the analyst, to self-document the absence of fraud in the calibration construction while incorporating the essential data integrity elements.

WLTR is used by the QA Officer or secondary reviewer to verify and validate the initial calibration meets method and/or program specified criteria and secondarily to verify the absence of any fraud in the calibration construction.

WLTR is used by the laboratory management to verify, validate and ensure the data is digitally stored, maintaining data integrity and secondarily used to document the absence of any direct or perceived fraud while incorporating essential data integrity elements, i.e., a fiduciary fraud prevention program.

WLTR is used by an auditor or third-party data auditor as a QA evaluator, a QC evaluator, an instrument software validator, an initial calibration data validator, a calibration construction validator and WLTR is used to document the absence of any direct or perceived fraud.

NEW METHOD DEVELOPMENT AND ANALYTE APPLICATION EVALUATOR

The introduction of a new method into the laboratory requires an enormous amount of planning and is generally assigned to a senior member of the technical staff who is equipped with the adequate resources to carry out the duties of method development.

The method development process will course its way presenting many challenges and the development team will make the necessary modifications, method changes, experiments etc. to achieve the goals set by the team leaders.

Generally, all new methods are evaluated for those parameters that adversely affect data quality. These parameters are items such as limits of detection, limits of quantitation, accuracy and precision. When adding a new analyte to a preexisting method, the inclusion of that analyte in the method should generally meet all the required calibration and QC requirements of the method to which the analyte is being added. However, in some cases, new analytes may not share that propensity in its predicted behavior and is then evaluated as a neophyte.

When a new method is developed or an analyte is added where no reference or preexisting QC criteria exists, the technical team must gather experimental data and establish accuracy and precision limits to set preliminary QC goals for start-up evaluation. As part of the development process, and to ensure continuous quality of data, QC criteria is generally proposed and established that is consistent with other similar methods or technologies.

A software program that could evaluate all possible calibration models and update the construction parameters in real-time would be indispensable to this process.

WLTR, a novel mathematically based SAAS program specifically designed to take the guess work out of constructing an initial calibration resulting in better data decisions.

WLTR is an independent SAAS program used as a personal data assistant, helping the analyst quickly choose the best initial calibration variables while confirming the calculations from the instrument software match the quantitated concentration values produced from WLTR, thus ensuring the initial calibration software settings are correct.

WLTR, has the added benefit of displaying data through a novel data design structure known as the Data Visualization Deck (DVD). Data is displayed in the DVD allowing the analyst to quickly view and assess all nine (9) mathematical calibration models, for all calibration points, including extrapolated values from the lowest calibration point to a calculated value at a zero response for each target analyte.

This allows the user to make better informed method and/or analyte calibration construction decisions whether this is a new method, new analyte and/or calibration maintenance.

DATA CONFIDENCE FOR CRITICAL DECISION MAKERS

Laboratory instrument CDS software was not strictly designed by chromatographers, they were designed by an IT department with requested input from data users. The net result is a software that fills a functional, practical purpose by employing a myopic data visualization approach while maintaining the current instrument miniaturization trends. However, it hinders the chromatographer's ability to fully understand and grasp the data it produces. In general, there are few arguments regarding calibration model mathematics; however, there are issues that should be addressed regarding four key functional areas:

- better data visualization,
- understand how to process initial calibration data, i.e., "raw" data acquired by on-boarded CDS software,
- understand how to evaluate the initial calibration in a manner allowing the analyst to make better informed calibration decision,
- understand how better calibration decisions will increase data quality.

A PRACTICAL APPLICATION

The table below represents a thirteen-point calibration with concentration values from 0.1 to 160 ug/ml. Each colored row represents the calculated concentration values for the nine different mathematical models and its calculated bias results in the following non-colored row. The calculated RSD for this compound was 6.74% with a calculated r > 0.995 and r^2 of >0.99. These initial calibration metrics would typically allow the analyst to use any of the mathematical models.

If this were cannabidiol (CBD) and the user had selected a least squared regression equal weighting function it would return a calculated value of 0.445 ug/L where the true value is 1.0 ug/L and a calculated bias of -55.5%. A selection of any other mathematical model would produce results with a much smaller bias. However, with current CDS software the analyst is generally unaware of the curve refitting attributes of each mathematical model unless the analyst re-quantitates the initial calibration points after initial calibration model construction.

In this example, a grower may be monitoring the CBD values to ensure they stay below a certain regulatory threshold of 1.0 ug/l, and they believe they are 0.445 ug/l. If a regulatory body took samples to independently check for compliance, more than likely this grow field would have to be destroyed due to the CBD values exceeding a compliance concentration value costing the grower a substantial amount of money through lost product as well as financial fines and perhaps the loss of a license.

CAL1	CAL2	CAL3	CAL4	CAL5	CAL6	CAL7	CAL8	CAL9	CAL10	CAL11	CAL12	CAL13
0.10	0.20	0.50	1.00	2.00	4.00	8.00	20.00	50.00	100.00	120.00	140.00	160.00
0.115	0.210	0.528	0.986	2.040	4.059	7.225	19.373	50.856	101.792	112.331	132.22	149.62
14.97%	5.16%	5.13%	-1.38%	2.00%	1.47%	-9.68%	-3.14%	1.71%	1.79%	-6.39%	-5.55%	-6.48%
-0.475	-0.374	0.039	0.445	1.557	3.688	7.029	19.849	53-076	106.832	117.954	138.94	157.31
-574.6%	-287.00%	-107.8%	-55.52%	-22.16%	-7.81%	-12.13%	-0.75%	6.15%	6.83%	-1.71%	-0.75%	-1.68%
0.091	0.190	.0521	0.999	2.098	4.203	7.504	20.170	52.998	106.108	117.097	137.83	155.98
-9.37%	-4.97%	4.19%	-0.10%	4.89%	5.07%	-6.19%	0.85%	6.00%	6.11%	-2.42%	-1.54%	-2.51%
0.100	0.17897	0.523	0.994	2.077	4.150	7.402	19.878	52.214	104.526	115.350	135.78	153.65
-0.45%	-1.25%	4.68%	-0.57%	3.83%	3.75%	-7.47%	-0.61%	4.43%	4.53%	-3.88%	-3.01%	-3.97%
0.121	0.221	0.554	1.036	2.142	4.262	7.588	20.344	53.406	106.896	117.963	138.85	157.12
20.73%	10.44%	10.83%	3.65%	7.11%	6.56%	-5.16%	1.72%	6.81%	6.90%	-1.70%	-0.82%	-1.80%
0.423	0.512	0.809	1.238	2.227	4.125	7.113	18.713	49.865	104.188	116-150	139.52	160.94
322.54%	155.90%	61.78%	23.84%	11.34%	3.11%	-11.09%	-6.43%	-0.27%	4.19%	-3.21%	-0.34%	0.59%
0.111	0.205	0.515	0.963	1.994	3.972	7.084	19.115	51.040	105.217	116.862	139.29	159.43
11.49%	2.33%	2.96%	-3.70%	-0.30%	-0.69%	-11.45%	-4.43%	2.08%	4.22%	-2.62%	-0.51%	-0.35%
0.100	0.197	0.518	0.983	2.050	4.098	7.313	19.692	52.128	105.726	116.997	138.44	157.40
0.18%	-1.63%	3.63%	-1.75%	2.52%	2.44%	-8.59%	-1.54%	4.26%	5.73%	-2.50%	-1.11%	-1.62%
0.108	0.199	0.498	0.931	1.928	3.841	6.854	18.541	49.877	104.311	116.255	139.54	160.81
8.49%	-0.75%	-0.38%	-6.88%	-3.61%	-3.97%	-14.33%	-7.29%	-0.25%	4.31%	-3.12%	-0.32%	0.51%

WLTR was designed and developed to provide instrument users a mathematically based platform to compute, construct, display, review, select and evaluate initial calibrations using a novel data visualization deck (DVD) summarized in an initial calibration summary table. This data-design structure was specifically engineered to help aid the bench chemist, make better calibration decisions, produce better quality data and provide the analyst a QA/QC evaluation tool.

WLTR also address the primary areas of weakness inherent in current CDS software resulting in:

- a more efficient analyst,
- better calibration decisions producing higher quality data,
- a data quality mechanism to document calibration metrics and increase profitability,
- a fiduciary commitment by laboratory owners to minimize calibration errors and mathematically validate initial calibrations, hence an insurance policy.

WLTR provides the user with a complete portfolio of calibration data results giving confidence in the reported values and delivers:

- Data Confidence for Critical Decision Makers,
- Increases Staff Efficiency, and
- An Insurance Policy

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