# Risk & Opportunity Management Process

Prepared By: Tina Mooney – Quality Assurance

Issued By: Carol Tomblin – Configuration Management

Authorized By: Brian Foy – Director of Operations

## AMENDMENT SUMMARY

| Rev | Date | Change Description |
|---|---|---|
| 1 | 05 MAR 10 | Initial issue |
| 2 | 12 SEP 10 | Update for lessons learned from initial Risk Management Plan execution |
| 3 | 18 OCT 10 | Added scope and related docs and forms to reference to ISO 9001:2008/AS9100/AS9110 |
| 4 | 06 JAN 11 | Revised document to make it applicable to SELEX AS Registered (AS9100/9110) Sites usage (removed references to Huntsville). |
| 5 | 19 DEC 17 | Update to incorporate requirements of AS9100 Rev D |
| 6 | 11 NOV 22 | Update company name and logo. Minor wordage change |
| | | |

## Table of Contents

## 1 Introduction

This document covers risk as determined at the Organizational and Operational Process levels and will provide evidence of conformity to ISO 9001/AS9100/9110. It also governs the effectiveness of the Leonardo Electronics US Inc. (LEI) Business Management System (BMS). Risk will be addressed using a risk-based thinking approach. Risk-based thinking ensures risk is considered from the beginning and throughout. Risk-based thinking makes prevention part of strategic and operational planning.

At the Organizational level risk will involve areas such as the Quality Management System, strategic planning, new customers, business strategy, new market areas, etc. At the Operational level risk will be identified through expressions of severity and likelihood of having a potential negative impact to processes, products, services, customers, or end users.

## 2 Scope

This policy applies to all employees, to include temporary, contract and any representative acting on behalf of LEI. It defines how risk will be managed at Leonardo Electronics US Inc.

## 3 Responsibilities

The Management of Risk and Opportunity from an Organizational level is owned by Quality Assurance. It is the responsibility of Quality Assurance to use a risk-based thinking approach in planning to determine risk and opportunities, considering the issues raised and requirements identified, to plan appropriate actions which will reduce undesired effects on the QMS and to evaluate the effectiveness of the system. The planning will include opportunity to achieve improvements and an avenue to report the effectiveness of those improvements. Other areas of Organizational risk such as Disaster Recovery and Contingency Planning is a shared responsibility between Quality Assurance and Operations Management.

Risk at the Operational Process level is owned by Project Management, supported by project control. Risks are identified using a risk-based thinking approach by the Project Manager and other cross functional team members as appropriate to form a Project Risk Management Board. Specific Project Tailoring is described in the Project Management Plan.

## 4 Related Documents & Forms

| | |
|---|---|
| ISO 9001 | International Standard |
| AS9100 | Aerospace Standard |
| AS9110 | Aerospace Standard |
| BMS.RM.01 Appendix 1 | Risk Register Template |
| BMS.RM.01 Appendix 2 | Top Ten Risk Summary |
| BMS.RM.01 Appendix 3 | Risk Action Plan Template |

## 5 Abbreviations

| | |
|---|---|
| BMS | Business Management System |

| | |
|---|---|
| QMS | Quality Management System |
| SWOT | Strengths, Weaknesses, Opportunities, Threats |

## 6 Risk Management

The five process components (Identify, Analyze, Evaluate, Mitigate/Promote and Report) are described in the following sections at a level designed to establish a foundation for consistent risk management practices across Leonardo Electronics US Inc. The process outline, in figure 1 below, provides the context for the descriptions that follow.

The mirrored halves of the diagram recognize that the same process is applicable to the active management of both risk and opportunity.

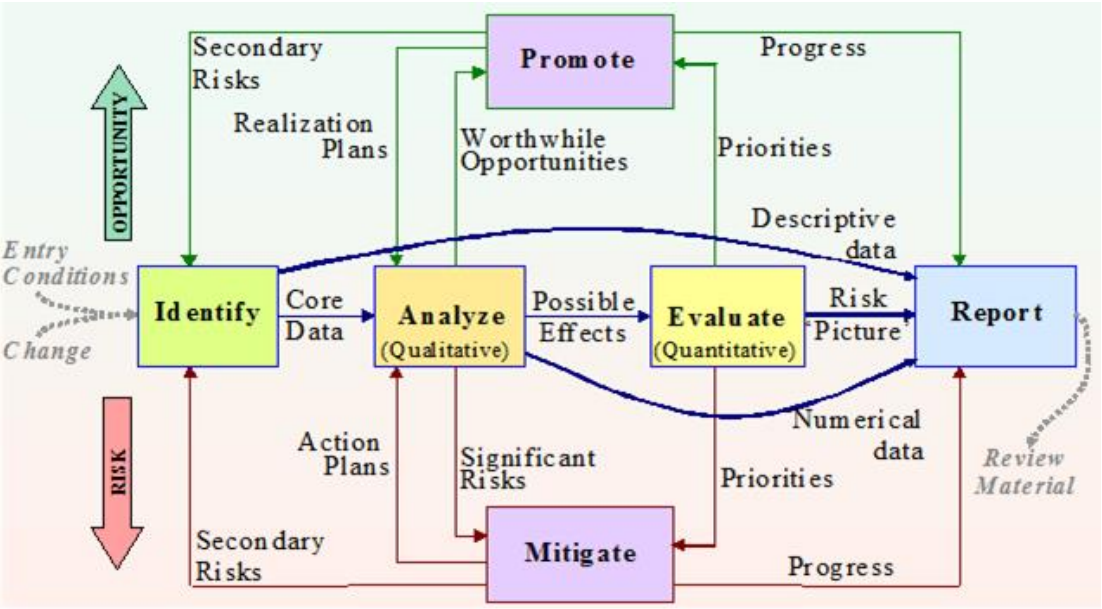


Figure 1. Risk Process Outline

## 7 Risk Management Plan

The principal objectives of this Risk Management Plan are to ensure there is a consistent and robust management approach to identification and control of Risk LEI projects which will lead to project success. This is achieved through the following objectives:

- Clearly identify overall Risk Management responsibility
- Properly identify appropriate Risks and Opportunities including definition of likelihood and consequences
- Assign specific Risk/Opportunity owners with responsibility and accountability for analysis, mitigation and effective control implementation
- Conduct robust Risk Analysis and Evaluation

- Establish, cost and accept mitigation of risk
- Exploit Opportunity in a similar robust way
- Thoroughly review and report risk issues

### 7.1 Planning Documents

The main risk and opportunity planning documents are:

- Risk Register
- Mitigation Plans
- Contingency Plans

### 7.2 Identification Tools/Techniques

The process used for Risk Identification involves all key members of the project team.

Risk Identification is based on, but not limited to, all or any of the following tools or techniques:

| | |
|---|---|
| Brainstorming | Interviews with key staff |
| Checklists | SWOT |
| Prompt Lists | Stakeholder Analysis |
| Crawford Slip Method | Monitoring of project progress |
| Assumptions analysis | Peer Reviews of project |

Risk Identification is documented through carefully constructed wording of risk using the following form of description:

*"There is a risk that (event)……..,*
*Caused by…….,*
*With the effect or impact of ……..."*

#### 7.2.1 Risk Register

The Risks identified in this manner are assembled in the Risk Register (Appendix 1), which identifies the following:

- Risk Reference Number
- Risk Name
- Risk Description/cause/impact
- Risk Owner (person most affected and therefore focused to improve the position)

The risk register will include a method of retiring and archiving risks for historical purposes.

#### 7.2.2 Risk Management Boards

Project managers will establish and lead cyclic risk management boards to ensure that current risks are managed, and the new risks are identified. Project Managers

will determine the appropriate cycle for these meetings as well as identify the required board members from among the project team. Outcomes of the Risk Management Boards include:

- Updates to the Risk Register
- Review of Mitigation and Contingency plans including any changes

### 7.2.3 Risk Approval

Following initial identification, the risk management board reviews the risks in order to eliminate spurious issues and approve analysis and risk planning for those that remain. The Project Manager determine a value (for example $5K or 0.1% of the residual contract value) and all risks below this level are subsumed into the baseline as uncertainty issues and not subjected to further analysis. Risk analysis and mitigation or elimination must be performed on any risk that is deemed flight critical, regardless of estimated value or remote likelihood of occurrence.

## 7.3 Risk Analysis

Analysis is qualitative and comprises qualifying and prioritizing the risks and opportunities that have been identified. Each risk and opportunity must be allocated to an owner who understands the risk/opportunity, has an interest in its resolution and is capable of leading the analysis and all further activity. The analysis process consists of:

- Grading the probability and impacts of each Identified risk/opportunity against Definition Scale bands. An example is shown below but this should be adapted, with the levels changed to meet the needs of each individual project.
- Deriving risk/opportunity factors (or Criticality Scores) from the graded probability and impacts, this is achieved using a 'look up table' (see 7.4.1). Use the highest ranking between Time and Cost impact to ascertain the criticality score.
- Estimating the post-mitigation probabilities of occurrence and the impacts on Cost and schedule.
- Ascertaining appropriate Mitigation strategies and the associated likelihood of success, and related costs.

| Factor | Time (Days) | Cost ($k) | Probability % |
|---|---|---|---|
| **Very Low** | <10 | <5 | <10 |
| **Low** | 11-20 | 6-20 | <20 |
| **Medium** | 21-60 | 21-50 | <40 |
| **High** | 61-90 | 51-100 | <50- |
| **Critical** | >90 | >100 | 51>60 |

### 7.3.1 Criticality Score Look-Up Table

| | | | | | | |
|---|---|---|---|---|---|---|
| Probability Level | C | 5 | 7 | 9 | 11 | 13 |
| | H | 4 | 6 | 8 | 10 | 12 |
| | M | 3 | 5 | 7 | 9 | 11 |
| | L | 2 | 4 | 6 | 8 | 10 |
| | VL | 1 | 3 | 5 | 7 | 9 |
| | | VL | L | M | H | C |
| | | Impact Level | | | | |

## 7.4 Risk Evaluation

Evaluation is Quantitative and comprises assessing risk and opportunity effects on project objectives and producing predictions on their individual and collective time and cost implications. The aim is to represent the risk position with as much clarity and confidence as possible.

Quantitative Risk Evaluation is undertaken estimating the Risk Schedule (in workdays) and Cost impacts (in thousands of dollars). This will give an overall Criticality score and cost. Both of these are used to determine impact and any mitigation actions needed.

## 7.5 Risk Strategies

After the initial evaluation has been undertaken, the risk mitigation strategy is determined for each risk. Strategies are entered in the Risk Register (Appendix 1) for each risk and Risk Action Plans are identified for each specific Risk. Strategies to be considered are:

### 7.5.1 Mitigation/Mitigation Plans

For risks where the impact or probability can be lessened by reasonable actions, mitigation steps will be established and put in place. There are two methods to reduce the risk. Either can be used for mitigation. Where there are minor actions with low cost and schedule impact, project managers may list the mitigation steps in the risk register.

Mitigation on risk register will include:

- Description of the planned activities.
- Clear ownership of activity.
- Estimate reduced risk

Mitigation Plan:

In certain situations, mitigation actions will require significant resources and will require project managers to establish formalized mitigation plans with their project plans. In these cases, the risk register will reference the mitigation plan. Risk mitigation activities will be scheduled into the programs integrated master schedule. The risk register will include a reassessment of the criticality of a risk after mitigation.

Mitigation Plans will include:

- Description of the planned activities.
- Clear ownership of the plan.
- Start date for the plan
- Budget
- A metric on the status of plan success, e.g., trend or Red, Amber, Green
- Consideration of secondary risks generated by the contingency plan
- A template for this plan can be found in Appendix 3

### 7.5.2 Transference

Where possible, risk may be transferred to a third party through the use of Firm Fixed Price Contracts, insurance or terms and conditions. When this strategy is executed, the corresponding risk will be retired and archived.

### 7.5.3 Avoidance

Risk avoidance is the removal or the situation where the risk could take place. It usually involves changing a project's execution strategy to select a lower risk option. If the Risk Management Board identifies a use for this strategy, the risk will be retired and archived.

### 7.5.4 Acceptance

Risk Acceptance will be used whenever the cost to manage the risk exceeds the impact of the risk itself.

## 7.6 Contingency Plans

In some cases, there will remain a significant residual risk after mitigation. In these cases, the risk management board must decide whether or not a contingency plan should be developed for execution in the event that the corresponding risk occurs. An estimate of the cost to execute the Contingency Plan is considered and reviewed. The funding to execute the contingency plan must be considered in the projects Estimate at Complete.

The components of the contingency plan should include:

- Description of the planned activities.
- Clear ownership of the plan.
- Trigger events that would cause the contingency plan to be put into effect
- The costs of carrying out the action plan including resources that will be needed.
- Comments section regularly updated.
- A metric on the status of plan success, e.g., trend or Red, Amber, Green
- Secondary risks generated by the contingency plan

## 8 Reporting

The Top Risk Summary Table may be used as necessary to present the 'Top' Risks at each Project Management Review. The selection of the most significant risks is based upon the post-mitigation criticality score and cost. In circumstances where this does not give a clear picture of the most significant risks to the project an alternative approach may be used as the Project Manger sees fit. Results from risk meetings will be communicated to top management and to relevant parties who could be impacted by those risks.

## 9 Proposal

During proposal stages risk-based opportunities are assessed and mitigated, or accepting, during the proposal creation and review stage. These may or may not follow the full evaluation laid out in this document. The Program Manager, and review team, will determine the required evaluation. All risk identified are reported to the review team.

## 10 Records

Records will be maintained in accordance with QP019 Documented Information.