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**Quality Manual**

Ivyhill Technologies LLC (IVYHILL)

9658 Baltimore Avenue, Suite 300-1

College Park, MD 20740

This manual complies with the requirements of the ISO 9001:2015 International Standard.

**9**

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# 1 Introduction

**Our Quality Management System Commitment**

As the Chief Executive Officer of Ivyhill Technologies LLC, I am committed to the Quality Management System, taking full accountability, and supporting other roles of leadership. Management uses the process approach and risk-based thinking to ensure the management system is integrated into our business processes to achieve intended results.

I am committed to provide the resources and training needed to ensure an effective Quality Management System that is necessary for our success and improvement. We provide a work environment that allows our employees to be successful in meeting our customers’ needs.

The Quality Policy is established to be the driving force behind our Quality Management System, and I will continue to ensure it remains compatible with the context and strategic direction of our organization.

Deanna Y Eaton, CEO

Ivyhill Technologies LLC

Quality Policy

Ivyhill Technologies is committed to exceeding our customers’ expectations by delivering quality service and continuously improving our quality management processes and customer service.

# 2 Management System Approach

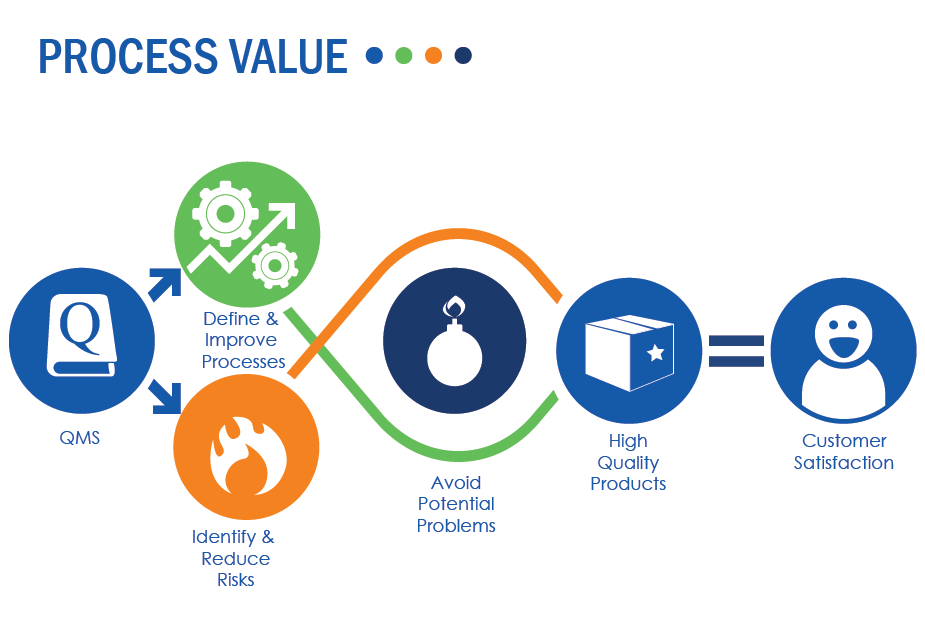
Our approach to our Quality Management System is based on the Plan, Do, Check, Act cycle (PDCA). The basis of our business beliefs is represented in **three** pillars:

## Customer Focus

Our customers are the reason we exist. We aim to meet or exceed their needs and expectations to make them successful. We try to anticipate their needs and introduce innovative, cost-effective solutions delivered in the spirit of a true partnership. Success depends on our ability to meet our customers’ needs and on fostering strong business relationships.

## Process Approach

To deliver on our commitment to total customer focus, we constantly work on our internal processes to maximize their effectiveness and efficiency. We recognize that it takes an entire team effort to deliver excellent service, and the process approach we apply brings this all together. Our business is a process that transforms several inputs (customer requirements, resources, skilled employees, etc.) into an output that meets our customer’s needs. Within our business are several key processes that make it all work. Our processes are dependent on one another and individually need continual attention and improvement. We are constantly challenging ourselves to refine and change how we do things to increase productivity, and deliver better and more timely services with the least errors. When errors do occur, we use them as opportunities to learn and improve. We are never satisfied with how things are working now and strive to raise our game every day.



## Risk-Based Thinking

Incorporating risk-based thinking into our decision making has always been intuitively part of our processes. By adapting some new process emphasis, we will find better ways to identify, capture, discuss, and plan actions to address risks (exposures and opportunities). At several points in our process, we purposely stop and ask two probing questions:

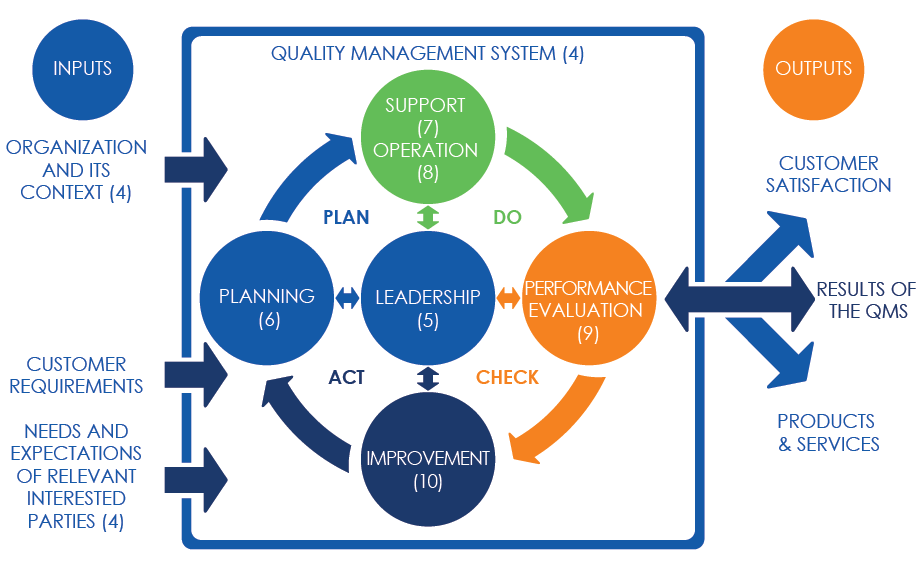
* “What could go wrong?”
* “Is there a way to prevent or improve?”

This perspective of constantly watching for risks and opportunities leads us to action, which we carefully manage to ensure timely implementation and effective results. This gives us an attitude of being proactive to take advantage of every opportunity to improve.

We intend these three basic beliefs to cause our customers to stand up and take notice of the difference we provide to them on a daily basis. Our Quality Management System described in this Quality Manual has been carefully crafted to make these three pillars a real part of what makes us work.

# 3 Quality Manual Structure

This Quality Manual is presented in a PDCA manner and describes our approach to the requirements of ISO 9001:2015. The manual is divided into four sections with all applicable sub-clauses represented in each section as below:



**NOTE**: In the sections that follow, Bold Blue Text refers to related documentation and where that additional documentation is maintained and/or records are retained.

SECTION 1: PLAN

With an ever-changing world, we are faced with new challenges on a continuing basis. The issues, changes, and trends within our industry and the broader economy present us with risks and opportunities from cultural, technological, competitive, regulatory, market, economic, and social factors. Not only can these factors affect our business, but there are also other interested parties and organizations that we deal with on a day-to-day basis; these present additional requirements that we must account for.

All of these factors may affect our business negatively (risks) or positively (opportunities). The risks may be relevant to us and have the potential to affect our business or our customers in a negative way. These aspects of our business environment may also create opportunities for us to improve our organization or take advantage of expanded current or new business ventures.

Planning other aspects of our organization is also very important. Our planning process includes people, their knowledge and training, infrastructure, environment, documented information, and communication. All planning efforts are structured, include decision-makers, and are documented when required.

Our extensive planning process puts us in the best position possible to forecast these challenges and take actions when necessary. It also establishes the needed foundations for us to provide our products and services.

# 4 Context of the Organization

### 4.1 Understanding the Organization and its Context

**Requirement**: Determine the external and internal issues that are relevant to the purpose and strategic direction and that affect the ability to achieve the intended result(s) of the Quality Management System.

**Our Approach:** Issues (4.1) stemming from trends and changes in our industry, internal lines of business, and company growth impact our business purpose and strategic direction. Those that present risks and/or opportunities are initially addressed by top management, recorded on the QMS Plan and then monitored and updated at Management Review meetings.

### 4.2 Understanding the Needs and Expectations of Interested Parties

**Requirement:** Determine the interested parties, and their requirements that are relevant to the Quality Management System.

**Our Approach:** Requirements from interested parties (4.2) that impact our ability to meet customer and applicable statutory and regulatory requirements may present risks and/or opportunities. In practical application our status reporting and management resources provide the primary inputs. These are reviewed to determine relevance and necessary actions. As appropriate, they are also recorded on the QMS Plan and then monitored through Management Review meetings.

### 4.3Determining the Scope of the Quality Management System

**Requirement:** Determine the boundaries and applicability of the Quality Management System to establish the scope, considering:

* External and internal issues
* Requirements of relevant interested parties
* Products and services

The scope is available and maintained as documented information stating the:

* Products and services covered by the Quality Management System
* Justification for any instance where a requirement of ISO 9001 cannot be applied

**Our Approach:** The contextual issues and interested party requirements are considered to determine the scope (4.3) of our Quality Management System.

In light of these external and internal issues and requirements, we have established the scope of our Quality Management System as:

Scope

This Quality Management System pertains to processes relating to all aspects at Ivyhill Technologies LLC (IVYHILL) headquarters, located at 9658 Baltimore Avenue, Suite 300-1, College Park, MD, including quality management, program management, business development, recruiting, and the design and development processes in support of our contractor lines of business.

The following requirements do not apply:

7.1.5 Monitoring and measuring resources (includes 7.1.5.1 and 7.1.5.2)

Justification: Ivyhill Technologies LLC does not use any equipment to monitor and measure conformity of products or services delivered to the customer.

### 4.4 Quality Management System and its Processes

**Requirement:** Establish, implement, maintain and continually improve the Quality Management System, including the processes needed and their interactions.

For the processes needed, determine:

* The inputs required and the outputs expected
* Their sequence and interaction
* The criteria, methods, including monitoring, measurements and related performance indicators needed to ensure their effective operation, and control
* The resources needed and their availability
* The assignment of the responsibilities and authorities
* The risks and opportunities, and plan and implement the appropriate actions to address them
* The evaluation and, if needed, the changes to processes to ensure that they achieve intended results
* Improvement

**Our Approach:** The processes (4.4) needed to achieve intended outcomes and results, and to continually improve our Quality Management System, are found in the QMS Plan; and, maintained and reviewed during Management Review meetings.

# 5 Leadership

### 5.1 Leadership and Commitment

#### 5.1.1 General

**Requirement:** Demonstrate leadership and commitment with respect to the Quality Management System by:

* Taking accountability for its effectiveness
* Establishing a quality policy and objectives that are compatible with the context and strategic direction
* Integrating the QMS requirements into business processes
* Promoting the use of the process approach and risk-based thinking
* Ensuring that the resources needed are available
* Communicating its importance and conforming to its requirements
* Achieving intended results
* Engaging, directing and supporting people to contribute to the QMS
* Promoting improvement
* Supporting other relevant management roles to demonstrate their leadership as it applies to their areas of responsibility

**Our Approach:** IVYHILL’s top management holds the ultimate responsibility for the Quality Management System. Executive management is dedicated and committed (5.1) to ensuring the Quality Management System is effective, understood, and improved.

The **ISO Executive Management Team** includes the following members (as of date version published), and, with few exceptions, meets monthly to review the Quality Management System program progress and processes:

* Deanna Y Eaton, CEO
* Joseph W Heary, CIO
* Brenda Walguanery, Director of Quality Assurance

#### 5.1.2 Customer Focus

**Requirement:** Demonstrate leadership and commitment with respect to customer focus by ensuring:

* Applicable requirements are determined, understood, and consistently met
* Risks and opportunities that can affect conformity of products and services, and enhancement of customer satisfaction, are determined and addressed
* Focus on enhancing customer satisfaction is maintained

**Our Approach:** IVYHILL’s managers demonstrate leadership and commitment through their direct participation and by ensuring all applicable requirements are met, risks and opportunities are addressed, and the focus on customer satisfaction is maintained (5.1.2) through our Quality Policy, QMS Plan, and Communication Plan.

### 5.2 Policy

**Requirement:** Establish, implement, and maintain a quality policy that:

* Is appropriate to the purpose and context and supports the strategic direction
* Provides a framework for setting quality objectives
* Includes a commitment to satisfy applicable requirements
* Includes a commitment to continual improvement of the QMS
* Is available and maintained
* Is communicated, understood and applied
* Is available to relevant interested parties

**Our Approach:** The top-level requirement that directs our entire Quality Management System is our Quality Policy**.** The quality policy (5.2)is maintained, available, communicated, and reviewed at least annually during Management Review. It is made available to interested parties upon request.

### 5.3 Organizational Roles, Responsibilities, and Authorities

**Requirement:** Ensure the responsibilities and authorities for relevant roles are assigned, communicated, and understood.

Assign Quality Management System responsibilities and authority for:

* Ensuring that it conforms to the requirements of ISO 9001:2015
* Ensuring that processes are delivering their intended outputs
* Reporting on its performance, and opportunities for improvement, to top management
* Ensuring the promotion of customer focus
* Ensuring that its integrity is maintained when changes are planned and implemented

**Our Approach:** Responsibilities and authorities (5.3) for our process owners are assigned, communicated, and understood in our QMS Plan and through management of our employees.The **Management Representative** supports IVYHILL’s Management Team and has to access other resources and assistance as needed.

# 6 Planning

### 6.1 Actions to Address Risks and Opportunities

**Requirement:** When planning for the QMS, consider the issues (4.1) and the requirements (4.2) and determine the risks and opportunities that need to be addressed to:

* Assure that the QMS can achieve its intended result(s)
* Enhance desirable effects
* Prevent, or reduce, undesired effects
* Achieve improvement

Plan:

* Actions to address these risks and opportunities
* How to:
  + Integrate and implement the actions into our processes
  + Evaluate their effectiveness

**Our Approach:** We address the risks and opportunities (6.1) identified in the QMS Plan and are reviewed in the Management Review meeting.

The actions will be integrated into our Quality Management System process and evaluated for effectiveness during reviews.

### 6.2 Quality Objectives and Planning to Achieve Them

**Requirement:** Establish objectives at relevant functions, levels and processes that:

* Are consistent with the quality policy
* Are measurable
* Take into account applicable requirements
* Are relevant to conformity of products and services and the enhancement of customer satisfaction
* Are monitored
* Are communicated
* Are updated as appropriate

Retain documented information on the quality objectives.

**Our Approach:**  We establish objectives (6.2) that are designed to alert the Management Team when exceptions occur to trigger appropriate analysis and actions to prevent future issues if necessary. The results quality objective measures and available analysis are reviewed and discussed in the Management Review meeting by referencing the Quality Objective Tracking workbook.

### 6.3 Planning of Changes

**Requirement:** Where needed, carry out changes to the Quality Management System in a planned manner considering:

* Purpose of the change and any of its potential consequences
* Integrity of the Quality Management System
* Availability of resources
* Allocation or reallocation of responsibilities and authorities

**Our Approach:** Necessary changes (6.3) are planned and carried out carefully considering the consequences, integrity of our Quality Management System, resources, and associated responsibilities. The changes are managed and recorded in theManagement Review meeting minutes as appropriate for the change.

# 7 Support

#### 7.1.1 General

**Requirement:** Determine and provide resources needed for maintenance and continual improvement of the QMS considering:

* Capabilities, constraints, and existing resources
* Needs from external providers

**Our Approach:** During our Management Reviews, our top management discusses all internally and externally provided resources needed (7.1.1) for maintenance and continual improvement of our Quality Management System and ensures they are provided.

#### 7.1.2 People

**Requirement:** Determine and provide the people necessary to effectively implement the Quality Management System and for the operation and control of processes.

**Our Approach:** During our Management Reviews, our top management determines the persons necessary (7.1.2) for the effective implementation of our Quality Management System and for the operation and control of our processes and ensures the resources are provided.

#### 7.1.3 Infrastructure

**Requirement:** Provide and maintain the infrastructure for the operation of processes and conformity of products and services.

**Our Approach:** To ensure our infrastructure resources (7.1.3) remain adequate, they are reviewed and discussed during Management Reviews.

#### 7.1.4 Environment for the Operation of Processes

**Requirement:** Provide and maintain the environment necessary for the operation of processes and to achieve conformity of products and services.

**Our Approach:** Our top management ensures our work environment (7.1.4) is sufficient to achieve conformity of our products and services as discussed during Management Reviews.

##### 7.1.5.1 Monitoring and measuring resources

**Requirement:** Provide the resources needed to ensure results when monitoring and measuring is used to verify conformity of products and services.

**Our Approach:** This is not required, nor applicable to the products and services IVYHILL provides

##### 7.1.5.2 Measurement Traceability

**Requirement:** If required or considered essential to provide confidence in the validity of themeasurement results, the measurements are traceable.

**Our Approach:** This is not required, nor applicable to the products and services IVYHILL provides

#### 7.1.6 Organizational Knowledge

**Requirement:** Determine the knowledge necessary for the operation of processes and to achieve conformity of products and services. Maintain this knowledge and, make it available to the extent necessary.

When addressing changing needs and trends, consider current knowledge and determine how to acquire or access the necessary additional knowledge and required updates.

**Our Approach:** All current knowledge (7.1.6) sources, requirements, changes, needs, and trends are determined by top management, maintained, and discussed during Management Reviews.

### 7.2 Competence

**Requirement:** Determine the necessary competence of people doing work under organizational control that affects the performance and effectiveness of the Quality Management System and:

* Ensure they are competent on the basis of education, training, or experience
* Where applicable, take actions to acquire the necessary competence, and evaluate the effectiveness of the actions taken
* Retain appropriate documented information as evidence of competence

**Our Approach:** We determine the required competencies (7.2) for our employees, whose work may impact the effectiveness and performance of our Quality Management System. We hire employees with specific knowledge, skills, and education that best fit our needs and provide training to fulfill any missing competencies.

Evidence of this process is retained in employee files and maintained by the Human Resources team led by the CEO.

As of the initial release of this document, all current employees are considered to be competent.

### 7.3Awareness

**Requirement:** Make people doing work under organizational control aware of:

* Quality policy
* Relevant quality objectives
* Their contribution(s) to the Quality Management System and the benefits of an improved system
* The implications of not conforming to the Quality Management System requirements

**Our Approach:** People doing work under our control are made aware (7.3) of our quality policy, objectives, how our Quality Management System works and the implications of not working within our Quality Management System as defined in the Communication and Awareness Plan. This plan is reviewed annually and any progress monitored during Management Reviews**.**

### 7.4 Communication

**Requirement:** Determine all elements of internal and external communications relevant to the Quality Management System.

**Our Approach:** Communication (7.4) is very important to IVYHILL’s success. Our communication methods are maintained on the Communication Plan. This plan is reviewed annually and any progress monitored through updates in Management Review meeting minutes**.**

### 7.5 Documented Information

**Requirement:** Determine the documented information necessary for an effective Quality Management System, and apply controls to ensure it is:

* Available and suitable, where and when it’s needed
* Protected from loss of confidentiality, integrity and improper use
* Properly identified
* Used in the proper format and media
* Reviewed for suitability and adequacy

Control the documented information, including necessary external documents, with regard to (as applicable):

* Distribution, access, retrieval and use
* Storage and preservation, including preservation of legibility
* Control of changes (e.g. version control)
* Retention and disposition

Protect all retained documentation used as evidence of conformity from unintended alterations.

**Our Approach:** We have determined which internal and external documented information (7.5) is necessary for the effectiveness of our Quality Management System. This documented information is created, approved, and controlled according to applicable requirements, primarily through the use of the Ivyhill Quality Management System (iQMS) implemented in SharePoint Office365.Other proprietary information may be maintained in other systems aimed at providing specific controlled access and collaborative functionality. Internal SharePoint sites and secured share drives are specific examples of this.

SECTION 2: DO

Providing our customers with products and services that meet their requirements and expectations is why we are in business. This takes planning and reviewing, as well as execution of these processes to ensure all requirements are identified and met.

In this section of the handbook, we will describe our methods for conforming to the operational planning, requirements determination and review, design and development, purchasing, product and service provision, and post-delivery activities, and what we do when something doesn’t go quite as we expected.

# 8 Operation (Contract and Service Delivery)

### 8.1 Operational Planning and Control (Planning of Proposals)

**Requirement:** Plan, implement, and control the processes needed to meet requirements for products and services and to implement the actions determined in 6.1, by:

* Determining requirements for the product and services
* Establishing criteria for the processes and for the acceptance of products and services
* Determining the resources needed to achieve conformity to product and service requirements
* Implementing control of the processes in accordance with the criteria
* Maintaining and retaining documented information to the extent necessary to have confidence that the processes have been carried out as planned and to demonstrate conformity of products and services to requirements

The output of this planning is suitable for the organization's operations.

**Our Approach:** The processes that affect our services are controlled (8.1). The details and evidence of our processes are maintained within this Quality Manual or the QMS Plan.

IVYHILL plans and develops the processes needed to respond to a customer’s Request for Proposal (RFP) and Request for Quote (RFQ) through IVYHILL’s Business Development Department (Process Plan and Audit - Business Development). In all cases, IVYHILL responds to qualified customer requests through a proposal. The VP, Business Development, is responsible for planning proposals and for maintaining associated records and other documentation. Planning for new proposals is consistent with the requirements of the other processes of the Quality Management System.

### 8.2 Customer Communication

#### 8.2.1 Customer Communication

**Requirement:** Communication with customers includes:

* Information relating to products and services
* Inquiries, contracts or order handling, including changes
* Obtaining customer feedback relating to products and services, including customer complaints
* Handling or controlling of customer property, if applicable
* Specific requirements for contingency actions, when relevant

**Our Approach:** Open and efficient communication with our customers (8.2.1) is very important for relaying information relevant to our provided services, contract information, customer complaints, changes, property, requirements, and contingency actions.

IVYHILL determines and implements effective arrangements for communicating with customers in relation to:

* Contract information
* Inquiries, contracts or order handling, including amendments
* Customer feedback, including customer complaints

Contract information is communicated via fax, mail, or email and maintained by the CFO and Contracts Administrator.

Customer feedback is recorded and managed by the CEO, Management Representative, and/or Division VPs, or reported in program and project status reports.

#### 8.2.2 Determining the Requirements for Services Related to Contract

**Requirement:** When determining the requirements for the products and services to be offered to customers, ensure:

* Requirements for the products and services are defined, including; applicable statutory and regulatory requirements, and those considered necessary
* The organization has the ability to meet the claims for the products and services offered

**Our Approach:** The organization determines:

* Requirements specified by the customer, including the requirements for service delivery and post-delivery activities
* Requirements not stated by the customer, but necessary for specified or intended use, where known
* Statutory and regulatory requirements applicable to the contract
* Any additional requirements considered necessary by the organization

The appropriate manager is responsible for determining all customer requirements, whether specified; not stated, but necessary; or statutory and regulatory. Requirements are determined by the client’s RFP/RFQ (including a Statement of Work) and IVYHILL proposal responses that may impose additional requirements needed to attain requested objectives. All of these items are typically included in the final contract award documentation.

#### 8.2.3 Review of the Requirements for Products and Services

**Requirement:** Ensure the ability to meet the requirements for products and services to be offered to customers is present. Conduct a review before committing to supply products and services to a customer, to include:

* Customer requirements, including requirements for delivery and post-delivery activities
* Requirements not stated by the customer, but necessary for the customers' specified or intended use, when known
* Requirements specified by us
* Statutory and regulatory requirements applicable to the products and services
* Contract or order requirements differing from those previously expressed

Ensure contract or order requirements differing from those previously defined are resolved.

**Our Approach:** IVYHILL reviews the requirements related to the contract. This review is conducted prior to the organization’s commitment to supply services to the customer under contract (e.g. acceptance of contracts or orders, acceptance of changes to contracts or orders) and ensures:

* Contract requirements are defined
* Contract or order requirements differing from those previously expressed are resolved
* IVYHILL has the ability to meet the defined requirements

Requirements related to the contract are reviewed during compliance reviews.

Records of the results of the review and actions arising from the review are maintained. The CFO, and Contracts Administrator are responsible for the review and for maintaining the records.

In a rare circumstance where the customer provides no documented statement of requirement, the customer requirements are confirmed by the organization before acceptance.

#### 8.2.4 Changes to Requirements for Products and Services

**Requirement:** Ensure relevant documented information is amended and relevant persons are aware of changes.

**Our Approach**: Where contract requirements are changed, the CFO and Contracts Administrator ensure that relevant documents are amended and relevant employees are made aware of the changed requirements.

### 8.3 Design and development

#### 8.3.1 General

**Requirement:** Establish, implement, and maintain a design and development process that is appropriate to ensure the subsequent provision of our products and services.

**Our Approach:** We maintain a design and development process that is appropriate to the products and services that we offer.

NOTE: Our design and development process is performed in controlled stages under our Standard Development Process. Records for the Design and development section (8.3) are maintained in accordance with the IVYHILL’s Development Process (SharePoint Artifacts).

#### 8.3.2 Design and development planning

**Requirement:** Determine the stages and controls for design and development, considering:

* Nature, duration and complexity of the activities
* Required process stages, including applicable reviews
* Required verification and validation activities
* Responsibilities and authorities involved
* Internal and external resource needs
* Need to control interfaces between individuals and parties involved
* Need for involvement of customer and user
* Requirements for subsequent provision of products and services
* Level of control expected for the processes by customers and other relevant interested parties
* Necessary documented information to confirm that design and development requirements have been met

**Our Approach:** The organization plans and controls the design and development of IT systems in support of customer contracts. The appropriate manager is responsible for controlling all stages of the design process, and for maintaining the appropriate records.

During the design and development planning, the organization determines the:

* Design and development stages
* Review, verification and validation that are appropriate to each design and development stage
* Responsibilities and authorities for design and development

IVYHILL manages the interfaces between different groups involved in design and development to ensure effective communication and clear assignment of responsibility.

Planning output is updated, as appropriate, as the design and development progresses. Planning output includes project schedules, flowcharts, meeting minutes, and/or the Project Management Plan.

#### 8.3.3 Design and Development Inputs

**Requirement:** Determine the requirements essential for the specific types of products and services being designed and developed, considering:

* Functional and performance requirements
* Information derived from previous similar activities
* Applicable statutory and regulatory requirements
* Standards or codes of practice that we have committed to implement
* Potential consequences of failure due to the nature of the products and services

Inputs are adequate for design and development purposes, complete, and unambiguous. Conflicts among inputs are resolved.

Documented information on design and development inputs is retained.

**Our Approach:** Inputs relating to product requirements are determined and records maintained. These inputs include:

* Functional and performance requirements
* Applicable statutory and regulatory requirements
* All requirements are adequate for design and development to proceed
* Use of our Standard Development Process, which includes:
  + Where applicable, information derived from previous similar designs
  + Risks and opportunities from tailoring of the process
  + Retention of design and development documentation in repository

#### 8.3.4 Design and Development Controls

**Requirement:** Apply design and development controls that ensure:

* The results to be achieved are defined
* Reviews are conducted to evaluate the ability of the results of design and development to meet requirements
* Verification activities are conducted to ensure that the outputs meet the input requirements
* Validation activities are conducted to ensure the products and services meet the requirements for the application or intended use
* Any actions are taken on problems determined during the reviews, or verification and validation activities
* Documented information of these activities is retained

**Our Approach:** We apply controls (8.3.4) to our design and development process by ensuring that at suitable stages, systematic reviews of design and development are performed in accordance with planned arrangements:

* Ensure output achieves defined results
* Review and evaluate our design and development requirements
* Verify that outputs achieve input requirements
* Validate that outputs meet requirements for application or intended use
* Resolve problems that may arise during design and development
* Retain documented information in repository

Participants in such reviews include representatives of functions concerned with the design and development stage(s) being reviewed.

Wherever practicable, we complete validation prior to delivering or implementing the product. Validation activities include testing, prototypes and customer acceptance. Practical

#### 8.3.5 Design and Development Outputs

**Requirement:** Ensure that design and development outputs:

* Meet input requirements
* Are adequate for the processes for the provision of products and services
* Include or reference monitoring and measuring requirements, as appropriate, and acceptance criteria
* Specify the characteristics of the products and services that are essential for their intended purpose and their safe and proper provision

Retain documented information resulting from the design and development outputs.

**Our Approach:** Our design and development outputs (8.3.5) are adequate, and include essential information needed to ensure all input requirements are met. The outputs of design and development are in a form suitable for verification against the design and development input and are approved prior to release.

Design and development outputs:

* Meet the input requirements for design and development
* Provide appropriate information for purchasing, production and service provision
* Contain or reference product acceptance criteria
* Specify the characteristics of the product that are essential for its safe and proper use

Design outputs include prototypes, wireframes, and/or quality/test plans.

#### 8.3.6 Design and Development Changes

**Requirement:** Review, control, and identify changes made during, or subsequent to, the design and development of the products and services, to ensure there is no adverse impact on conformity to requirements.

Retain documented information on:

* Design and development changes
* Results of reviews
* Authorization of the changes
* Actions taken to prevent adverse impacts

**Our Approach:** Any changes (8.3.6) made during the design and development stages of the products and services are controlled and identified. The changes are reviewed, verified and validated, as appropriate, and approved before implementation. The review of design and development changes includes evaluation of the effect of the changes on constituent products already installed or delivered.

### 8.4 Control of Externally Provided Processes, Products, and Services (Purchasing)

#### 8.4.1 General

**Requirement:** Ensure externally provided processes, products, and services conform to requirements.

Apply controls to externally provided processes, products and services when:

* Products and services are provided for incorporation into the organization’s products and services
* Products and services are provided directly to the customer(s) on behalf of the organization
* A process, or part of a process, is provided as a result of our decision

Establish and apply criteria for the evaluation, selection, monitoring of performance and re-evaluation of external providers based on their ability to provide processes or products and services in accordance with specified requirements.

Retain documented information of the results of the evaluations, monitoring of the performance and re-evaluations.

**Our Approach**: IVYHILL ensures purchases required to provide services to our customers conform to specified customer and/or corporate requirements. The type and extent of control applied to the supplier and the purchased product is dependent on the effect of the product on the quality of the service delivered to our customers.

IVYHILL evaluates and selects suppliers based on their ability to supply product in accordance with the organization’s requirements. Supplier criteria for selection, evaluation, and re-evaluation are established.

|  |  |  |
| --- | --- | --- |
| **Supplier Criteria** | **Selection** | **Evaluation/Re-evaluation** |
| Customer specified | X |  |
| Project completion |  | X |
| Technical specifications | X | X |
| Price and availability | X | X |
| Product quality | X | X |
| On-time delivery |  | X |

The CIO is responsible for controlling the purchasing process and for maintaining appropriate records. Approved suppliers are listed in our Accounting software. External providers are evaluated during our Management Reviews.

As of the release date of this document, all current suppliers in good standing are considered to be approved.

#### 8.4.2 Type and Extent of Control

**Requirement:** Ensure externally provided processes, products, and services do not adversely affect the ability to consistently deliver conforming products and services to customers by:

* Ensuring that externally provided processes remain within the control of the QMS
* Defining both the controls that are intended to be applied to an external provider and those intended to be applied to the resulting output
* Taking into consideration the potential impact of the externally provided processes, products and services on the ability to consistently meet customer and applicable statutory and regulatory requirements; and the effectiveness of the controls by the external provider
* Determining the verification, or other activities, necessary to ensure that the externally provided processes, products and services meet requirements

**Our Approach:** The controls (8.4.2) we apply to our external providers are decided on an individual basis. We ensure all suppliers remain in control in our Quality Management System and apply other controls as necessary by product, service, or situation.

#### 8.4.3 Information for External Providers

**Requirement:** Ensure adequate requirements prior to communicating to the external provider, and communicate the requirements for:

* The processes, products and services to be provided
* Approval or release of products and services, methods, processes or equipment
* Competence of personnel, including necessary qualification
* Their interactions with the QMS
* The control and monitoring of the external provider’s performance to be applied
* Verification or validation activities that the organization, or customers, intend to perform at the external provider’s premises

Ensure the adequacy of specified requirements prior to communicating to the external provider.

**Our Approach:** Prior to communicating with suppliers, we ensure all applicable requirements are clearly identified. These may include requirements relating to products, services, supplier processes, certifications or personnel, and any verification or validation the supplier provides at its premises. Purchasing information describes the product to be purchased, including, where appropriate:

* Requirements for approval of product, procedures, processes and equipment
* Requirements and qualification of employees
* Quality Management System requirements

Purchasing information (8.4.3) is communicated to suppliers via purchase orders, subcontracts and modifications.

### 8.5 Control of Production and Service Provision (Program Management)

#### 8.5.1 Control of service provision

**Requirement:** Implement controlled conditions, including, as applicable:

* Availability of documented information that defines the characteristics of the products and services, and the results to be achieved
* Monitoring and measurement activities at appropriate stages to verify that criteria for control of processes and process outputs, and acceptance criteria for products and services, have been met
* Use and control of suitable infrastructure and process environment
* Availability and use of suitable monitoring and measuring resources
* Competence and, where applicable, required qualification of people
* Validation, and periodic revalidation, of the ability to achieve planned results of any process for production and service provision where the resulting output cannot be verified by subsequent monitoring or measurement
* Implementation of actions to prevent human error
* Implementation of products and services release, delivery and post-delivery activities

**Our Approach:** We control all phases of our service realization (8.5.1). IVYHILL plans and carries out service delivery under controlled conditions. These controls include, as applicable:

* Availability of information that describes the characteristics of the project
* Availability of work instructions, as necessary
* Availability of qualified employees
* Availability of monitoring and measurement activities as appropriate
* Use of suitable equipment
* Implementation of project release, delivery and post-delivery activities

The CEO and Division VPs are responsible for controlling all phases of service provision and for maintaining appropriate records.

#### 8.5.2 Identification and traceability

**Requirement:** Use suitable means to identify outputs when it is necessary to ensure the conformity of products and services. Identify the status of outputs with respect to monitoring and measurement requirements throughout production and service provision. Control the unique identification of the outputs when traceability is a requirement and retain the documented information necessary to enable traceability.

**Our Approach:** Contract records are identified by means of unique project numbers established in our accounting system.

We identify project status by monitoring and measurement requirements throughout service delivery of customer contracts.

Traceability is addressed, when required, using the previously established unique project numbers and the maintained contract records.

#### 8.5.3 Property Belonging to Customers or External Providers

**Requirement:** Exercise care with property belonging to the customer or external providers while it is under organizational control or being used. Also, identify, verify, protect and safeguard the customer’s or external provider’s property provided for use or incorporation into our products and services.

Property of the customer or external provider which is lost, damaged or found to be unsuitable, is reported to the customer or external provider and documented information of what occurred is retained.

**Our Approach:** There may be times that we use property belonging to customers or external providers (8.5.3). When this occurs, IVYHILL exercises care while the property is under our control or we are using it. IVYHILL identifies, verifies, protects, and safeguards customer property provided for use or when incorporated into the product. If any customer property is lost, damaged, or otherwise found to be unsuitable for use, we report this to the customer and maintain records. Customer property can include intellectual property and personal data.

The CIO is responsible for controlling and recording customer property, as well as all communication with the customer regarding their property.

#### 8.5.4 Preservation

**Requirement:** Ensure preservation of process outputs during production and service provision, to the extent necessary to maintain conformity to requirements.

**Our Approach:** The CFO and Contracts Administrator are responsible for preserving the contract records during internal processing and delivery to the intended destination in order to maintain conformity to requirements. As applicable, this preservation includes identification, handling, packaging, storage, and protection.

#### 8.5.5 Post-Delivery Activities

**Requirement:** Meet requirements for post-delivery activities associated with products and services, considering:

* Customer requirements
* Nature, use and intended lifetime of the products and services
* Customer feedback
* Statutory and regulatory requirements
* Potential, undesired consequences associated with its products and services

**Our Approach:** Post-delivery activities (8.5.5) after contract expiration would include maintaining documentation regarding the characteristics of the project as well as any documents that are required by statutory and regulatory requirements. The CEO, SVPs, and other leaders routinely discuss and consider any lessons learned for future usage. If appropriate, these are then incorporated into the QMS Plan’s list of risks and opportunities.

#### 8.5.6 Control of Changes

**Requirement:** Review and control changes for production or service to the extent necessary to ensure conformity with specified requirements**.**

Retain documented information describing the results of the review of changes, the personnel authorizing the change, and any necessary actions arising from the review.

**Our Approach:** Any changes (8.5.6) that occur during a contractual period of performance are reviewed, verified and validated, as appropriate, and approved before implementation. The CFO and Contracts Administrator are responsible for informing the impacted parties. The review of the contract change includes an evaluation of the impact on existing agreements and deliverables, and our ability to comply.

We retain records of the results from the review of changes and any necessary actions taken.

### 8.6 Release of Products and Services

**Requirement:** Implement planned arrangements at appropriate stages to verify product/service requirements have been met.

Release of products/services to the customer does not proceed until the planned arrangements have been satisfactorily completed, unless otherwise approved by a relevant authority and, as applicable, by the customer. Retain documented information on the release of products/services includes:

* Evidence of conformity with acceptance criteria
* Traceability to the person(s) authorizing the release

**Our Approach:** Project release of services (8.6) is indicated by means of a signed contract by a member of the Corporate Executive Committee. The release of project and delivery of service to the customer does not proceed until the planned arrangements have been satisfactorily completed, unless otherwise approved by a relevant authority and, where applicable, by the customer.

IVYHILL monitors and measures the characteristics of the project to verify that contract requirements have been met. This is carried out at appropriate stages of the new contract’s process in accordance with the planned arrangements.

Methods for monitoring and measuring of projects include program reviews, staff meetings, operations meetings (project, program & division leaders included) and senior manager meetings.

Evidence of ability to perform the stated customer requirements is maintained. Records also indicate the person(s) authorizing the start of service delivery to the customer.

### 8.7 Control of Nonconforming Process Outputs, Products and Services

**Requirement:** Ensure process outputs that do not conform to requirements are identified and controlled to prevent unintended use or delivery.

Take action based on the nature of the nonconformity and its effect on the conformity of products/services. This applies also to nonconforming products/services detected after delivery of the products or during or after the provision of the service.

As applicable, deal with nonconforming outputs in one or more of the following ways:

* Correction
* Segregation, containment, return or suspension of products and services
* Informing the customer
* Obtaining authorization for acceptance under concession

Where nonconforming outputs are corrected, conformity to the requirements is verified.

Retain documented information that:

* Describes the nonconformity
* Describes the actions taken
* Describes any concessions obtained
* Identifies the authority deciding the action in respect of the nonconformity

**Our Approach:** The organization ensures service that does not conform (8.7) to contract requirements is identified and controlled to prevent its unintended use or delivery.

We take appropriate action to deal with the nonconformity. Resolutions are described on the Corrective and Preventive Action Procedure.

Where applicable, IVYHILL deals with nonconformances by one or more of the following ways:

* Taking action to correct the detected nonconformity
* Authorizing its use, release, or acceptance under concession by a relevant authority and, where applicable, by the customer
* Taking action to preclude its original intended use or application
* Taking action appropriate to the effects, or potential effects, of the nonconformity when nonconformances are detected after delivery or use has started

When nonconformances are corrected, it is subject to re-verification to demonstrate conformity to the requirements.

Records of the nature of nonconformities and any subsequent actions taken, including concessions obtained, are maintained.

SECTION 3: CHECK

We make great efforts to be data-driven decision makers. This can only be accomplished by ensuring that we maintain accurate data and that the data is properly interpreted.

We take the time to analyze data from various areas that supplies us with data on:

* Customer satisfaction
* Process effectiveness
* Product/service conformity
* Effectiveness of our QMS
* External providers
* Our planning efforts
* External providers
* Associated risks and opportunities

Our thorough “checking” process allows us to have confidence in our Quality Management System and identify improvement areas.

# 9 Performance Evaluation

### 9.1 Monitoring, Measurement, Analysis and Evaluation

#### 9.1.1 General

**Requirement:** Determine:

* What needs to be monitored and measured
* The methods for monitoring, measurement, analysis and evaluation to ensure valid results
* When the monitoring and measuring will be performed
* When the results from monitoring and measurement will be analyzed and evaluated

Evaluate the performance and effectiveness of the Quality Management System through the Management Review process and retain documented information as evidence of the results.

**Our Approach:** Our method of monitoring, measurement, analysis, and evaluation is maintained within our QMS Plan. Review of this plan is performed at every Management Review.

#### 9.1.2 Customer Satisfaction

**Requirement:** Monitor customer perceptions of the degree to which their needs and expectations have been fulfilled.

**Our Approach:** As one of the measurements of the performance of the Quality Management System, IVYHILL monitors information relating to customer perception as to whether we have met customer requirements.

Customer satisfaction is monitored in direct meetings with customers, interviews, CPARs/surveys, or email.

The methods for obtaining and using this information are determined by the CEO.

#### 9.1.3 Analysis and Evaluation

**Requirement:** Analyze and evaluate appropriate data and information arising from monitoring, measurement and other sources to evaluate:

* Conformity of products and services
* Degree of customer satisfaction
* Performance and effectiveness of the QMS
* Planning implementation
* Effectiveness of actions taken to address risks and opportunities
* Performance of external provider(s)
* Needs or opportunities for improvements to the QMS

**Our Approach:** Our sources and evaluations (9.1.3) are described within our **QMS Plan** and also retained within our Management Review meeting minutes.

### 9.2 Internal Audit

**Requirement:** Conduct internal audits at planned intervals to provide information on whether the QMS conforms to requirements, is implemented and maintained.

The organization shall:

* Plan, establish, implement, and maintain an audit program(s), including the frequency, methods, responsibilities, planning requirements, and reporting, which takes into consideration the importance of the processes concerned, changes affecting the organization, and the results of previous audits
* Define the audit criteria and scope for each audit
* Select auditors and conduct audits to ensure objectivity and impartiality of the audit process
* Ensure the results of the audits are reported to relevant management
* Take appropriate correction and corrective actions without undue delay
* Retain documented information as evidence of the implementation of the audit program and audit results

**Our Approach:** Our internal audit program is implemented, maintained, and used to ensure our QMS is maintained and effective. Our internal audit program has been planned, taking into consideration the status and importance of the processes and areas to be audited, as well as the results of previous audits. The audit criteria, scope, frequency and methods are defined in our Internal Audit Plan and Schedule. This document defines the responsibilities and requirements for planning and conducting audits, establishing records and for reporting results. The selection of auditors and their conducting of audits ensures objectivity and impartiality of the process. Auditors do not audit their own work.

We maintain records of the audits and their results. The Internal Audit Coordinator is responsible for overseeing the internal auditing system and for maintaining appropriate records.

The management representative responsible for the area being audited ensures that any necessary corrections and corrective actions are taken without undue delay to eliminate detected nonconformities and their causes. Follow-up activities include verifying the actions taken and reporting verification results.

### 9.3 Management Review

**Requirement:** Top management conducts planned reviews of the QMS to ensure its suitability, adequacy, effectiveness and alignment with the strategic direction considering:

* Status of actions from previous management reviews
* Changes in external and internal issues that are relevant to the QMS
* Information on the performance and effectiveness of the Quality Management System, including trends in:
  + - Customer satisfaction and feedback from relevant interested parties
    - Extent to which quality objectives have been met
    - Process performance and conformity of products and services
    - Nonconformities and corrective actions
    - Monitoring and measurement results
    - Audit results
    - Performance of external providers
    - Adequacy of resources
    - Effectiveness of actions taken to address risks and opportunities
    - Opportunities for improvement

The outputs of management review are to include decisions and actions related to:

* Opportunities for improvement
* Any need for changes to the Quality Management System
* Resource needs

Retain documented information as evidence of the results of management reviews.

**Our Approach:** Our management reviews are planned and generally occur on a monthly basis. At a minimum, these reviews are regularly attended by the **ISO Management Team (see 5.1).**

The Management Reviews are planned using a schedule and meeting agenda consisting of all required inputs. The meetings are documented with the Management Review meeting minutes and updates to the QMS Plan as needed.

Outputs from our Management Reviews include the actions and decisions relating to any opportunities for improvement, needed changes to the QMS and resource needs. Outputs are also retained in the Management Review meeting minutes or QMS Plan.

SECTION 4: ACT

This final step within our Plan, Do, Check and Act Quality Management System serves two purposes. First, it is the step that is used to make the decision of taking or not taking action based on the analysis and evaluations that occur during the “check” step. Whether we decide to take action or not, the decision will always be metric-driven, and risk-based.

The second purpose of the “Act” step is that it serves as the pivoting step that guides our QMS back to the Plan phase to begin the PDCA cycle and support continual improvement.

This last section of our manual covers our approach to improvements and corrective actions.

# 10 Improvement

### 10.1 General

**Requirement:** Determine and select opportunities for improvement and implement actions to meet customer requirements and enhance customer satisfaction, including (as appropriate):

* Improving products and services to meet requirements as well as to address future needs and expectations
* Correcting, preventing or reducing undesired effects
* Improving the performance and effectiveness of the Quality Management System

**Our Approach:** We continually discuss and select opportunities to:

* Improve our products and services for clients and staff
* Correct, prevent or reduce undesired effects
* Improve our QMS

Inputs to the improvement process may come from discussions of the quality policy, quality objectives, employee recommendations, management observation, audit results, analysis of data, corrective and preventive actions and management review.

We retain the documented information regarding improvements in our QMS Plan, according to theCorrective and Preventive Action Procedure or, in the Management Review meeting minutes.

### 10.2 Nonconformity and Corrective Action

**Requirement:** When a nonconformity occurs, including those arising from complaints, we:

* React to the nonconformity, and as applicable:
  + - Take action to control and correct it
    - Deal with the consequences
* Evaluate the need for action to eliminate the cause(s) of the nonconformity, in order that it does not recur or occur elsewhere:
  + - Review and analyze the nonconformity
    - Determine the causes of the nonconformity
    - Determine if similar nonconformities exist, or could potentially occur
* Implement any action needed
* Review the effectiveness of any corrective action taken
* Update risks and opportunities determined during planning, if necessary
* Make changes to the Quality Management System, if necessary

Corrective actions are appropriate to the effects of the nonconformities encountered.

Retain documented information as evidence of the:

* Nature of the nonconformities and any subsequent actions taken
* Results of any corrective action

**Our Approach:** IVYHILL ensures that service that does not conform to contract requirements is identified and controlled to prevent its unintended use or delivery.

Where applicable, we deal with nonconformances in one or more of the following ways:

* Take action to correct the detected nonconformity
* Authorize its use, release or acceptance under concession by a relevant authority and, where applicable, by the customer
* Take action to preclude its original intended use or application
* Take action appropriate to the effects, or potential effects, of the nonconformity when nonconformances are detected after delivery or use has started

Nonconformities are taken seriously and are reacted to as applicable. We take any actions necessary to ensure the nonconformity does not recur or occur elsewhere. Nonconformities are documented according to our Corrective and Preventive Action Procedure and discussed during Management Reviews.

The process also defines the need for:

* Reviewing and analyzing nonconformities (including customer complaints)
* Determining the causes of nonconformities
* Determine if the risk of similar nonconformities exist
* Evaluating the need for action to ensure that nonconformities do not recur
* Determining and implementing action needed
* Updating the risks and opportunities in planning
* Making changes to the QMS if necessary
* Recording and maintaining records of the results of action taken
* Reviewing the effectiveness of the corrective action taken

Corrective actions are appropriate to the effects of the nonconformities encountered. When a nonconformance is corrected, it is subject to re-verification to demonstrate conformity to the requirements. We maintain records of the nature of nonconformities and any subsequent actions taken, including concessions obtained.

The Management Representative is responsible for maintaining the procedure and the associated records.

### 10.3 Continual Improvement

**Requirement:** Continually improve the suitability, adequacy, and effectiveness of the QMS.

**Our Approach:** We consider the results of analysis and evaluation, and the outputs from Management Review, to confirm if there are needs or opportunities to be addressed as part of continual improvement. A list of improvements resulting from the QMS program, or to the program, are maintained in the QMS Plan.