



TraxStar Lab Management Product Suite

Quality - Your Strategic Advantage

Introduction

Product quality is a major determinant of customer satisfaction and long-term corporate viability. The top challenges for to achieving Quality are limited visibility and a lack of real-time response, according to a recent Aberdeen Research paper¹. Test laboratories are directly tied to product quality.

Test Laboratories, when aligned with corporate strategy, directly impact the bottom line through higher quality products, shorter product development cycles, more efficient testing and lower warranty costs. Product testing has always suffered from being at the end of the product lifecycle where testing is reduced or ignored in order to meet product deadlines. However, this mindset is costly in the fast paced, technology-based economy that exists today. Test laboratories must not only provide efficient and well-disciplined environments but they must also contribute to the goals of the organization. That means automation, sophisticated test scheduling, application of best practices, and business-oriented execution. TraxStar is introducing a product suite for test laboratories to achieve corporate quality goals.

The Test Lab Management Product Suite is inherently extensible to the shop and other parts of an active manufacturing environment where product quality benefits from integration of people and equipment into a common, visible real-time process.

A live environment surfaces significant events to appropriate individuals notifying and suggesting solutions as soon as those individuals appear on the test lab grid.

¹ The Product Quality Benchmark Report *Achieving Quality across the Global Manufacturing Network* Dec 2005

The TraxStar Advantage

At the core of the TraxStar product suite are two dominant technologies:

- Dynamic Scheduling
- Liquid Software

Dynamic scheduling is the ability of the test scheduling software to “re-generate” schedules whenever changes occur in the test laboratory. This is extremely important in the dynamic test lab environment because changes within test laboratories occur frequently and product development schedules have very little room for error since they drive eventual product rollout dates. Test schedules become invalid almost as fast as they are generated. Samples are not delivered when promised, test machines go down, operators get sick or are pulled to more critical tests, or a major defect is found which require additional related tests. Whatever the case, a new schedule must be generated given the current state of the laboratory. And this must be accomplished with minimal user intervention (autonomously) because of the complexities involved in generating optimal schedules.

If schedules are to remain valid, the test scheduling software must be made aware of any changes to the lab environment. In a dynamic environment, the software must be active; always on, providing feedback and notification as the situation warrants. The TraxStar infrastructure consists of a technology called “liquid software”. The software allows real-time detection of changes to the test laboratory and then informs appropriate individuals and the scheduling engine of the changes. This is done in real-time and without user intervention. Extending the software to accommodate new resources and new types of resources can be done in real-time as well.

TraxStar Product Suite

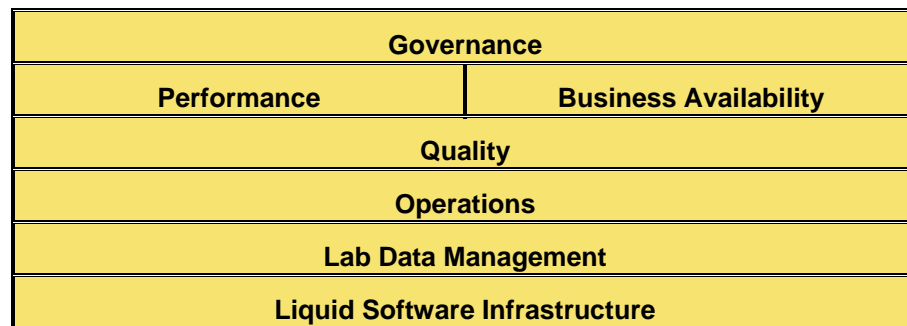
The TraxStar Lab Management product suite consists of five major packages as show in Figure 1:

- Operations Package – what is necessary to run test lab operations as a business.
- Quality Package – ensures the quality of a product and of the services provided by the test organization.
- Governance Package – manages the laboratory for business-related reasons such as cost, availability, and standards adherence.

TraxStar Lab Management Product Suite

- Performance Package – supports the application of best practices and evidence-based decision making for test execution.
- Lab Data Management Package – supports an official data repository for lab data.
- Business Availability Package – Administrative tools provide problem resolution and internal and external problem reporting. Also monitors the TraxStar software deployment.
- Liquid Software Infrastructure – foundation for the entire TraxStar product suite which, like a liquid fits in and around existing services and legacy software systems.

Figure 1:
TraxStar
Software Suite



Liquid Software

The Liquid Software infrastructure supports the entire TraxStar product suite. It provides the infrastructure necessary to support test laboratories as contributors to the corporate strategy. The liquid moniker refers to the software infrastructures ability to fit into an existing IT environment, filling in and around existing services and legacy systems rather than displacing them. The attributes of liquid software are:

- Self-Organization
- Self-Healing
- Self-Diagnosis
- Self-Evolving

These attributes help the software achieve maximum efficiency with minimal user-intervention while evolving with changing business needs and IT environment. End-users will be able to change the software in real-time with minimal training and with no software developer skills.

Laboratories, engineering sites and manufacturing facilities world-wide are connected “live”, communicating via the liquid software structure. This allows collaboration on a scale never previously attainable.

TraxStar provides a software development kit that allows software developers to expand the capabilities of the liquid software infrastructure.

Operations

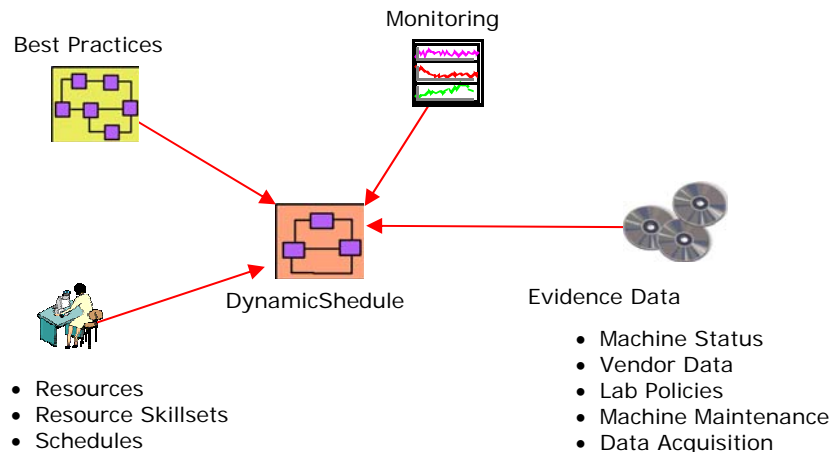
The Operations Package is at the center of running your labs as a business. The goal is to ensure that you are aware of significant events and actions (or the lack thereof) and that the events and the ripples they create receive appropriate attention.

At its core is the advance Dynamic Scheduling product which supports real-time changes to the test plan. The package uses the liquid software infrastructure to track changes to the test laboratory such as unavailable operators or test machines. Figure 3 shows the types of information that contribute to a well-optimized test schedule:

The features of the Operations Package include:

- Executive Dashboards showing the state of all testing in the facility.
- Test Plan or Work Request definition (workflow)
- Test Plan or Work Request execution
 - Activity tracking
 - Test and result tracking
- Parts\Sample Tracking
- Dynamic Scheduling

Figure 3: Data used by Dynamic Schedules



- Portfolio Management – monitoring, controlling, assessing costs on the Test Laboratory.
 - Quoting/pricing services
 - Tracking labor and equipment hours
 - Materials cost and usage
- Document Management
 - Internal Procedure/Process Document Control – a reference library of controlled documents with numbering scheme, revision control, approval tracking, comment tracking, historical archive, periodic review notification.
 - Reference Library Control – externally sourced documents such as regulations and standards.
- Resource Management – monitoring, controlling, assessing all resources used by the Test Laboratory. This includes:
 - Personnel Training
 - Equipment management including preventive maintenance, repairs and calibration.
- Test Report Template – Test Report Generator

Quality

The Quality Package consists of software that ensures the quality of a product and the quality of the services provided by the testing organization.

- Quality Management – Complete quality system maintenance that addresses management needs as well as supports internal and external audits.
 - Internal Procedure/Process Document Control – See Governance
 - Reference Library Control – See Governance
 - Action Manager – keeps track of actions assigned in the laboratory that are not related to the testing processes. These could be any of the types of actions arising out of ISO 17025 sections 4.8-4.12, 4.14 or 4.15.
 - Meeting Record Keeper– Acts as a repository of meeting minutes for the laboratory.
 - Creates a “Proficiency Planner” to schedule and monitor the lab’s self monitoring for assuring quality of test results.
 - Materials traceability and usage
- Direct support for quality initiatives including one or more of the following:
 - ISO 17025
 - ISO 9001
 - TS 16949
 - ISSix-Sigma and specifically Lean Manufacturing
 - CMMI
 - COBIT
- External product integration (SmartConnectors).

Performance

The Performance Package is at the center of providing an “always-optimal” test laboratory. The goal is to ensure that all testing involves “evidence-based” decision making. This implies that each decision (e.g. which resources to use) is done with the most complete information (evidence) available. Access to diverse information resources within and outside of the test laboratory is accomplished via the liquid software infrastructure. The information is brought together to construct optimal test schedules. The results of the test execution are analyzed and incorporated into best practice scenarios which in turn are used to derive future test schedules. The cycle never stops as the best practices reach an optimal level over periods of time.

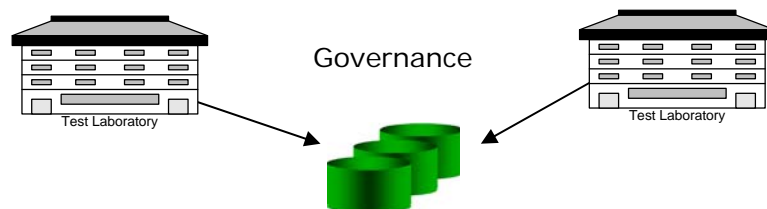
The features of the Performance Package include:

- Creation, management, and control of test lab metrics, resource availability, and testing best practices.
 - Tracking labor and equipment hours
 - Tracking test or activity duration
- Metrics
- Industry Utilization Benchmarks
- Application of performance information into existing test plans and best practices.
- External product integration (SmartConnectors).

Governance

The Governance Package provides the administration and control of the processes within and around the Test laboratory. The package directly relates the Test Laboratory to the Corporate world by ensuring common goals, cost efficiency, and resource controls. The Governance package supports effective management either within a single Test Laboratory or across multiple Test Laboratories that are part of a multi-organizational project as shown in Figure 2.

Figure 2: Multi-laboratory governance.



The package maintains common information across individual deployments of the TraxStar product. The features of the Governance Package include:

- Testing - Corrective action and incidence tracking associated with product issues\failures
- Sarbanes-Oxley support for the Test Laboratory. Includes the protection of any information that is deemed critical to the organization. Also the logging and monitoring of data within the TraxStar suite.
- Audit Support.
- Executive Dashboards showing critical issues.
- Agent-Based Workflow for automating any kind of task.
- Demand Management – monitoring, controlling, assessing demands on the Test Laboratory. Defining corporate policies for test laboratory demand.
- External product integration (SmartConnectors).

Business Availability

The Business Availability package provides services to ensure the test laboratory is functioning according to corporate policies and goals. This includes the ability to manage, monitor, and correct the execution of the software product suite. In addition, to handle issues encountered by the users of the product suite. The features of the Business Availability Package include:

- Monitoring software to manage the health of the TraxStar software deployment. TraxStar provides network monitoring capabilities to ensure that the software is performing as per corporate policies.
- Internal User Management – Problem Tickets. Problem resolutions in the laboratory. For example operator issues, lack of resources, problem test machines.
- Customer Management – Problem Tickets. Problem resolutions with customer (external or internal). For example late testing responses, inappropriate time estimations, cost overruns.
- Tying into outside systems that provide project management (e.g. PLM).
- External product integration (smart connectors).

Lab Data Management

The Lab Data Management package supports an official data repository for lab data.

- For those cases where lab data lies in manual files, excel spreadsheets and the like, data can be aggregated into an accessible enterprise class database.