Methodology for Gap Analysis and Compliance Management

and its implementation in the

GA Lab

web based gap analysis system

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Terminology and abbreviations

Acronym/Term	Description
BOD	Basis of Design - a set of [Standards] comprising a basis of design/operation of a [Location]
Compliance record	Compilation of details (e.g. compliance flags, comments, references, links et.) corresponding to one Keyword (or one Index) of a Directive Statement
CR	See Compliance record
Directive Statement	A paragraph, sentence or a phrase within a standard which mandates, or recommends certain rules to be applied to the company assets, product or services in various areas of their operation.
GA	Gap analysis
Gap	Non-compliance, non-conformance to a Directive Statement of a Standard
Gap Analysis Record	Gap analysis work pack comprising of information related to one gap analysis exercise on one [location] one [standard]
GAR	See Gap Analysis Record
Index	Same as keyword
Keyword	Words that determine the meaning of Directive Statements such as Shall, Should, Will, May etc.
[Location]	Refer to section 3.2 [Location]
Matrix of Indexes	Set of reference points to the Keywords of Directive Statements of a particular Standard
[standard]	Refer to the section 3.2 Standards and [Standards]
Flag	Flags are - Gap, Compliance, Not Applicable, Hold. These are used within the GA Lab system to indicate the status of compliance/non-compliance for each directive statement

1 Introduction

Modern industries become increasingly reliant on compliance to various regulations, codes, standards and practices in order to maintain their license to operate in the current global market. It is very important to ensure that the assets, processes, products and services are properly designed, developed and maintained and comply with the relevant normative requirements. Compliance to codes, standards and regulations is not only the driver to better quality but, the most important, it is the key to safe and environmentally friendly operations. Therefore the organisations and even individual specialists on a regular basis have to demonstrate compliance to regulatory requirements in a form of internal self-verification processes and/or external audits.

One of the common ways leading to achieve compliance is Gap Analysis Process which is described in more details further in this document. Analysing the gaps between the required and actual state of things helps to clearly see the weak points of a business and plan for improvement.

This methodology has been developed based on practical experience and research to make the gap analysis process uniform and applicable for a wide range of industries and organisations of any scale across the globe.

2 Purpose

The purpose of this methodology is to describe the optimised and uniform process of gap analysis which will guide the practitioner through all the essential steps and help to understand the core principles.

In addition this document shall be used as a general guidance for conducting gap analysis aided by the GA Lab system - GA Lab https://gapanalysislab.com/, which has been designed and built around this methodology by Asaitec Ltd.

3 Gap Analysis Process and Compliance Management Methodology

As it is described in Wikipedia.org - *"gap analysis involves the comparison of actual performance with potential or desired performance"*. In other words it is comparing a real apple to an apple of your dreams.

3.1 Current challenges

Currently, most of companies and individual specialists worldwide are facing a number of common challenges when it comes to performing gap analysis for part or whole of the organisation and doing this in a systematic order. These challenges normally are:

- There is no simple and uniform procedure which could be implemented by any practitioner or organisation and it usually ends up with "re-inventing the wheel"
- No common and standard template which would be convenient for any application
- Challenges in tracking gaps and their impact on business
- No common KPIs for management of the GA process
- No common planning and monitoring process
- Lot of non-productive administrative work before and after gap analysis and gap assessment

Where it comes to a big scale gap analysis (e.g. auditing design of a cargo ship, or offshore oil&gas installation) this process requires a very well managed collaboration, planning and performance management in order to complete it with good quality and ensure that the results are not lost among the bureaucratic chains of verifications and approvals.

Individual specialists are facing similar challenges as it usually comes to looking for a right way of gap analysis which would be acceptable by officials, independent auditors or certification organisations.

Let's start with understanding the basic elements of this process.

3.2 Gap analysis made simple

Terminology

First of all let's agree on the terminology which it going to be used on these pages.

Compliance management - is a complex process which includes Gap Analysis as the main engine and some other activities like definition of applicable codes and standards, design/product specifications, self-verification, auditing, resourcing and planning.

Gap Analysis - is a part of the compliance management process and we consider this as a general term which covers a number of processes listed below:

ELEMENTS OF GAP ANALYSIS PROCESS	
Identification of gaps	Review the actual state of things and compare it to the desired state (or vice versa) to find all non-compliance elements - gaps
Risk assessment	Analyse each gap in terms of severity and probability of the risk induced by this non-conformance to requirements, or to a desired state
Gap **elimination** planning	Develop actions to eliminate the gaps
Recognise a gap as a **deviation**	When it is practically impossible to eliminate a gap it should be clearly defined as a Deviation and risk mitigation measures should be developed Deviations can be permanent or temporary thus requiring different measures to address those.

Standards and [Standards] - For the purpose of this methodology we are going to use the term **[Standard(s)]** in square brackets to describe **any regulatory document** including any procedures or practices used internally within an organisation.
Regulatory documents are your desired performance or status. In other words - this is what you want to achieve.
Regulatory documents are, but not limited to:

- Industry standards (such as ISO, ASME, DNV etc.)
- Laws and Regulations
- Procedures and Practices
- Directives and Guidance papers
- etc.

[Standards] are generally written in a standard way and are using the standard set of keywords in order to determine importance of the directives. The directives can be split into two main groups:

- **Mandatory** (based on **keywords** - shall, must, have to etc.) - where implementation of a given requirement is the must
- **Recommendatory** (based on **keywords** - should, may, recommended etc.) - where it is up to the practitioner to decide whether or not to implement the given requirement

The term **Standard** without square brackets, will be used in all other semantic context.

Directive Statement - is a paragraph, sentence or a phrase within a [standard] which mandates, or recommends certain rules to be applied to an object or process, and contains one or more **Keywords** (highlighted).

Example extract from a [standard]: "… component exposed to more than one fire zone shall be used in the assessment…. The component should be assigned to the next most severe fire…"

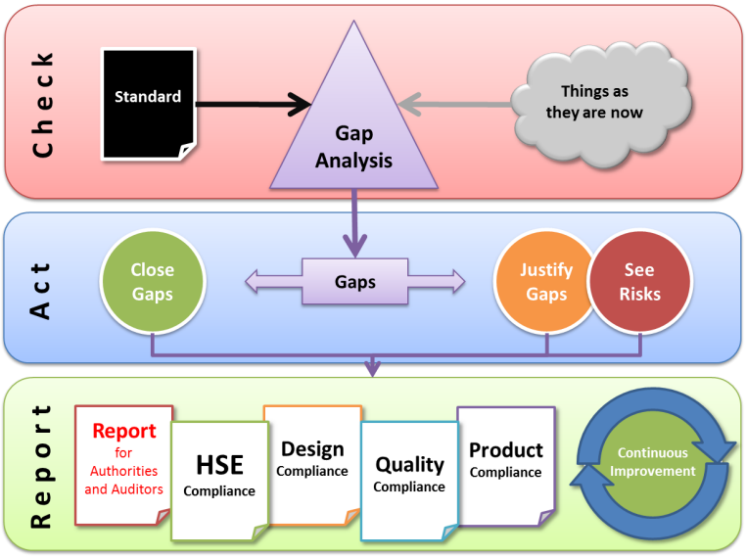
[Location] - Another important term to be well understood in this methodology is **[Location]** in square brackets. This term will be used to describe your actual objects or subjects (equipment, process, facility, design or even human resources). Where a [standard] is your desired performance or state that you want your object to achieve - the [location] is an object of study.

Example:
1. You want to have your company be ISO9001 certified on, so your company is the [location] and the ISO9001 is the [standard]
2. You are going to conduct an audit of a design of a
[location] = hydraulic press in paper cup manufacturing factory
to ensure that it complies with
[standards] = a set of relevant standards and safety regulations

Compliance management

Regardless on industry or a professional area the process of compliance management is generally the same. It consists of 3 main steps:

1. **Check**
   In this step a [standard] is being compared with a [location]s actual state. This is where the gaps are identified.
2. **Act**
   This is where the gaps are being assessed in order to define risks, plan for gap elimination actions or accept gap as a deviation
3. **Report**
   The step where a report is created to present the results of gap analysis work, planned actions, risks and deviations.



Gap analysis

In similar way the Gap Analysis process itself is also common in general. In this methodology we represent this process as shown below.

For a piece of gap analysis this should work as follows:

Provided that you already know which [standard(s)] are you going to gap analyse against your [location] the process normally will consist of the following steps:

1. Plan your gap analysis work - when this is going to be done? who will do it?
2. Identify gaps
   a. read the [standard],
   b. highlight keywords,
   c. describe and verify if your [location] is in compliance to each keyword + add references and evidence
   d. describe and explain if Non-compliance (**Gaps**) + references and evidence
3. Go through the list of **gaps** and perform risk assessment for each one
4. Define follow-ups for the gaps
   a. Create actions to eliminate gaps
   b. Acknowledge a gap as a Deviation (constant or temporary) and document it
5. Track the actions to completion and closeout

6. Compile all your work into a report

There can be many other steps which are performed before, during and after gap analysis process or exercise but those are rather administrative type tasks which are now automated in the GA Lab system. In fact GA Lab system takes control over the steps 1-6 listed above and provides a convenient environment and automation to conduct gap analysis work of a good quality.

Gap Analysis Report

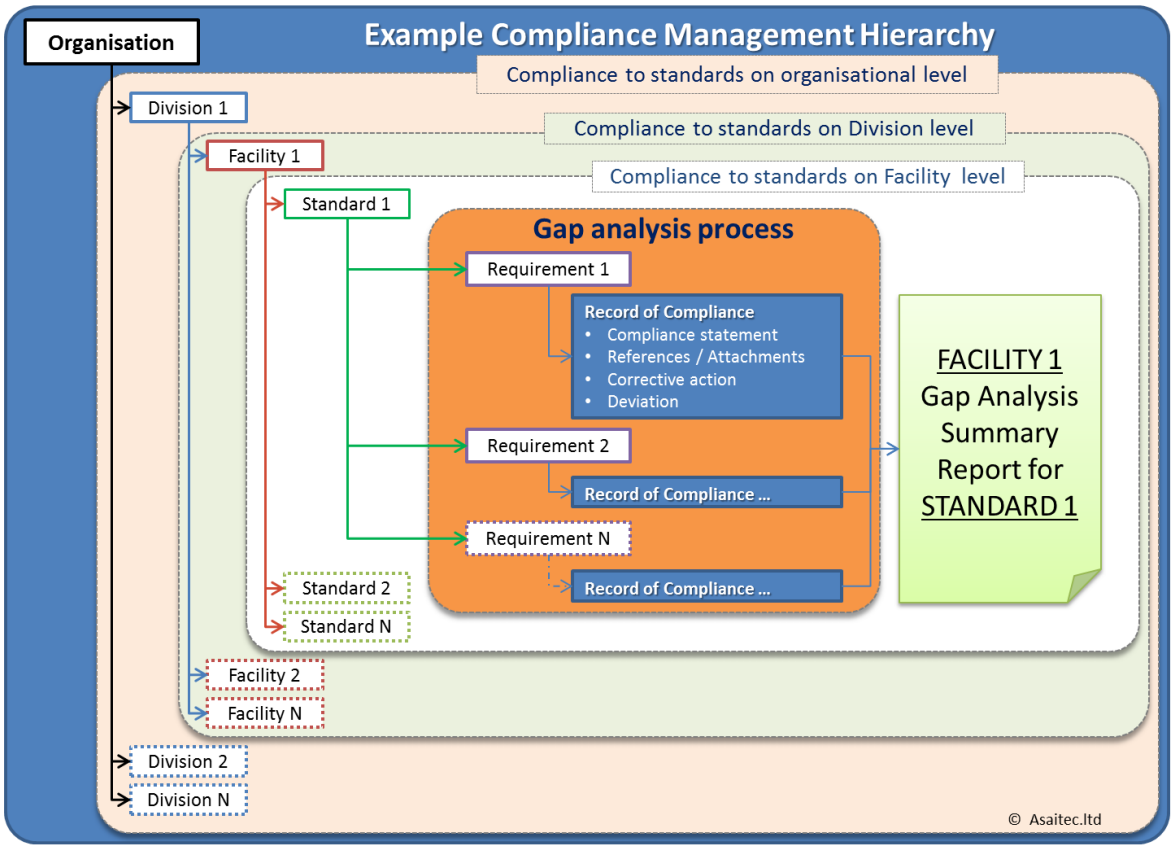
The final and the main product of any gap analysis process is a documented **Gap Analysis Report** (or Audit Report) sometimes. This document is a summary of the gap analysis exercise on a [standard] against a [location] and usually contains the following information:

- Introduction. purpose and scope of the gap analysis exercise
- Summary of Gaps, Risks, Deviations and Actions
- Feedback to the originator (author) of this Standard identifying any points for improvement
- Detailed gap analysis section where each directive statement of the standard is referred to a relevant company document to demonstrate compliance, or flagged as a Gap with reference to an Action or Deviation.
- Names of specialists who were involved in this Gap Analysis exercise

GA Lab system collates all details into the report automatically. See example GA Lab Report

3.1 Key advantages of this methodology

In the core of the methodology lies implementation of hierarchical approach to every single requirement of any given normative document - [standard] which is firmly assigned to a [location]. This method helps to build a strong framework of requirements and their applications to each individual area. Please see the picture below, it shows a representative example of compliance hierarchy for a random organisation. GA Lab system allows building hierarchies of any shape and size, so you can use it for any ad-hoc gap analysis work for a random location or build a comprehensive structure to accommodate any global industrial giant.



You can see on the picture that an Organisation (say "Oil Products Xyz.") can consist of a number of Divisions (such as Refining, Retail, Transportation, etc.) which in turn divided into Facilities (Petrol stations, Pumping stations etc.). Each facility has a number of standards to comply with (Standard 1, Standard 2 and so on). In the bottom of the hierarchy there are Requirements within the standards. Gap analysis process is landing on the hierarchical layers and incorporates all the details for each requirement. As a result it helps to create a detailed report which can be used either for auditing purposes or for internal self-verification and continuous improvement initiatives. Utilising the power of computer databases and applications this method helps to organise and manage gap analysis process at any level of granularity.

4 GA Lab - Gap Analysis Laboratory

This chapter briefly describes how the current methodology has been implemented in web based application environment - GA Lab.

4.1 The concept

The GA Lab System is the integrated framework for gap analysis and compliance management. It provides effective and convenient tools within the web-based multiuser environment for

- maintaining the master register of [Standards]
- maintaining the register [Locations] and all applicable [standards] and other information
- planning for Gap Analysis work and management of execution
- execution of gap analysis processes
    - gap identification
    - gap risk assessment
- management of Actions and Deviations
- creation of gap analysis detailed reports
- export of data into spreadsheet format

Web based implementation of this methodology helps to save significant amount of manpower, eliminate paperwork related issues and simplify planning and execution process.

4.2 Modules

The system consists of 5 main modules providing a working environment for Gap Analysis and Compliance management processes.

1. Library
2. Locations
3. GA Plan (Gap analysis plan)
4. Gap Analysis processor
5. Gap assessment

4.2.1 Library

This module provides environment and functionality to upload, maintain and manage the master register of all [standards], reference documents and images.

When a [standard] is being uploaded it is automatically scanned by the system and indexed to build the keyword reference matrix. The matrix is stored along with the [standard] and can be used for multiple gap analysis jobs. The matrix is used by the system to automatically highlight the keywords in the document for convenience of gap analysis and also to assign all the compliance records, references and flags to each keyword in a given [standard] against a given [location] thus creating a solid cross reference.

4.2.2 Locations

Locations module provides functionality to create and manage the master register of [Locations]. The interface allows creation of either simple lists of locations or building a hierarchy tree of any complexity to reflect the work structure or a structure of an organisation. For each location there is a Location summary dialog box to record the [Location]'s details and the most important to

- assign all applicable [standards] from the existing Library
- plan gap analysis work

The module also allows printing out Location details reports in PDF format.

4.2.3 Gap Analysis Plan (GA Plan)

This module provides functionality to create gap analysis work (called **Gap Analysis Records**, or **GAR**s within the GA Lab System) and perform all the basic planning and work management activities.

Each GAR represents a complete gap analysis work pack and serves as the master source for the Gap Analysis Reports.

Within the GA Lab system GARs are following the predetermined workflow to hep planning and monitoring the work. The workflow is indicated by statuses - CREATED, PLANNED, IN PROGRESS, COMPLETED and CLOSED and the system performs validation of the information in the GAR on every status change.

4.2.4 Gap Analysis Record Summary (GAR Summary)

The summary module is the main page for each GAR where users can populate information related to one particular gap analysis work, view the statistics about work completion, number of keywords, gaps, actions, deviations etc. This module also provides functionality to start gap identification process (GA Processor), go to the gap assessment module and print the final Gap Analysis report.

4.2.6 Gap Analysis Processor (GA Processor)

This is the main module where gap identification and initial gap analysis are performed. It consists of 3 sections

- [Standard] - where the [standard] is being presented with the highlighted keywords
- Compliance Record - the sliding dialog where user can populate details about compliance/non-compliance to a selected directive statement and Flag it as Gap, Compliance, Not Applicable or Hold. It also allows adding references like other documents, images, drawings etc. as an evidence.
- Toolbar which provides useful automation like jumps between keywords, search, and open the GA processor's settings

The process of gap identification in the GA Processor goes as follows:

1. Scroll (or jump) to a directive statement, click on the highlighted keyword to open the Compliance Record dialog
2. Populate the dialog with relevant details about compliance/non-compliance and put the appropriate Flag
3. Carry on with the steps 1 and 2 until you come to the end of [standard] and complete the gap identification process

This module allows grouping multiple keywords under a single compliance record. This is convenient when there are sections or pages of requirements which are known to be followed (or not followed) all together.

There are many more functions built in this module which are not described here and can be found in the GA Lab User manual and Help pages for the system.

4.2.7 Compliance Records

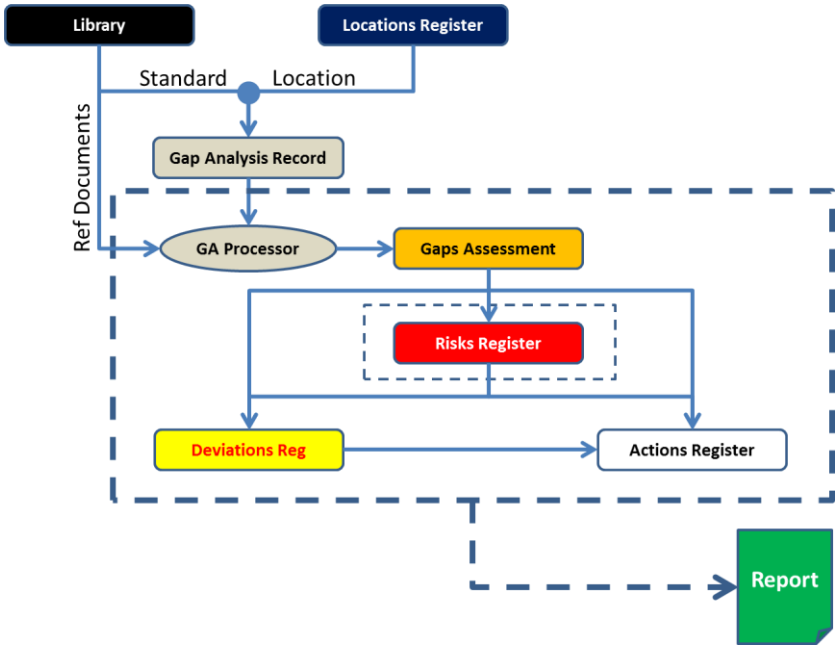
Compliance Records (CR) module is the master database for all compliance records from all gap analysis that you have done with GA Lab system. It provides functionality to do gap assessment, risk assessment, create actions and report deviations for each keyword.

This database serves as a data source for analytical reports to assess compliance to [standards] amongst all [locations].

When you open this module from the main menu it will display all CRs, but if you came here from the GAR Summary it will only display the gaps for this particular gap analysis record.

4.3 Steps of Gap Analysis with GA Lab

The 3 main steps of the gap analysis process - Check, Act, and Report are implemented in the GA-System as shown on the picture.



This simplified procedure for gap analysis exercise has been written mainly to demonstrate how the methodology described in this document is implemented. For more detailed guidance please refer to the GA Lab User manual.

0. Preparation steps

0.1. Go to Library module and upload [Standards] and other relevant documents.
0.2. During the uploading process GA-Lab will automatically read the [Standard] in the background and create the index matrix of all the keywords within the document
0.3. Other documents are simply uploaded without any processing. These documents will be used for reference as attachments if you need to have a formal back-up for demonstration of compliance.
0.4. Go to Locations module and create a new record for [Location] which requires Gap Analysis.

1. Check

1.1. Go to GA Plan and create a new Gap Analysis Record (GAR)
1.2. Select your [Location] from the dropdown list
1.3. Select your [Standard] from the dropdown list
1.4. Click Ok to create the new GAR in the GA Plan
1.5. Click on the newly created GAR to open the GAR Summary
1.6. Populate any additional info about this gap analysis work - eg. Introduction, Planning dates, Description etc.

1.7. Change Status to Planned and click Save. System will check if all the required information in place and It you know if anything is missing.
1.8. One planned and you are ready to start - change status to INPRG (In Progress) and click Save. System will get ready for gap analysis and you can start.
1.9. Click on GA Processor button to open it and start gap identification
1.10. Click on the first highlighted keyword in the text to open the compliance record dialog
1.11. Identify gaps by flagging the relevant keywords as **Gap**
1.12. Identify Compliance by flagging **Compliance**
1.13. Continue gap identification
1.14. Click on browsers Back button to return to the GA Summary when finished

2. Act

2.1. Click on Gap Assessment button to start Gap Assessment process
2.2. Perform risk assessment, create actions and report deviations as required for all gaps which you have identified in the GA Processor
2.3. Return to the GA Summary

3. Report

3.1. Change status to COMPLETE and click Save. The system will check if you have responded to all keywords and completed gap assessment for all gaps and there are no Holds and will let you know if something is missing.
3.2. When the status has been set to COMPLETE you can click Print button to view your gap analysis report
3.3. GA-Lab will create the Gap Analysis Report automatically when you click Print Report button
3.4. You can send the report on printer or save as a file.
3.5. You can also run or export other statistical reports to support your organisation in tracking performance of Gap Analysis works and indicate compliance to standards.