

Effective: 03 February 2017

Keysight Technologies' Business Management System Manual

Document Control Log

REV NO.	CHANGE SUMMARY	DOCUMENT OWNER	APPROVER	DATE APPROVED
18	AS9100 specific updates related to findings from the AS9100 stage 1 audit in Santa Rosa.	Kevin Fawl (BMS Team)	Rick Chapman	03 Feb 2017

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1. Introduction

1.1 Purpose

This Manual is a summary description of Keysight Technologies, Inc. and its key policies. It is intended to be used by all relevant interested parties (Employees, External Temporary Workers, Customers, and Business Management System Auditors and External Auditors). It is also intended to assist the Company in deploying its policies, processes and structure; to assist in achieving business and quality goals; to ensure the Company continues to be compliant with all applicable statutory/regulatory requirements; and to execute the overall business processes in an effective and efficient manner.

1.2 Background

This manual was written under the direction and leadership of Keysight Technologies' Management. The owner of the BMS Manual is the BMS Manager and a controlled copy of this document is available at the BMS [Document Map](#) location.

Any changes to the Manual are made as per the "[Document Control Requirements](#)" process.

Definitions of special terms, acronyms, and abbreviations used in the Business Management System are provided at the end of this document.

Keysight Technologies Inc. (NYSE: KEYS) is the world's leading electronic measurement company, transforming today's measurement experience through innovations in wireless, modular, and software solutions. With its HP and Agilent legacy, Keysight delivers solutions in wireless communications, aerospace and defense and semiconductor markets with world-class platforms, software and consistent measurement science. The company's over 9,500 employees serve customers in more than 100 countries. To read more about Keysight Technologies – <http://about.keysight.com/en/companyinfo/>

1.3 Manual Scope

The Business Management System, which is comprised of all the organization's policies, procedures, plans, resources and processes, along with the delineation of responsibility and authority, is deliberately aimed at achieving product, solution or service quality levels consistent with customer satisfaction and organizational objectives.

The Business Management System includes quality-related activities worldwide. Employees and external temporary workers follow the Business Management System policies, processes, and procedures. Product Conformity is measured in alignment with solicited customer feedback (KCS) and the Keysight Technologies' Quality Policy.

Company locations are registered with, audited by, and/or certified by regulatory standards agencies as per the agencies rules. This BMS Manual defines the business/quality philosophy in use at all Company locations worldwide. Locations certified to ISO9001 and are listed in the Company's certificate addenda. Keysight's ISO9001 and all other quality related material can be found here – <http://about.keysight.com/en/quality/>

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2. Normative References

The following documented information, in whole or in part, are normatively referenced in this manual and are indispensable for its application.

- ISO9001
- AS9100
- ISO17025 (Keysight Technologies has a number of accredited locations that comply with this standard).
- [Management Review Process](#)
- [Keysight Risk Management Process](#)
- [Corrective and Preventive Action Requirements](#)
- [Audit Program Manual](#)
- [Training Process and Requirements](#)
- [Control of Nonconforming Product / Process Requirements](#)
- [Quality Records Requirements](#)
- [ESD Control Manual](#)
- Calibration Requirements
 - [Calibration System Manual](#)
 - [Measurement Method / Uncertainty Validation Process Requirements](#)
 - [Calibration Policy](#)
 - [Option 1A7 & A6J Introduction Guide](#)
- Anti-Virus [Standard & Requirements](#)
- CIR (Customer Issue Resolution) Process - <http://emg.communications.keysight.com/quality/cir/>
- General Retention Schedule - <http://legal.keysight.com/rim/index.shtm>
- Documentation - <http://sharedoc.collaboration.is.keysight.com>
- Documented procedures - http://emg.communications.keysight.com/quality/bms/040318_docMap.asp
- Customer Experience & Quality Website - <http://emg.communications.keysight.com/quality/>
- Design and Manufacturing Documents - <http://emg.communications.keysight.com/dsug/DAM.asp>

The Disaster Recovery Processes / plans include:

- [Disaster Recovery \(WPS\)](#)
- [IT Disaster Recovery Program](#)
- [Disaster Recovery \(Finance\) / Risk Management](#)

3. Terms and Conditions

It is required and to be understood that this document, and its contents, are mandatory for the management and control required to ensure effective processes; the delivery of high quality products, solutions, and services; and to drive customer satisfaction and loyalty.

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4. Context of the Organization

4.1 Organization

The Company scope and structure consists of each of the following Solutions Groups (✓) and Supporting Functions (❖). Each Organization Chart can be viewed by clicking the relevant Group/Function name.

- ✓ [Communications Solutions Group](#)
- ✓ [Electronic Industrial Solutions Group](#)
- ✓ [Services Solutions Group](#)
- ❖ [Corporate Planning & Technology](#)
- ❖ [Worldwide Sales](#)
- ❖ [Finance](#)
- ❖ [Human Resources](#)
- ❖ [General Counsel](#)
- ❖ [Corporate Services](#)
- ❖ [Order Fulfillment](#)
- ❖ [Information Technology](#)
- ❖ [Global Sourcing](#)

Each of the Solution Groups are separated into Market aligned Industry Solutions Teams (ISTs). The primary responsibilities of these ISTs are as follows:

- Business intelligence
- Industry and solutions marketing
- Sales support, enablement, and business development
- Solution planning and architecture
- Solution R&D, application software, and delivery (including interface with solution partners)
- Post-sales customer support for industry and solutions

Additional Scope information is available here - <http://inside.keysight.com/about/org/> and in section 8.1 of this document.

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4.2 Understanding the Needs and Expectations of Keysight's Interested Parties

Interested Party	Needs & Expectations	Example Associated Company Metrics and Data
Customers	Quality, price, cost of ownership and delivery of products, solutions, and services.	Quality Policy, KCS, CRDD, OBE Downtime, SW CFD, OTA, Customer Escalation, SOT, Re-Repair, Product Recalls.
End-Users	Product/solution performance, usability, reliability, safety, and maintainability.	Customer OOT, OBE Downtime, Product Quality or Safety Events, Customer Requirements
Owners & Investors	Profitability, Return-On-Investment and growth in the market value of the Company.	EPS, Revenue Growth, and Stock Price.
Management	Increased growth, sales & profitability, efficiency & effectiveness of ongoing operations & processes, and competency of employees.	Sales Growth, Gross Margin, Backlog, Funnel Management, Scrap, Yield.
Employees	Effective work environment, job security, health and safety, ongoing development & training, and recognition & reward.	Management Engagement, Retention and Attrition, Safety Events, Variable Pay & Benefits, Health and Safety Policy, Harassment at Work.
Suppliers & Partners	Timely communication of existing and future Keysight requirements, effective & efficient collaboration, and ongoing adherence to contractual agreements.	TQRDCBE, Quarterly Reviews, Quality Escalations, SCARs, Yields.
Governments, Society & Communities	Environmental Protection, ethical behavior, growth in business and taxes, adherence to standards of business conduct and applicable government legislation.	Corporate Social Responsibility Report, Standards of Business Conduct, Sarbanes-Oxley, SEC, Keysight in the Community.
Regulatory Bodies	Availability of evidence supporting that products meet relevant technical requirements and follow the administrative requirements of local/regional applicable laws & regulations.	RoHS, REACH, WEEE, Product Safety Events, Product Regulatory Declarations.

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4.3 The Scope of the Keysight BMS

The scope of the Keysight BMS is as stated in Keysight's ISO9001 Certificate and includes the various company locations as stated in the associated Addenda - http://about.keysight.com/en/quality/Keysight_ISO9001_Certificate.pdf

Scope:

Research and development, design, manufacturing, marketing, sales, calibration, repair, and customer contact centers, for software, systems, solutions and test & measurement equipment.

4.4 Keysight BMS and its processes

4.4.1 The Business Management System is a set of requirements/policies and procedures designed to be effective, simple, uniform, and readily auditable.

Business Management System requirements, processes and procedures are common worldwide unless there is a compelling, justifiable, verifiable and documented rationale for variations that have been reviewed and approved by the appropriate level of management.

Applicable documented information is structured in the following tiered hierarchy.

Tiered Hierarchy	Documented Information
Level 1	Business Management System Manual
Level 2	Required Documents: Cal Sys Manual, Risk Management Process, CAPA, ESD Program Manual, etc.
Level 3	Entity Specific Documents/local procedures
Level 4	Records

The Company's input and output map (BMS Relationship Map and Business Process Flow) depicts the flow of our overall key processes. The details of each key process can be found in this BMS Manual and they consist of the following:

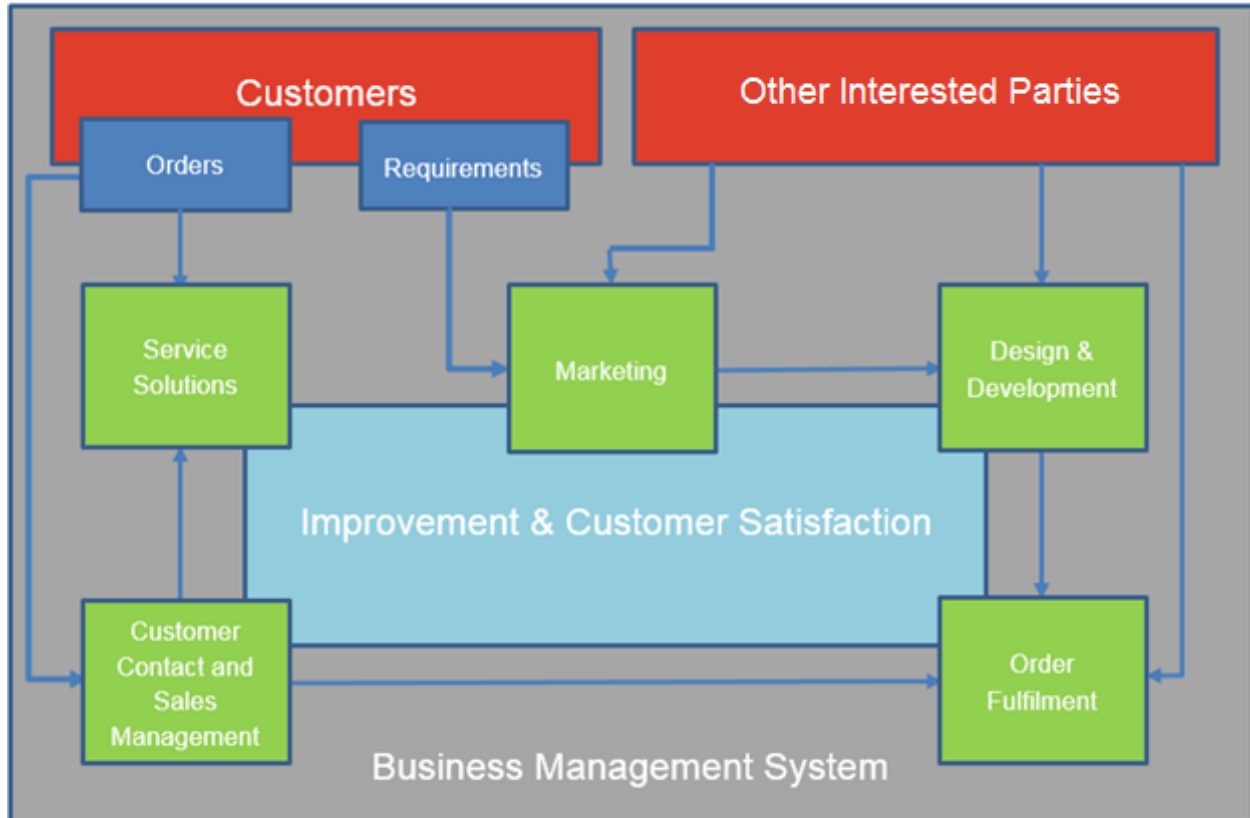
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BMS Relationship Map



In addition, an **AS9100** specific interaction diagram is available to view at the following link -
<http://sharedoc.collaboration.is.keysight.com/sites/EMG-Wide/SD/EMG%20BMS/NPS/Keysight%20AS9100%20Interaction%20Diagram.pptx>

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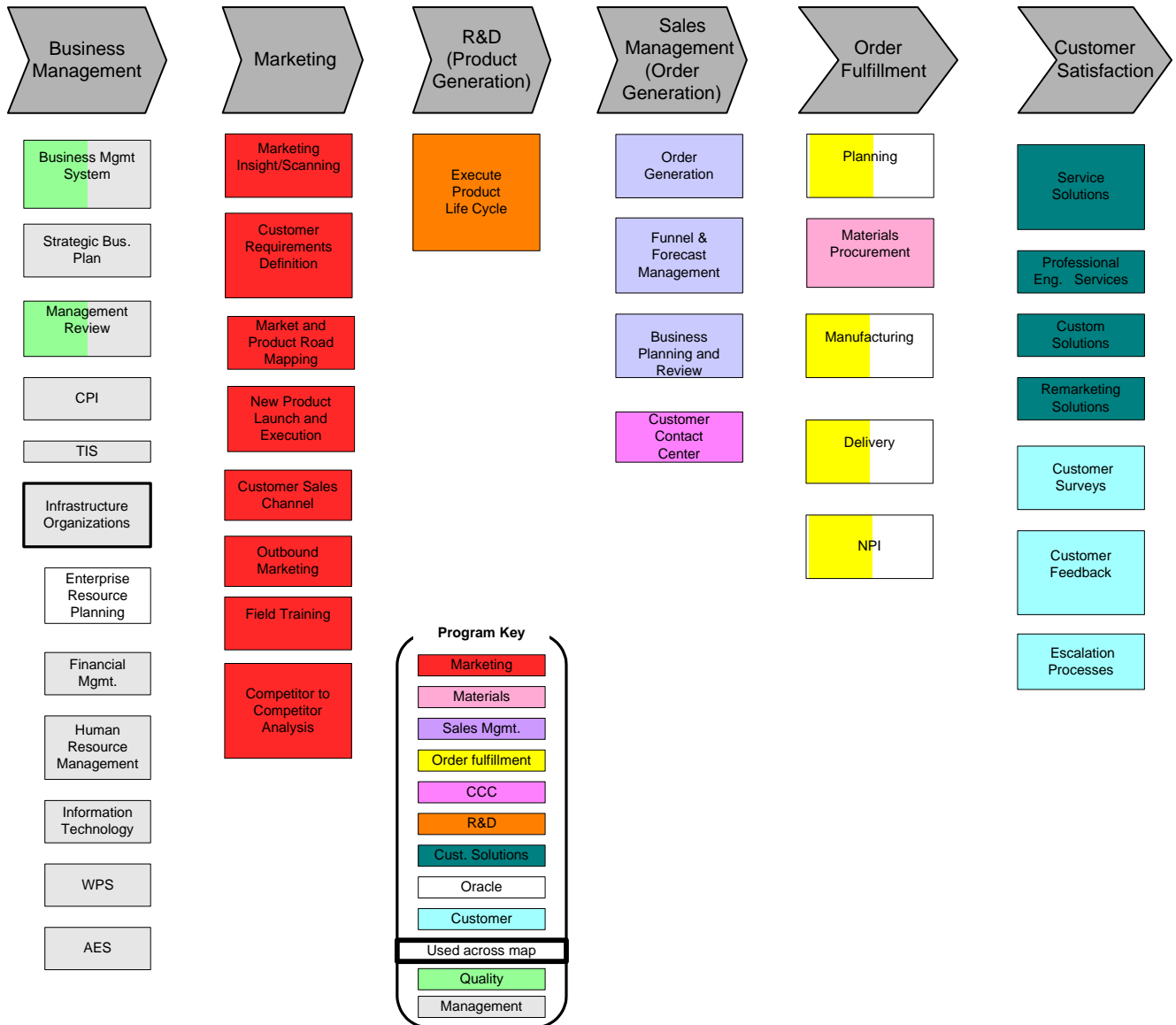
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Business Process Flow

The top Chevrons are the level-one, key processes.
The blocks below each Chevron are the level-two sub-processes.



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Business Management contains many high level functions which are required to run the organization. These functions act as a resource while providing support and direction and are critical to the success of the overall business. The company implements the business management system to ensure customer requirements are fully met through the consistent execution and maintenance of our internal operations, which directly affect Keysight's ability to produce high quality solutions, products, and services.

Core Processes and Documented Information

The quality management system is defined and shown in the Process Map. Details of specific processes the Company employees adhere to can be found in the [documentation map](#) –

- [Management Review Process](#)
- [Keysight Risk Management Process](#)
- [Corrective and Preventive Action Requirements](#)
- [Audit Program Manual](#)
- [Training Process and Requirements](#)
- [Control of Nonconforming Product / Process Requirements](#)
- [Quality Records Requirements](#)
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- Calibration Requirements
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- CIR (Customer Issue Resolution) Process - <http://emg.communications.keysight.com/quality/cir/>
- General Retention Schedule - <http://legal.keysight.com/rim/index.shtm>
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5. Leadership

5.1 Leadership and Commitment

5.1.1 General

- a) Keysight Management are ultimately accountable for meeting the ongoing business/quality objectives as defined at each Strategic Planning Review (SPR) - <http://corpdev.keysight.com/Strategy/Strategy.asp> and for ensuring the ongoing effectiveness of the Business Management System.
- b) Keysight Management will ensure that the [Quality Policy](#) and [Quality Objectives](#) are established and reviewed periodically (Executive Quality Leadership) to ensure that both are in alignment with the context and strategic direction of the organization.
- c) Keysight Management will ensure that appropriate communications are established within the organization and that communication takes place regarding the importance of an effective Business Management System (BMS) and of conforming to the associated BMS requirements. (E.g. coffee talks, Company newsletters, Town Hall, Media Clips, Quality Blue Books...etc.)
- d) Keysight Management will ensure the integration of the Business Management System requirements and applicable statutory & regulatory requirements into the organization's business processes and will ensure that the BMS achieves its intended results.
- e) Keysight Management will ensure the promotion and the use of the process approach (PDCA), risk-based thinking and, ultimately, improvement.
- f) Keysight Management will ensure the provision of the required resources and training for implementing and maintaining the BMS and continually improving its effectiveness.
- g) Keysight Management will engage, direct, and support persons to contribute to the effectiveness of the Business Management System.
- h) Keysight Management will support other relevant management roles to demonstrate their leadership as it applies to their areas of responsibility.
- i) Keysight Management will demonstrate leadership and commitment with respect to customer focus by ensuring that customer requirements are determined, understood, and consistently met.
- j) Keysight Management will also ensure that the risks and opportunities that can affect conformity of products, solutions, services and the ability to enhance customer satisfaction (KCS, OBE, CRDD, CCAFR, OTA, TAT, etc.) are determined and addressed.
- k) Keysight Management will conduct relevant management, functional, operational, and process reviews, by selecting key process, quality, and business measures, to be evaluated at least on an annual basis and maintain records and action items as per the MRP (Management Review Process).
- l) Keysight Management will ensure that Keysight products, solutions, and services meet or exceed their specifications.
- m) Keysight Management will ensure changes to the BMS (e.g. strategy, structure, etc.) are planned and maintained by communicating these changes accordingly (e.g. to the BMS Manager, Quality Mgr., etc.) through Management and the EQLT. They will also ensure that any changes are evaluated for any potential risks and shall identify appropriate contingency actions to mitigate any risks that are deemed not to be acceptable as per [Keysight's Risk Management Process](#).

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- n) Keysight Management will ensure that responsibilities and authority are defined and communicated appropriately throughout the organization. Responsibilities and authority can be defined either in a documented form or verbally depending on the risk and impact to the business.

5.1.2 Customer Focus

Keysight's management ensures that customer focus is embedded in all of the core processes within the company. From Strategic Planning, gathering and understanding customers' requirements, understanding applicable statutory and regulatory requirements, to resolving quality issues or individual customer issues, these are all paramount to the company's goals and philosophy of driving towards customer loyalty.

5.2 Policy

5.2.1 Establishing the quality policy

The Company's [Quality Policy](#) is available for review. All Company Managers and Employees support the implementation of this Quality Policy in accordance with their roles and responsibilities within the organization

5.2.2 Communicating the quality policy

The Keysight quality policy is available on the company's external and internal websites allowing access to all employees and interested parties. The quality policy is reviewed on a yearly basis and any changes are communicated as necessary.

5.3 Organizational roles, responsibilities and authorities

Keysight's President and CEO jointly own the BMS with the Customer Experience & Quality Director.

Keysight's Customer Experience & Quality (CE&Q) Director ensures the Company has a robust Business Management System (BMS) to address customer expectations, quality, statutory and regulatory requirements. The BMS Manager (Management Representative) is appointed by the Customer Experience & Quality Director and has the responsibility and authority to ensure the Business Management System is effectively established and maintained per the regulations and standards relevant to the Company.

Keysight TAG: This team is led by the BMS Manager. The team exists to share best practices/learning, improve quality, and add rigor to the BMS.

BMS Reps: assist in the implementation of the BMS and are typically dotted line/support the Business Management System Manager.

Site Management Liaisons are identified to assist the BMS representatives as appropriate.

In addition, roles are detailed in the various organization charts in section 4 of this manual.

6. Organizational Planning

6.1 Actions to address risks and opportunities

6.1.1 & 6.1.2

With the addition of clarity regarding Risk Based Thinking in ISO9001:2015 and the requirements as stated in AS9100, the expectation is that as a minimum, Keysight Management will follow this [Risk Management Process](#) or take a similar approach when planning for change or making strategic or tactical decisions related to their organizational objectives and how to achieve them.

With respect to the delivery of products, solutions, and services, it is expected that Keysight delivery organizations employ a risk based approach where any changes could result in the supply of defective products, solutions, and services. Examples include process changes; material changes; supplier changes...etc.

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6.2 Quality objectives and planning to achieve them

6.2.1

The company's quality and delivery objectives/metrics are detailed in the Quality Blue Books - <http://intuition.is.keysight.com/bluebook/Default.aspx>

The Quality Blue Books are distributed on a monthly basis and reviewed by management and the Director of Quality on an ongoing-basis.

6.2.2

If any of Keysight's quality, delivery, and/or process objectives/metrics or any new Keysight objective/metric is created, and they are deemed not to be meeting their target goal, the accountable level of Keysight management shall ensure:

- a) What needs to be done to positively impact;
- b) What resources need to be assigned to positively impact;
- c) Identification of who will be responsible to positively impact;
- d) Clear definition of when the impact will be completed;
- e) How the results of the actions taken will be evaluated;

6.3 Planning of Changes

Whenever needed changes to the Business Management System have been identified, these shall be reviewed prior to implementation to ensure that related risks have been identified and that the appropriate contingencies/mitigations have been determined if the risk has been deemed to not be acceptable. Similarly, Management shall review any contingencies/mitigations that have been implemented with the objective of evaluating the effectiveness of the actions taken.

Planning shall be executed in a manner that will consider:

- a) The purpose of the changes and their potential consequences;
- b) The integrity of the Business Management System;
- c) The availability of resources;
- d) The allocation and reallocation of responsibilities and authorities;

7. Support

7.1 Resources

7.1.1

As part of determining and providing the resources needed for the establishment, implementation, maintenance and continual improvement of business management system, Keysight management consider:

- a) The capabilities of, and constraints on, existing internal resources;
- b) What needs to be obtained from external providers.

7.1.2 People

Keysight Management determine and provide the persons necessary for the effective implementation of its quality management system and for the operation and control of our processes.

7.1.3 Infrastructure

Keysight management determines, provides and maintains the infrastructure necessary for the operation of its processes and to achieve conformity of products and services.

To maximize the company's ability to develop and deliver high quality solutions, products and services, infrastructure organizations are in place to deliver internal support services. These organizations are managed at the Keysight Executive Level. They include Work Place Solutions (WPS), Information Technology (IT), Human Resources (HR), Finance, & Legal.

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7.1.3.1 Financial Management

Finance's primary contribution is to track and report revenue and profitability which assists Keysight Management in business planning, analysis, and decision making. Finance also ensures sound business controls are in place consistent with local and regional statutory and regulatory requirements. Keysight finance publishes a monthly Keysight Business Report to report financial and operational performance details, enabling action on decisions to improve operational and financial performance. Finance Web site:

<http://finance.keysight.com/finnet/Index.htm>

Financial Services provides efficient, compliant global financial services enabling the Solutions Groups to focus on their objectives. The primary areas of responsibility include process and operations for sales accounting, collections, general accounting, financial planning and controls and country operations. Accounts Receivable and Collections process maintains short collection periods, minimizes bad debt through collection efforts, minimizes potential disputes, monitors customer pay trends, and educates customers on payment terms of the invoice.

[Keysight Contracts](#) are responsible for creating contract documents and terms and conditions, which balance Keysight requirements and customer needs and are appropriate for the specific business or industry segment.

7.1.3.2 Human Resource Management (HR)

HR's role is to be the architect of organizational capability and human potential. HR's contributions aim to increase the productivity and effectiveness of individuals and teams in order for the Company to meet and exceed business objectives. HR has three primary goals: Build a stronger deeper leadership bench; Re-enforce the Company as a best place to work; create a simpler, best in class HR function and HR services. The Company believes, by attaining these goals that HR will create a competitive advantage through people practices and a high-performance culture. Success is monitored quarterly and measured annually at the Company level via external and internal metrics and surveys focused on our three primary objectives.

7.1.3.3 Information Technology (IT)

IT ensures delivery of all information technology services to enables the Company to be a high growth, high performance Company. Business fundamentals measure the success of IT results.

Enterprise Resource Planning (ERP)

ERP systems (part of IT) integrate departments and functions across the Company into single systems that serve all those different departments and their particular needs. The Company utilizes Oracle's Enterprise Resource Planning system as the cornerstone of its business process reengineering and transformation initiative. <http://one.it.keysight.com/apps/Sharedlinks.asp>

The Company is registered to ISO14001 and there are many Health and Safety programs in place within the Company. [The Environmental Management System](#) web site has more information.

7.1.4 Environment for the operation of processes

7.1.4.1 Work Place Solutions (WPS) Plant, Equipment and Facilities Management

The Work Place Services organization ensures that the facilities used by the Businesses meet the Company's and government standards for safety, that environment regulations are met, and that the physical plant is adequate to meet the needs of the other functions in performing their responsibilities. Click the following link to go to the WPS website <http://wps.service.keysight.com/index.html>

Similarly, Keysight management and Human Resources have a responsibility to ensure that all activities are conducted in environments which are free from any social or psychological issues that could affect the conformance of delivered solutions, products, or services.

7.1.4.2 Calibration Services

In addition, locations that deliver calibration based services are required to adhere to environmental conditions as specified in Keysight's [Calibration Systems Manual](#).

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7.1.5 Monitoring and Measuring Resources

Keysight conducts various levels of monitoring and measurement at all areas of significance within the company e.g. Manufacturing Metrics, Sales Metrics, Quality Metrics, etc. All relevant resources are identified to provide appropriate levels of monitoring and measurement. All identified resources are assigned based on their training, competency, and via one-to-one discussions with their management.

7.1.5.2 Measurement Traceability

Keysight Technologies has a large number of [ISO17025 accredited laboratories](#) around the world which adhere to very strict requirements regarding traceability. The Company utilizes the [Calibration Systems Manual](#) to ensure ongoing compliance with the ISO17025 traceability requirements.

7.1.6 Organizational knowledge

Quality Education

Quality Education has the role of establishing the standard course requirements for the Quality and Six Sigma classes to ensure consistent format and delivery to employees across the businesses. The standard course requirements include:

- Clear Learning Objectives
- Available Resources
- Employee Learning Assessment
- Clear Linkage to Strategic Initiatives and Business Objectives

Quality Education has the responsibility of working with the business units to ensure each course will build awareness or skills in Quality/Six Sigma which can then be utilized by a business to achieve their business objectives.

Quality Education measures of success are based on the number of seats in the courses delivered to employees. Quality of the course, instructor where applicable, and the delivery of the course is evaluated based on the employee assessment. <http://emg.communications.keysight.com/quality/education/default.asp>

Keysight Managers are responsible for ensuring that their direct reports have the knowledge and competency to perform and execute the processes that they have responsibility for.

Education and competency records shall be maintained in Meidas or local repositories.

When addressing potential changes to process, creation of new projects, initiatives, etc., managers shall consider any potential gaps in knowledge and/or competency and plan to address these gaps in an appropriate manner.

7.2 Competence

Keysight managers, in alignment with Keysight's [Training Process and Requirements](#), determines the necessary competence of their direct reports by the use of yearly performance reviews ([Value Creation Plans](#)), goal setting, and periodic one-to-ones. Keysight performance reviews are intended to set yearly objectives, identify training or gaps that need to be addressed to meet the identified objectives.

7.3 Awareness

Keysight managers ensure that the Quality Policy, Quality objectives, Employee contributions, and implications of not conforming to the BMS, are understood as per the methods described in 7.2.

The Quality Policy and company objectives are available via inside.keysight.com

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A number of examples of how Keysight ensures Organizational Knowledge awareness are detailed below:

No	Examples	Brief description	URL
1	Insight Keysight	Company intranet to capture and distribute key information to all employees	http://inside.keysight.com/
2	Keysight Collaboration site (Jive)	Company social collaboration site where employees share information and knowledge based on common topics of interest	https://keysight-int.jiveon.com/
3	Keysight Library	Contain online resources for our employees	http://library.keysight.com/
4	myInsight	Site which capture valuable ideas from our employees	http://fast.corporate.keysight.com/frmmysightopportunity.aspx
5	Keysight Decision Summary site	Site which capture and share key decisions made by our Execs which impacts our business success with all our employees	http://inside.keysight.com/news/decsum/view.asp
6	Keysight Authors of Technical Articles	Site which capture and share knowledge from our internal technical experts. Many of these are presented at internal and external conferences	http://inside.keysight.com/news/authorpub.asp
7	MEIDAS (employee portal)	One stop portal for our employees to access key information related to their work	https://meidas.hr.is.keysight.com/java/ehr.Home
8	Keysight Strategy and Direction	Site which capture and distribute information about our company strategy and direction	http://inside.keysight.com/about/strategy.asp
9	Keysight Exec Presentations	Site which capture and distributes key Exec presentations on our businesses.	http://inside.keysight.com/about/exec.c.asp
10	Knowledge Capture and Preservation resource site	Site which contains resources for our managers in regards to knowledge capture and preservation	http://emg.communications.keysight.com/manager/toolkit/Knowledge/
11	Manager Communications site	Site which capture and distributes toolkits for our managers to help them in their communication with their respective teams	http://emg.communications.keysight.com/manager/
12	Customer and Quality (Voice of the Customer/ Customer Issue Resolution Page)	Site which captures customer issues and document what steps are taken to resolve the issues	http://emg.communications.keysight.com/quality/voc/; http://wcoswp3k.cos.is.keysight.com:8088/cirf.aspx

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7.4 Communication

Internal:

The [Newsight Newsletter](#) is published on a weekly basis to all managers and employees highlighting strategic decisions, keys successes, and other news of significance to employees and the company. [Decision Summaries](#) are published as necessary to provide all managers and employees timely updates on key strategic decisions and process changes. A number of communication related material is available via inside.keysight.com

External:

Keysight communicates externally via News Releases, Investor Relations Publications, Social Media Postings, etc. Additionally, customers, partners, suppliers, etc. are communicated with via the use of email, post, FTP Servers, telephone, etc.

7.5 Documented Information

7.5.1 General

Keysight's BMS consist of a number of core BMS documents that can be accessed via http://emg.communications.keysight.com/quality/bms/040318_docMap.asp
Keysight's constituent groups and functions have locally managed documentation which shall be managed and controlled in alignment with Keysight's BMS.

7.5.2 Creating and Updating

Keysight utilizes a number of document control system to ensure:

- a) Identification and description of documents
- b) Adequate formats
- c) Review and approval

These documents system range from ShareDoc, Enovia, and SharePoint, etc.

7.5.3 Control of Documented Information

7.5.3.1 & 7.5.3.2

As per Keysight's [Document Control Requirements](#) and [Control of Quality Records](#), all documented information is available where necessary and adequately protected within the various systems and tools.

Any significant changes to Level one or Level two BMS documentation will be communicated to relevant interested parties (management, employees, etc.) via a change notification email distributed by the BMS Team.

Customer Data Team is responsible for managing the Company's transactional customer database, which presents an accurate global view of customers and their Company structures. This team ensures that Keysight can derive legal compliance, effective risk management, and operational efficiency from the customer database through a holistic approach to customer record maintenance. The Customer Data Team holds the ownership for customer data standards for all customers that engage with the Company worldwide.

ECD Webpage – <http://cmd.keysight.com/>

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8. Operation

8.1 Planning

8.1.1

Strategic Planning

The strategic plan is developed at the Top Management level encompassing all business processes and stating the direction, leadership, and transformation required to meet Corporate Stakeholders' goals and objectives. The Company will strive to improve customer satisfaction and earn customer loyalty through personalized customer relationships, capitalize on the Company's product & solutions leadership, create customer value and intimacy through innovative systems, high-valued services and support solutions and accelerate business process transformation.

The Company has yearly strategy reviews ([Strategic Plan Reviews](#)) to ensure plans are consistent with changing market conditions and investor expectations. The Company focuses on customers, competitors, other relevant interested parties and its respective solutions portfolio. After the strategy review, the annual financial plan is developed (SCALE: short term commitment and long term estimate) using the SPR (strategic plan review) as the baseline for Revenue, Profitability, Growth and EPS (Earnings per Share). Tactical reviews are held quarterly to review financial results, NPI revenues, market share, customer satisfaction, etc..

Acquisitions:

Corporate Development (CD): Supports the ongoing assessment of the Company's Enterprise Business Portfolio to identify candidates for active abandonment or investment. CD focuses on the Company's overall prospects for top line growth and value creation. The [Corporate Development](#) site is designed to support the needs of those involved in transactions, integration, strategic planning, and new ventures within the businesses and corporate functions.

Technology Development:

- a) The [Technology Leadership Organization](#) leads the creation of strategy, makes R&D portfolio decisions, delivers breakthrough technology with clear competitive advantage, executes R&D programs, guides level architecture, and manages and improves key R&D processes.
- b) [Keysight Laboratories](#) identifies and transfers breakthrough technologies into the various R&D Centers of Excellence.

Discontinuance/Obsolescence:

The [Discontinuance Plan](#) is the key document that is used to plan and execute the discontinuance and final obsolescence of products at the end of their lifecycle. The Discontinuance Plan is split into several sections, and a cross-functional team is required to address these sections effectively.

8.1.2 Configuration Management (CM)

Keysight's process regarding configuration management consists of a number of constituent parts throughout the product/solution lifecycle (Cradle to Grave). Below is a list of the processes that ensures adequate CM.

- Product/Reference Solutions Lifecycle – See section 8.3.1
- Supplier Management – See section 8.4
- Engineering Change Management – See section 8.5.1
- Identification and Traceability – See section 8.5.2
- Preservation – See section 8.5.4
- Control of Changes – See Section 8.5.6
- Release of Products and Services – See section 8.6

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8.1.3 Product Safety

Keysight Product Safety is a fundamental requirement of all the existing installed base of hardware and all new hardware shipments. During hardware development (as per the PLC), specific mandatory requirements are in place to ensure that all applicable statutory and regulatory requirements are adhered to including product safety.

Additionally, the company has a [Product Safety Event Management](#) process for any perceived product safety events to ensure the necessary investigation and action/s.

8.2 Requirements for products and services

8.2.1 Customer communication

8.2.1.1

Customer Contact Centers (CCC's) are responsible for management of customer interactions from quotation to invoice processes while adhering to the BMS.

CCC's are a Field Operations with demarcated global presence into four major regions (i.e., Americas, Asia Pacific, Europe and Japan). In each region the **Business Centers** and **Contact Centers** make up a CCC regional unit.

The CCC organizations typically consist of four core functions:

- **First Contact (FC):** Primary contact for all customer interactions with the goal to resolve a maximum proportion of requests without further handoff.
- **Customer Relationship (CR):** Manages orders, customer escalations and issue resolution. CR is an end-to-end bridge between FC and CS.
- **Commercial Services (CS):** Focuses on non-verbal customer transaction management such as quotations, order entry and invoicing.
- **Contracts Administration (CA):** Creates and administrates customer Purchase Agreements and structuring of pre-sales contracts strategies.

Each region has typically one Business Center focusing on back-office tasks and one to more Contact Centers focusing on customer interactions.

This model is followed globally except where specifics of each region are taken into account to better suit customer requirements within that region.

Field Sales

The purpose of the sales function is to grow orders within a given cost envelope. The function applies capabilities in test and measurement to help customers improve their business results while maximizing orders. Working together across functions in the field and field/factory to create solutions specifically tailored to achieve maximum customer satisfaction. Customer Loyalty has always been and continues to be the most treasured asset. Keysight envisages being known as the Test and Measurement Company that is most committed to exceeding customer expectations, thereby earning customer long-term loyalty. Key Metrics: Orders, Expenses, Funnel, Loading, and Customer Satisfaction.

- a) Order Generation: This process is one of the core customer facing processes and includes Account Management, Opportunity Management and Deal Management utilizing web, phone and face to face (the sales process).
- b) Funnel and Forecast Management: this is the core process for the monthly management of the Order Generation Process.
- c) Business Planning Review: this process involves all activities related to strategic and tactical business planning, organizing and deploying people and other enabling resources for on-going sales operation and order generation.
- d) Field Portal – This contains information specific to field processes.

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Sales and Marketing Policies: All of the Sales and Marketing Policies have been developed in order to:

- Define Companywide principles for conducting business with our customers
- Establish overall standards of performance and control
- Provide a framework for the Business Operations to implement marketing strategy and establish operational policy.

8.2.1.2 Lifecycle Management of Orders

The Lifecycle Management of Sales and Service Orders is managed by Commercial Services and the Customer Relationship teams. Commercial Services' focus is on the efficient lifecycle management of orders. Any exceptions, specific customer requests and changes in requirements are owned by the Customer Relationship team. Job specialization within the Commercial Services team allows focused management of customer's orders:

1. *Sales Order Management* – Management of sales order lifecycle for hardware and software products, parts and services sold upfront (e.g. extended warranty, training, consulting). Key processes performed include quoting, booking, and acknowledgement of customer's orders using the ERP system, fulfilling deliveries, order changes, cancellations, product returns, corrective transactions and billing.
2. *Service Administration* – Management of service orders. Service orders are primarily related to the maintenance, system uptime support, and repair of equipment. Service Administration is comprised of two functions – Support Agreements Administration and Support Order Management.
 - Support Agreements Administration – responsible for the order lifecycle of Agreements for maintenance, system uptime support, software, and repair of equipment. Key processes performed include quoting, placing Agreement orders, managing frequency of invoicing, modifications and cancellations, and Sold Upfront Tracking into the Customer Service System
 - Support Order Management – responsible for management of the lifecycle of per-incident Trade and Non-Trade Support Orders from quote to invoice. Key processes performed include quoting, placing orders into Customer Service System, follow-up on open orders, issue resolution, invoicing and corrective transactions.

8.2.2 Determining the Requirements of Products and Services

8.2.2.1 Customer Interaction Management

Customer Interaction processes are managed by First Contact and Customer Relationship teams. First Contact's focus is on the prompt fulfillment of any customer inquiry. Any special customer requests or resolution of customer issues are managed within the Customer Relationship Team.

The *First Contact* team is responsible for all initial voice (phone) and non-voice (e-mail, fax, and web) interaction with customers and business partners. Their objective is to qualify and fulfill the requests in an expedient manner or when appropriate transfer the request within CCC or to business partners like sales, technical support or to another business organization for further resolution. Key FC responsibilities are to help customer in checking product availability or service capability, providing information on marketing promotions, checking customer entitlement for service repairs and calibration and providing order and service status. In general, FC takes ownership of customer issues to satisfy/delight customers by providing real time help and responses to a wide variety of customer requests.

The *Customer Relationship* team is responsible for managing customer interactions that require escalations. They also make outbound communications related to the management of sales, support orders and agreements, negotiate changes on orders or service delivery schedules, and initiate Service Recovery and Customer Feedback. Additionally, any specific/unique requirements (A/D, etc.) are reviewed to understand expectations and implications.

8.2.3 Review of the Requirements of Products and Services

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8.2.3.1

All requests made by or on behalf of customers, statutory and regulatory bodies, etc. related to the provision of products, solutions, or services, shall be reviewed to ensure Keysight clearly understands and has the ability, or not, to meet the requirements. This is predominantly the responsibility of the customer facing operations such as First Contact, Field Engineers, Customer Relationship, Applications Engineers, etc.

If upon review Keysight determines that some requirements cannot be met or can only partially be met, Keysight shall negotiate a mutually acceptable agreement with the customer.

8.2.3.2

Documented information related to customer interactions is stored and maintained in various systems and tools such as Siebel, Oracle, Infoline, FileNET, etc

8.2.4

If any requirements are subject to change, these changes shall be documented, reviewed, and communicated to the appropriate persons to ensure these changes are clearly understood and Keysight continues to have the ability to meet the agreement/requirements.

8.3 Design and Development of Products and Services

8.3.1

R&D Centers of Excellence have the responsibility of designing products to meet Keysight's customer requirements and the various design and quality standards.

Product Life Cycle (PLC):

The Product Lifecycle (PLC) is a phase review process for cross-organizational and cross business teams from the point where product development resource involvement begins (CON = concept) through eventual product obsolescence (CLO = closure). The PLC focuses on a series of checkpoints and milestones, along with a specific set of deliverables for each. The PLC embodies the Shewhart Cycle (Plan, Do, Check, & Act)

The guidelines established here are to define and communicate quality objectives, expectations, and responsibilities of each organizational area at each phase of product lifecycle culminating in [Quality Sign off](#) ** (click on QSO form checklist). See [SPGE Website](#)

**Note: Quality Sign-off confirms that the requirements for products regulations, environmental test, reliability and accelerated life testing, specifications/DFx /Quality Objective setting, product stewardship, the Whole Product Support Plan....etc. have been met.

Reference Solution Lifecycle (RSLC)

The Reference Solution Lifecycle (RSLC) is the phase review process of checkpoints, milestones, and deliverables for all Reference Solution development in Keysight. The RSLC sets expectations for each phase in the lifecycle, from the first assignment of resources through eventual publication on www.keysight.com. The RSLC also gives guidance on how to link with lower level Solution Component NPIs. See [SPGE Website](#)

8.3.2 & 8.3.3 Design and Development Planning & Inputs

Each Solutions Group Marketing function has the responsibility to ensure that product/solution designs are based on an understanding of markets and customer needs and to ensure that the right product reaches Keysight customers, through the relevant sales channel. Success is measured monthly through orders booked.

- a) [Marketing Insight/Scanning](#) (inbound): Monitor market dynamics and identify new opportunities, technologies, and standards. This also includes determining market size and short/long term growth rates.
- b) [Customer Requirements Definition](#) (Inbound): Identify key customer requirements and market windows in targeted market segments. Includes prioritization of these requirements from most to least important. Meet customer's unstated requirements. See [Requirements Management](#) web site.

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- c) Market and Product Roadmaps (Inbound/Division): Translate customer requirements into market based solutions roadmaps and then into the associated product, software, and service roadmaps. The objective of these roadmaps is to define solutions and services that meet customer requirements, at the right time, and which are truly differentiated from any market competitors.
- d) New Product/Solutions Launch and Execution: Establish new solutions positioning; launch strategy, objectives and tactics (pricing, product structure and configuration rules). Set launch criteria. Execute launch as per plan (on time and within budget).
- e) Customer and Sales Channel Support: Provide phone and electronic support to customers and sales and service teams. Support content includes technical product/solutions and applications insight, handling competitive situations or customer satisfaction issues and post-sales support of customer's product/solutions.
- f) Outbound Marketing: Identify hot customer applications and problems. Set strategy, objectives and tactics that proactively generate awareness, leads, and move customers through the sales funnel. Methods include Public Relations, Advertising, Application notes, technical web and face-to-face seminars, catalogs, tradeshow, customer visits, special promotions, e-mail notification, etc.
- g) Field Training: Identify and deliver training to the direct and indirect sales/support teams on products, solutions, applications, competitive and service information.
- h) Competitor to Competitor Analysis: High level analysis of key competitors' strategies and detailed analysis of their products, solutions, and services (as they compare to Keysight).
- i) Obsolescence related to materials, processes, suppliers, etc.: Each NPI/development team reviews the status of existing materials' data specific to new designs and any relevant processes, suppliers, etc. to identify any associated risks and mitigate these by designing out or taking other mitigating actions.

8.3.4 Design and Development Controls

These requirements are achieved via the implementation of the Product Lifecycle and Reference Solution Lifecycle as stated in 8.3.1.

8.3.5 Design and Development Outputs

These requirements are achieved via the implementation of the Product Lifecycle and Reference Solution Lifecycle as stated in 8.3.1.

With regards to Critical Items as stated in AS9100, Keysight shall specify, as applicable, any critical items, including any key characteristics, and identify specific actions to be taken for these items.

8.3.6 Design and Development Changes

These requirements are achieved via the implementation of the Product Lifecycle and Reference Solution Lifecycle as stated in 8.3.1.

8.4 Controls of Externally Provided Processes, Products, and Services

8.4.1 General Outsourcing Requirements

8.4.1.1

Outsourcing includes: 1) the decision to purchase a product, solution, or service rather than make it internally; 2) the subsequent selection of a qualified supplier; and, 3) the management of the on-going relationship with the supplier. The materials purchasing process description in Section 8.2 applies after the decision, often called the "make versus buy" decision.

The Vice President/General Manager of each Solutions Group is ultimately responsible for the decision to outsource any product, solution, or service in their business that significantly affects conformity with customer, stakeholder, and statutory/regulatory requirements. Once the decision to outsource is made, responsibility for control falls on the immediate management of the operation responsible for the product, and the supply-chain management professionals that assist them. The degree of control for outsourcing depends on the significance of the outsourced activity on product/solution conformity and whether the outsourcing is related to a new or existing product/solution. Suitable risk identification and mitigation needs to be incorporated in this process.

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The [Product Lifecycle](#) (PLC) and the [Reference Solutions Lifecycle](#) (RSLC) processes establish the recommended management checkpoints and basic considerations for the control of product/solutions lifecycle transitions, including outsourcing for new product/solution introductions and manufacturing, if the new product/solution is taken to market.

In some cases, strategic suppliers are shared across local operations or across product lines. In these cases, one entity may be tasked with managing all or part of the outsourcing on behalf of the others. The Strategic Supplier Management team is an example. This group manages the overall business relationship with top-level strategic contract manufacturing and component suppliers.

Materials Purchasing

Materials purchasing management is a constituent part of Order Fulfillment. Solutions Group and COE Management align with Keysight's Supplier Management Team to ensure that the following processes are followed.

Four generic processes are used to manage supplier quality:

1. Requirements Specification
2. Supplier Selection
3. On-Going Conformance Assurance
4. Performance Evaluation

Requirements Specification

New Product/Solutions Introduction (NPI) purchasing operations specify the item/s to be purchased in accordance with the needs of the operation and the needs of Keysight customers. Customer requirements flow into the purchasing process through the requirement specifications and into the manufacturing entity sourcing the material. Purchasing staff funnel the requirements to be tendered to the supplier and reviews these with the relevant NPI Team/s, in order to ensure accuracy and then communicate the requirements to the supplier.

Quality requirements specifications consist of:

- Standard purchase-order and purchase-agreement information that references Company-wide quality requirements, including reference to Keysight's Supplier Quality System Requirements document [5951-1665-1](#).
- Business-specific standard terms and conditions, if any are developed at the Solutions Group level; and,
- Specifications dictating the product form, fit, function, etc. and any other specific requirements for approval of the product, procedures, processes, and equipment.

Current document retention standards only require controlled retention of quotations, contracts/agreements, confidential non-disclosure agreements, and licensing agreements accepted from/with suppliers. Where records are retained, it is by the buyer/manager of the supplier and/or their extended team of internal customers using the supplier.

Supplier Selection

Suppliers are selected by personnel from the operation where the purchased product will be used, usually in partnership with materials procurement personnel. Suppliers are asked for information relative to desired requirements. The type and extent of qualification depends on how critical the product and supplier is to the continuity of order fulfillment, and the form, fit, and function of the end product. Where qualification is required, it usually consists of ordering, inspecting, testing and validating prototypes or samples. The entity that establishes the relationship with a new supplier, and/or for a new item to be purchased, is responsible for maintaining the records from the selection and/or qualification process, including the criteria and management approval in accordance with the entity's sourcing requirements.

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Suppliers are intended to be carefully monitored and controlled within Keysight to ensure Assurance of Supply, Quality and Delivery, and avoid the contamination of the supply chain due to aftermarket components, or indeed, counterfeit components. Therefore, Global Sourcing have various Supplier Addition Process and requirements in place to ensure the above. <http://ops.infrastructure.keysight.com/GS/>

Performance Evaluation

Supplier performance is managed in real time through the escalation of any observed issues concerning the delivery, form, fit, and function of the item. In some cases, issues are tracked online, such as on-line part failure history tracking and engineering alerts. Materials procurement personnel typically act as the focal point for supplier quality issues. In addition, there is a guideline for evaluating how well strategic suppliers (critical to business) have met requirements. The technology quality, responsiveness, delivery, cost, and environment are called TQRDCE. Suppliers are subject to periodic performance evaluation and records from such evaluations are maintained.

Keysight utilizes a supplier performance measurement survey tool that allows users to enter input and access results. Examples of key metrics: Material cost reduction as a percent of spend, inventory levels in days of supply on hand, on-time delivery in days early or late, and defect rates in parts per million, percentage of parts delivered over time, or number of dead-on-arrival (DOA) products.

8.4.2 On-Going Conformance Assurance

The process for ensuring that the purchased product meets the specified purchase requirements is implemented locally within the framework of the applicable Company processes and practices. In general, incoming material shipments are checked to see if any special handling or inspection is required, otherwise it is assumed fit for use and delivered to the user or storage area.

Material requiring inspection is flagged in the Material & Order Management System. Material not requiring inspection is delivered to its storage location, which is normally at the point of use.

FGI (finished goods inventory) handling procedures may vary from site to site.

If verification is performed at the supplier's location, the purchase order or agreement will state the arrangements and method of release.

The usual method is to request suppliers to provide outbound quality control testing reports.

For any special processes conducted at the supplier, the same requirements stated above are applicable but may have additional verification requirements.

Materials procurement personnel usually manage the resolution process if a supplier fails to meet any stated requirements. Any identified supplier related quality issues shall result in a [Supplier Corrective Action Request \(SCAR\)](#). The SCAR is a process that indicates that a supplier related quality issue exists and that a formal review, acceptance, and resolution is required.

For internal Keysight locations which supply components, products, software, etc. to AS9100 certified locations, no AS9100 mandated verification is required. However, local defined practices may require this.

8.4.3 Information for External Providers

Keysight's Supplier [Terms and Conditions](#), as outlined in each country specific purchase order agreement, details the various supplier requirements including access to supplier information; cost, quality, and delivery requirements, and legal compliance requirements.

Keysight also utilizes a Supplier Portal in alignment with the [Enovia](#) System which provides Product Design Lifecycle management capabilities for Keysight's supply chain. All hardware related BOMs, drawings, schematics, layouts, assembly instructions, etc. are revision coded to ensure adequate control and change management with the release of Gerber data packets to suppliers. The data packets provided also indicate what level of verification and validation (test methods and acceptance criteria) is required before release to Keysight.

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8.5 Production and Service Provision

8.5.1 Control of Production and Service Provision

Demand-Planning (forecasting)

Demand Planning uses statistical forecasting tools and/or sales forecasting to create a plan for future customer orders. Forecast accuracy is measured and utilized to improve the demand plan and processes. Demand planning includes the process to generate product and solutions plans and schedule orders into the manufacturing system.

Supply Chain Planning and Scheduling

Supply Chain planning creates a supply plan that considers supply chain constraints (i.e., inventory, lead times, etc.), forecasted customer requirements, and actual orders, to create and execute shipment plans. Customer orders are promised against the supply chain plan and against customer/service delivery schedules.

Manufacturing

OF manufactures or manages the manufacture of the vast majority of products/solutions and has the responsibility to ensure that products/solutions are manufactured/configured to the Company's manufacturing and quality standards and supplied to the customer in a timely and cost-effective manner. OF also provides replacement assemblies to Service Centers & customers and also performs factory calibration of customer instruments when required. Example of key metrics: Quality (CCAFR), Delivery (CCRD) and Cost (Gross Margin).

Production

- a) The Material Handlers assigned to the various Production Lines will pull the necessary materials from stock as part of their daily duties.
- b) Assembly & Test: Assemble instrument according to production schedule. Perform functional test. Non-conforming material is identified as per procedure [#E103 Keysight Control of Nonconforming Outputs](#).
- c) System Integration (where appropriate to business): Assemble system according to customer order and perform system tests.
- d) Calibrate: The process of calibration is defined in related documents:
[Keysight Calibration Policy](#);
[Keysight Calibration System Manual](#)
- e) The Company uses Design & Manufacturing Processes to determine workmanship criteria. See the website for the list of Keysight's Design and Manufacturing documents:
[Design and Manufacturing Document List](#), [Design Standards Users Group](#)
- f) ESD (Electro Static Discharge) control is a quality requirement. The ESD Control Manual contains the minimum control requirements that must be followed. Compliance is required at all sites where ESD-sensitive electronic devices are manufactured, assembled, tested, serviced, configured, installed, handled, packaged, stored or supplied by OEMs. Each entity/business has appropriate local controls to ensure ESD Control requirements are met, via the [ESD Control Manual](#).
- g) Handling and storage of product will be determined by the local area, but will include identification, packaging, and proper protection of product.
- h) Hardware Test Centers exist to provide environmental testing, failure analysis services, and regulatory compliance expertise that enable our partners in R&D, Manufacturing, and Marketing to design and deliver products which meet our trade customers' quality requirements. This function may reside in OF or a Solutions Group.

Delivery

Delivery is an important part of the overall BMS and assures the product/solution is configured, packaged and shipped appropriately and meets specific quality/delivery standards and customer expectations. Customer requested delivery date (CRDD) is a measure to drive improvement in delivery performance as viewed by the customer.

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Shipping

Pack: Pack instrument and accessories according to customer order/requirements. (Pick to Order)

Shipping Logistics: Plan and manage worldwide shipping logistics to meet customer requirements.

New Product Introduction (NPI)/Engineering Support

The OF strategy is to have one centralized manufacturing center with a number of smaller regional NPI OF sites. These NPI sites provide New Product Development and Introduction support for the centralized OF. In most cases these are centralized under a specific function of Order Fulfillment.

Primary Roles: NPI OF organizations provides the critical, dynamic, new product development and introduction linkages between the product/solutions development labs and centralized manufacturing. This is a collaborative role that includes influencing product/solution design and supply chain design decisions to optimize business results and meet current and future product development requirements. Specific activities may include validating design performance, providing rapid prototyping, characterization and qualification testing, and ensuring smooth new product introductions and production ramp up execution.

NPI OF organizations also provide a business management/leadership linkage between R&D Centers of Excellence, Marketing, and Product Planning and it is typically co-located with the R&D Centers of Excellence. This business linkage ensures R&D Centers of Excellence activities link successfully with Order Fulfillment Manufacturing.

- a) NPI's & Transfers
Manage the introduction of new products/solutions into the manufacturing environment.
Coordinate with R&D Centers of Excellence and Order Fulfillment.
- b) Engineering/Production Support
Provide support for Test Systems (including Test S/W and Measurement Traceability), Production Processes and Technical Investigations.
- c) Customer Feedback – CA/PA
Investigate design and manufacturing issues and implement corrective and preventative actions for products/solutions in the production phase.

Services Solutions Group (SSG) - Services

The SSG mission is to build customer value and intimacy through various support services and solutions. These either extend the usefulness and product life of hardware products or are unique services such as asset management, consulting and training, and Remarketed Products, that all provide a whole service based solution to the customer

The SSG Org Chart is available at the following link and states each of the functions/operations - [Services Solutions Group](#)

Repair:

Repair is composed of a number of related processes that return a hardware product back to useful service. The overall repair process includes sub-processes such as cleaning and safety testing and information services such as Service Notes. <http://servicenotes.literature.keysight.com/litapp/>

An overall ISD map is available at: http://grande.cos.is.keysight.com/Keysight_WCSS_Quality/default.asp

Examples of key metrics: Turn-around Time (TAT), Ship on time (SOT).

The Measurement Solutions Division provides on-site support (repair and calibration and delivery such as site preparation and installation) and remote phone technical support to customer.

Calibration:

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Calibration is the set of operations that establishes, under specified conditions, the relationship between values indicated by a measuring instrument or measuring system and the corresponding standard or known values derived from the standard. The benefit to the customer is to assure that an instrument is operating within the measurement specification design parameters. Examples of key metrics: TAT and SOT.

The process of calibration is defined in related documents:

[Calibration System Manual](#) (includes control of subcontracted calibration section 4.5, supplier selection.

[Audit Program Manual](#)

[Metrology Policy Manual](#)

Service Logistics & Supply Chain

The [SLSC](#) function works to provide business & trade customers with support parts to repair customer's equipment in a cost effective timely manner with minimum asset levels. SPO worldwide operations include the functions of 1) Request Management, 2) Planning, 3) Procurement, and 4) Logistics. MSD manages its own service parts operation and leverages the Global Service Parts Operation processes.

Business Planning

MSD business planning provides leadership for Business Development, Marketing and R&D for on-site/mobile calibration and therefore meeting customer needs and the development of new products and services.

Application Engineering Organization (AEO)

Keysight offers a flexible range of engineering, training and technical support services specifically designed to help customers optimize the use of their test and measurement solution. The Company can help them get started with their new solution, provide out-of-warranty agreements for technical phone support, provide continued custom assistance with the optimization of their existing instruments, provide training based on their specialized requirements, and more. We help customers achieve their application and measurement goals.

These services can be provided in a variety of ways: face-to-face at the site, remote (via phone and web collaboration), or through self-guided tutorials.

Professional Services & Support

In some cases, Keysight provide tailored service and support which may include specific professional services, such as project management, deployment & commissioning, acceptance testing and high availability reactive and proactive support.

Remarketing Solutions Division (RSD)

RSD is a division that provides solutions specific to remanufacturing of Demo equipment, Trade-In and Sourced Products, and manages the Trade-In/Trade-Up Program for the Company. Organizationally, RSD is divided into functional areas: Business Development / Sourcing, Marketing, Supply Chain, Channel Partners, TQM and Demo. RSD financial and operational metrics are reviewed on a monthly basis by the management team.

RSD uses a 120 Day Calibration policy (Products can be shipped with Calibration Certificates at 120 days or less.

- **Remanufacturing** is an operation that refurbishes customer preowned, demo and factory used products. Remanufacturing has three channels to sell inventory: Direct sales, Alternate Channel and scrap mitigation.

- **Trade in** is a program that allows customers to leverage a currently owned product for credit towards a new unit or service. RSD acts as a facilitator between the sales force and the original manufacturing entity. The preowned unit traded in by the customer is disposed of through RSD's Remanufacturing operations. Trade up web site: <http://rsd.keysight.com/in/>

- **Demo** is an organization within RSD that supports sales of products by providing demonstration units to Sales Representatives (FE, AE, SE) and Distributors.

Note: For any processes identified as Special:

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- 1) Internal Special Process: Keysight shall ensure these are fit for purpose either by monitoring or measurement or be validation at the next point of use.
- 2) Supplier Special Process: Keysight shall ensure that suppliers that manage these process understand the specification and requirements and shall also ensure these are fit for purpose either by monitoring or measurement or be validation at the next point of use.

8.5.2 Identification and traceability

Keysight ensures identification and traceability for all products and constituent parts and components throughout manufacturing and delivery of services. This is predominately done via the application of serial numbers of similar numbering systems which are stored and managed in planning systems, production systems, servicing systems, material tracking systems etc.

8.5.3 Property belonging to customers or external providers

Keysight exercises care with customer property while it is under the organization's control or being used. ISD follows their Global process for [Control of Customer Property](#). Each area will use local processes to record and track the status of customer property in the rare instance when the Company receives customer products or property. If customer property is lost, damaged or otherwise found to be unsuitable for use, this is reported to the customer and records are maintained locally. (Examples of customer property: government contracts, special handling specification, product or test equipment).

8.5.4 Preservation

Keysight ensures the preservation of outputs during production and services provision via the use of inspections, verification, validation, material handling and safety procedures, control of environments, storage controls and suitable packaging.

8.5.5 Post-delivery activities

Keysight ensures compliance with post-delivery activities by providing customer support and services either on a per-incident basis or on a support and/or service contract basis. As part of the Product and Reference Solutions Lifecycles, support plans are developed and approved to ensure supportability is provided for all products, solutions, and services. Statutory and Regulatory requirements are stipulated in the Product and Reference Solutions Lifecycle to ensure compliance to all relevant country, regional, and global requirements such as WEEE, ROHS, REACH, etc.

8.5.6 Control of Changes

Keysight ensures control of changes via the use of Engineering Change Requests (ECR) and Engineering Change Orders (ECO). These processes are a constituent part of the overall management of data including BOM structures, mechanical drawings and electrical schematics, and materials. All data is stored in the company Enterprise systems such as Oracle and Enovia.

8.6 Release of Products and Services

Keysight products can only be released once the SHP (shipment checkpoint) of the PLC/RSLC or similar has been approved and that the Keysight Quality Signoff has been signed and approved by the relevant Solutions Group Management. See QSO Approvers - http://sharedoc.collaboration.is.keysight.com/sites/EMG-Wide/SD/EMG-QSO/QSO_Documentation/EMG_QSO_Signatories_epsq1038987.pdf

8.7 Control of Nonconforming Outputs

Keysight utilizes a number of mechanisms to verify and validate the outputs of the multiple processes currently utilized. Such as Outgoing Inspections, Incoming Inspections, Out of the box customer experience checks, Software verification and validation, along with many others. Keysight also uses [the Control of Nonconforming Product](#) process to identify, isolate, and manage such outputs.

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If any production or service provision outputs are identified as non-compliant, process managers and employees are responsible to ensure immediate action/s are taken to prevent unintended usage or shipment. These actions include shipment stops.

For instances of nonconforming outputs that could impact shipments or impact the next process flow, Keysight retains documentation that describes the nonconformity; describes the actions taken; describes any concessions obtained; and identifies the authority deciding the action in respect to the nonconformity.

9. Performance Evaluation

9.1 Monitoring, Measurement, Analysis, and Evaluation

9.1.1

Keysight has number of mechanisms in place to monitor and measure aspects such as projects, financials, products, solutions, customer satisfaction, quality metrics, production, etc. These various mechanisms are reviewed periodically based on significance and risk to ensure ongoing compliance to both strategic and process goals and objectives.

9.1.2 Customer Satisfaction

Customer Satisfaction is meeting Keysight's Customers' quality, delivery, pricing and features based requirements. Quality is more than hardware/software reliability. It is all about the customer's total experience in interacting with Keysight products/solutions, people, partners, and agents. It is the sum of these interactions over time that determines customer loyalty.

Management of customer Complaints

Improvements to product and production processes may be initiated in response to information gained from customer feedback.

- a. The OBE (Out-of-Box Experience) system provides information that is analyzed for patterns and trends in order to prioritize areas for further investigation. Changes to product or process may be implemented within Order Fulfillment along with involvement from other areas of the business as required.
- b. Customer requested delivery date (CRDD) is measured for all shipments. The results are monitored and reported in the monthly [Quality Blue Book](#).
- c. On Time Arrival (OTA): measures the delivery performance for all products. The results are monitored in the monthly [Quality Blue Book](#).

Customer Surveys

Surveys of Customers is based on the most recent interaction with regional "Touch Points" (i.e., Business Center, Contact Center, Sales, Service & Support, and Web). The Company has a web based survey where the Customer can either provide a rating score, select from multiple choices or enter a comment (verbatim). See the [Customer and Quality](#) page.

Keysight Customer Satisfaction (KCS) program: Keysight Customer Satisfaction is a customer satisfaction measurement and improvement program consistent across Keysight business, regions and touch points. KCS implements an actionable metrics model to track and improve Keysight Customer Satisfaction (KCS) performance. This includes setting a Company-wide metric for customer satisfaction, setting visible goals to continually improve customer satisfaction, and monitoring and rewarding improvement.

Keysight : <http://emg.communications.keysight.com/quality/kcs/default.asp>

Customer Feedback

The Customer Feedback System provides customer satisfaction and future opportunity information regarding product, service, and support offerings. A variety of processes and tools (Customer Feedback System, Customer visit reports, surveys, etc.) are used to meet the diverse needs of the organizations within the Company.

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Each organization is required to:

- Document customer feedback received (solicited and unsolicited)
- Take appropriate follow-up action on feedback
 - Redirect operational issues requiring immediate response to the appropriate business process.
 - Direct all other feedback to the responsible action/process owner for review, follow-up and disposition.
- Include feedback in their processes to identify systemic customer satisfaction issues and new product, service, and support opportunities.
- Include Customer Feedback as an input for the local management review.

Feedback may be submitted using one of the following methods:

- [Customer Issue Resolution Process \(CIR\)](#)
- By E-mail: CIR_Feedback@Keysight.com
- By Voicemail -- (719) 590-3855, Telnet 590-3855 (Americas), Telnet 268-2275 (India)

Quality Blue Book

The [Quality Blue Book](#) provides data specific to quality performance from our customers' perspective where feasible. It is designed to measure areas which affect customers' perception regarding quality. Multiple levels of management review the Quality Blue Book quarterly to understand overall quality trends to make improvements as appropriate.

Out of Box experience (OBE)

OBE is specific to when a customer opens their shipment/s, configures the solution, and begins using. Customers expect products/solutions to conform to quality expectations including turn-on, boot-up, function as expected and intended Customer reliability expectations: 1) Out of box experience, where Keysight's reputation can be questioned, 2) Early lifetime, where the specific product's quality is in doubt, 3) Warranty period, where reliability perceptions are developed, and 4) Post-warranty period, where service delivery is measured.

Escalations and Customer Issue Resolution

[CIR \(Customer Issue Resolution\)](#)

Worldwide Customer Issue Resolution (CIR) process focuses on resolving cross-organizational customer issues. Timely and effective customer issue resolution is an important aspect in building customer satisfaction and in sustaining Keysight's position as the premier measurement Company.

CIRF is a web or Outlook based form that is available to all employees. CIRF provides an easy way to: Report a customer problem, provide customer feedback/compliment, request an escalation, request a 2nd Level Escalation and ask for assistance when you don't know where to go for help.

Key elements of CIR: Common Process across the Company.

- Single Entry Point: CIRF ([Customer Issue Reporting Form](#)) will be the primary input tool for front-line employees.
- One Platform: Siebel will be the sole content management system.
- Single Point of Contact: Each organization has one single point of contact (a specific person, not an email node).
- Containment Plan Required for Escalations: In addition to initial response time to the issue submitter, a containment plan is now required.
- 95% of All Escalations Contained Within 7 Working Days or Less.

The Presidents line: Respond to customers that make complaints to Keysight's CEO or a member of their staff when previous channels used to attempt to resolve the issue have been either unsatisfactory or unknown to the customer. The Presidents line gives appropriate, timely responses and follow-up to customer issues and all are treated in a manner that is respectful and consistent with Keysight corporate objectives. This information

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provides visibility to problems so Keysight Technologies can drive process improvement. Unless a specific resolution plan and milestones negotiated with the customer are in place, it is expected that the issues will be resolved within 10 working days.

Delivery Escalation Process: The purpose of this process is to avoid customer satisfaction issues and to ensure the order is delivered as per the correct process. This process will help manage, prioritize order delivery activities.

Internal escalations: are defined at the entity/business level.

9.1.3 Analysis and Evaluation

Keysight performs numerous levels of analysis and evaluation across and down the company to ensure:

- Conformity of products and services (OBE, CCAFR, SOT, TAT, OTA, CRDD...)
- The degree of customer satisfaction (KCS)
- The performance and effectiveness of the quality management system (Internal Audits, Business/Strategic Goals and Objectives, Management Review...)
- If planning has been implemented effectively (Strategic Planning Review, Lifecycle Processes, Internal Audits, Management Reviews...)
- The effectiveness of actions taken to address risks and opportunities (Strategic Planning and Management Reviews)
- The performance of external providers (TQRDCE, Supplier Management Reviews...)
- The need for improvements to the quality management system (Strategic Planning and Management Reviews)

9.2 Internal Audit

9.2.1

Keysight conducts audits at planned intervals based on sites, risk, and feedback from employees to drive improvement in the effectiveness and efficiency of the company's processes and practice. This is done in alignment with Keysight's [Audit Program Manual](#).

9.2.2

Keysight maintains an internal audit schedule identifying the sites to be audit on a yearly basis and in alignment with the Audit Program Manual.

Each audit is scoped according to 9.2.1 and auditors are assigned from a group of internal auditors and their availability,

Each audit ends with a closing meeting where the findings are shared with local management and the final report is shared with all participants and relevant management that may not have been directly involved in the audit.

All nonconformity findings are logged in the corporate Nonconformity Corrective Action Database (NCCAdb) and tracked for action and closure.

Similarly, all audit records/reports are stored in Sharedoc and linked to the internal audit schedule.

9.3 Management Review

Keysight Management, Solutions Group Management, and Functional Management review select key quality and business measures to be evaluated on at least an annual basis and conduct a comprehensive quality review annually. The General Managers/Vice Presidents have the ultimate responsibility for ensuring regular reviews are conducted for their organization/function. As a result of such reviews, changes may be made to any aspect of the quality management system including the quality policy and/or objectives to improve suitability, adequacy or effectiveness. [Management Review Process](#)

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10. Improvement

10.1 General

Process Improvement is based on Management by Objectives. The Customer Experience and Quality Director and the Executive Quality Leadership Team establish business-wide quality improvement objectives that align with the Company's Quality Policy. Objectives are assigned to owners who are accountable to the Leadership Team for successful accomplishment of the objectives. These objectives are communicated to all levels of the organization. At each level, plans are developed in support of the business-wide objectives as appropriate, depending on the relevance of the objective. Periodically, and during reviews, progress is reviewed and evaluated by the EQLT and course corrections, if necessary, are initiated. Other process improvement objectives may be established at Company sites or organizations and will be managed and monitored by the site/organization management. These objectives will be based on local needs, criticality, and resource capacity.

- a) The Company monitors and measures processes during internal audits, reviews and continually strives to improve the processes.
- b) Data analysis is performed throughout the business. (E.g. KCS, Quality Blue Book, TQRDCE, CCAFR, OBE, CIR, etc).
- c) Six-Sigma/Lean has been adopted by the Company worldwide as a data driven tool for improving the quality of products and processes and improving overall business results. The Six Sigma/Lean program provides a highly structured set of tools and methodologies that are applied to a variety of business processes as appropriate to achieve breakthrough results. Organizations can apply Six Sigma/Lean to product design and development, manufacturing, sales, services, and support functions to reduce process complexity, variation, and cost, resulting in increased customer satisfaction and the elimination of defects. Learn more about [Six Sigma](#) and [Lean](#) within Keysight.

10.2 Nonconformity and corrective action

Whenever a nonconformity is identified, Keysight processes ([CAPA](#)) require action to be taken to control, correct, and to deal with the consequences (Product Quality Event, Product Safety Event, etc.) as per the audit program manual, control of nonconforming material procedure, and applicable company processes.

The nonconformity shall be reviewed, evaluated, and where necessary, the cause shall be determined and assessments shall be made to ensure a similar nonconformity does not exist in similar processes/functions.

Any resulting actions shall be implemented and subsequently reviewed for effectiveness. Additionally, any corrective actions taken shall be proportional to the significance of the nonconformity.

If the nonconformity is found to be significant to the overall performance of the BMS, changes shall be implemented to address these effects.

All information related to any identified nonconformity shall be stored in the relevant documented systems (NCCAdb, SCAR, CAR, FAST, FIRM, etc.)

10.3 Continual Improvement

Keysight strives to continually improve the effectiveness of the Company, its processes, its business results, its customer satisfaction and employee satisfaction. It achieves this by the application of 10.1 and 10.2 as stated above.

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Abbreviations used in this manual

List	Examples
CSG	Communications Solutions Group
ISG	Industrial Solutions Group
SSG	Services Solutions Group
KCS	Keysight Customer Satisfaction (Survey)
AEO	Application Engineering Organization
BMS	Business Management System
BMSM	Business Management System Manager
CCC	Customer Contact Centers
CIRF	Customer Issue/Input Reporting Form
CPI	Continual Process Improvement
CS	Commercial Services
DFx	Design for Excellence
ECO	Engineering Change Order
ECR	Engineering Change Request
ELT	Executive Leadership Team reporting to GM
ERP	Enterprise Resource Planning: an automated planning system (Oracle)
ESD	Electro Static Discharge
GM	General Manager
HTC	Hardware Test Center
MRP	Management Review Process
MST	Manufacturing Special Test
MTLS	Materials
NPI	New Product Introduction
OBE	Out of Box Experience
OF	Order Fulfillment
OTA	On Time Arrival
OTS	On Time Shipment
CRDD	Customer Requested Delivery Date
QIC	Quality Improvement Cycle
RFI/P	Request for Information, Request for Proposal
RIP	Reliability Improvement Process
ROQ	Renaissance of Quality
RSD	Remarketing Solutions Division
SAP	South Asia Pacific
SPO	Service Parts Organization
TAT	Turnaround time
TIS	Technical Information System
VOC	Voice of the Customer
MSD	Measurement Services Division
Sharedoc	A web based tool providing a consistent document configuration management tool.
WW	World Wide
WWMat	World Wide Materials
VCP	Value Creation Plan
VP	Vice President
SOT	Ship-On-Time
SSD	Scheduled Ship Date
SCAR	Supplier Corrective Action Request

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CAR	Corrective Action Request
NCCAdb	Nonconformity Corrective Action Database

Document Control Log

RE V NO.	CHANGE SUMMARY	DOCUMENT OWNER	APPROVER	DATE APPROVED
1	Keysight BMS Manual developed from last revision (112) of the EMG BMS Manual	Kevin Fawl (BMS Team)	Ted Tucker	1-Aug-2014
2	Updated Links from Agilent to Keysight	Kevin Fawl (BMS Team)	Rick Chapman	22-Jan-2015
3	Amended 2 broken hyperlinks	Kevin Fawl (BMS Team)	Rick Chapman	09 April 2015
4	Resolved Table of Content Page Numbering Alignment	Kevin Fawl (BMS Team)	Rick Chapman	23 Sept 2015
5	Reformatted pagination	Kevin Fawl (BMS Team)	Rick Chapman	02 October 2015
6	Included risk and opportunities, CRDD, changed from OBD to OBE and organization name changed	Poh Chin Heng (BMS Team)	Rick Chapman	28 October 2015
7	Revised in alignment with ISO9001:2015 requirements specific to Risk and Opportunities and Changes to the management system.	Kevin Fawl (BMS Team)	Rick Chapman	10 November 2015
8	Corrected Typos and Errors Throughout	Kevin Fawl (BMS Team)	Rick Chapman	16 December 2015
9	Fixed Various Hyperlink Errors	Kevin Fawl (BMS Team)	Rick Chapman	17 December 2015
10	Updated to Reflect Structural Changes to Company, Strategic Goals, and alignment to ISO9001:2015	Kevin Fawl (BMS Team)	Rick Chapman	30 March 2016
11	Continued update to Reflect Structural Changes to Company, Strategic Goals, and alignment to ISO9001:2015	Kevin Fawl (BMS Team)	Rick Chapman	28 June 2016
12	Continued update to Reflect Structural Changes to Company, Strategic Goals, and alignment to ISO9001:2015	Kevin Fawl (BMS Team)	Rick Chapman	19 July 2016
13	Aligned with AS9100 and fixed typos	Kevin Fawl (BMS Team)	Rick Chapman	9 September 2016
14	Aligned with AS9100 and updated to include reference to Risk Management.	Kevin Fawl (BMS Team)	Rick Chapman	9 September 2016
15	Fixed broken links and revised wording of ISG description.	Kevin Fawl (BMS Team)	Rick Chapman	13 October 2016
16	Revised Section 4 to reference AS9100 specific Keysight Interaction Diagram and updated reference to documented information.	Kevin Fawl (BMS Team)	Rick Chapman	06 January 2017
17	Minor improvements to layout and fixing broken links. Added paragraphs related to review and acceptance of customer requirements in section 8. Added examples of Knowledge in section 7.	Kevin Fawl (BMS Team)	Rick Chapman	30 January 2017

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