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**This report is intended to be of use to managers working in the metrology industry. It is concerned with the future of the industry and covers strategic, operational and marketing issues**

## **1.1 Introduction**

This research report analyzes the global market place for calibration services of test and measurement equipment. It is assumed that the reader is generally familiar with

- the operations of calibration laboratories,
- the majority of common terms used in the industry,
- the worldwide system of measurement,
- and, current quality management practices, especially as they relate to metrology.

The consumers of this report are intended to be executives, managers and supervisors working in the metrology industry. Marketing forecasts are not the only subjects addressed. No document should be relied on to have “all” the answers but there is considerable observation on the state of most aspects of providing calibration services. This report is of value to personnel concerned with the following issues:

- Capacity and capability planning of metrology laboratories
- Customer service issues in the provision of calibration
- Calibration laboratory management
- Production and automation issues
- Marketing and sales of calibration services
- Strategic planning, budgeting and forecasting

This is the fourth edition of the report. It has benefitted from the feedback of many readers throughout the world. The reader is urged to contact The Signal Group with any and all suggestions for improvement to this report.

While market forecasts and predictions of future events are a key aspect of the report it may be that the qualitative (as opposed to quantitative) aspects of the report are of an even greater value. The practice of managing and guiding organization, and its operations, is the practice of being able to respond appropriately to unfolding events. It is clear that significant trends can generally be foreseen up to five years beforehand. This report attempts to identify these unfolding trends and predict, generally, their timing.

## 1.2 Market Definition

**This report is concerned with calibration services using documented procedures and a traceable standard. It excludes repair.**

Calibration of test equipment is the service of verifying that the instrument is providing measurement readings accurate to within a specified range, the *tolerance*. For simple instruments e.g. a vernier caliper there is only one range (length) and the service of calibration extends to determining the accuracy of this measurement at various specified points. The various points of reference and their tolerance range is normally that provided by the manufacturer and these are generally referred to as the *manufacturers specifications*. *Procedures* are specific documented instructions on the steps to be taken, and their order, to carry out an instrument calibration. An acceptable calibration normally requires the use of documented procedures that are referenced on a *Calibration Certificate*. Calibrations performed without the use of documented procedures are not included in the market definition. Neither are calibrations that are performed without reference to an appropriate standard (e.g. a physical constant or a standard with calibration traceable to a National Measurement Institute). A corollary to this is that informal calibration, the “checking” of an instrument by comparing its readings to a similar (uncalibrated) instrument is not included in the market definition. (Some in-house calibration “benches” do just this. The practice is equivalent to no calibration.) Instruments that provide a number of different types of measurements at different ranges have the most complex procedures for calibration. This report refers to a calibration service as the verification of all manufacturer specifications for the test instrument. As the astute reader is aware the possible variations in the extent of calibration are extremely wide and will be discussed in full in Market Overview - Service Pricing and Plans below.

Calibration service *per se* refers to this verification activity and the provision of associated documentation of this activity. It may, for the purposes of this report, extend to the provision of necessary adjustments to bring an out of tolerance piece of equipment into tolerance. A pure calibration is a completely intangible service and one for which there is no real evidence of the work having actually been done. Appropriate documentation is an integral part of the service. Trust in the provider of the service also plays an important role.

This report is primarily concerned with regular calibration activity related to compliance with regulatory or quality management practice. While calibration activity associated with a repair event

## 2.1 Manufacturer Practices

The practice of calibrating test and measurement equipment has, in the past, largely been defined by the specifications, policies and practices of the manufacturer of the equipment under calibration. As has been previously discussed the *manufacturer's specifications* form the basic definition of what constitutes a complete calibration service. The manufacturer's influence goes beyond this to affect calibration services pricing, options, timeliness and the level of customer communication.

**Manufacturers are the market leaders. They have a natural advantage when providing calibration services.**

The manufacturers of test equipment continue to establish the standards or function as the *market leaders* in setting the standards for the provision of calibration services. In any particular type of equipment the manufacturer whose equipment has the greatest market share serves to have an even greater influence over the nature of calibration services provisioning. Agilent service policies (Agilent is arguably the leader in high-end electronic test equipment sales) are the standard to which most electronic laboratories compare themselves to. Nevertheless this manufacturer leadership role has weakened and will continue to do so as Calibration Service Vendors (CSV's) who service the equipment of more than one manufacturer gain market share (see The Changing Role of the Manufacturer below).

The manufacturer has many advantages as a provider of calibration services. They are generally the first and obvious choice for any servicing need. Who else could understand the equipment better? Manufacturers, and their distributors, often have the information necessary to contact the equipment owner and offer calibration service. Manufacturers can provide both calibration and repair of the equipment while honouring any warranty provisions. Manufacturers have the advantage, in many cases, of offering services to a very distinct type of equipment and customer. They can tailor their calibration, and associated repair, policies precisely to meet the needs of their particular technology and customer set. They benefit from significant economies of scale, often enhanced by automation, due to the need to service large volumes of identical units. These advantages mean that CSV's must often refer to practices *within each equipment segment* to remain competitive.

Many manufacturers assume that the customer will naturally receive calibration services through them. Pricing and service levels are established from this point of view. The very large competitive advantage that the manufacturer enjoys in providing