**Preview**

**Introduction**

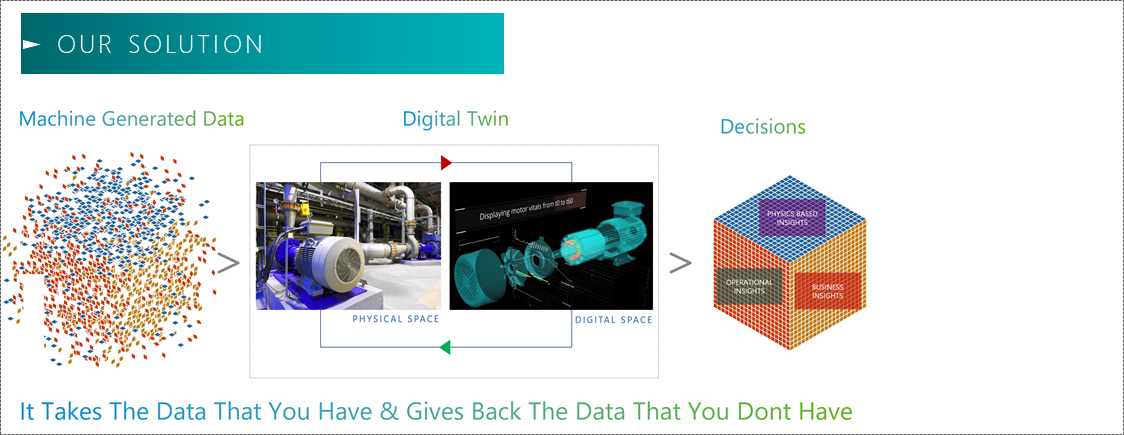
This document has the project plan for 'PPGPL'(Phoneix Park Gas Processors Limited) covering areas such as personnel, project management, engineering processes and quality assurance.

**Project/Managed Service Overview**

**Management Objectives and Priorities:**

To enable and to create a Unified Digital Enterprise by providing Digital twin solution for Gas Turbines, Motor Pump and Cooling Tower Fan.

**Project Objectives:**



Design and Implementation of three Digital Twin Minimum Viable Products [MVPs], enabling real time and predictive maintenance for Gas Turbines, Cooling Fans, and Pumps. These MVPs are intended to show reduction of unexpected downtime for such assets through digital intervention by deploying asset performance management software and further enhance efficiency of these assets.

**Major Activities:**

Leverage advanced data analytics and machine learning algorithms to proactively identify potential issues and optimize asset performance:

▪ Pump

* Monitor real-time motor health for early failure prediction.
* Predict impeller cavitation erosion
* Detect early potential damages caused by water hammer effect.

▪ Gas Turbine

* Monitor health of radial bearings and thrust bearings

▪ Cooling Tower Fan

* Display time series sensory data with flexibility to opt-in required channels
* Identify and showcase faults via decision support system

Below is a list of common activities in scope of the three MVPs pertaining to requirements validation, data acquisition and gathering relevant telemetry:

* Detail technical discussion to understand the operations, performance, available instrumentations and determining data landscape of three machines in scope
* Data dictionary preparation which documents the required data required for Digital Twin as validated by PPGPL’s data owners
* Deploy suitable data transmission systems to transmit field data to the cloud instance
* Design, develop and deploy suitable data ingestion mechanism on the cloud front to ingest field data on:
  + Data Transmission Schema
  + Data Rate
  + Available Connection to Edge
* Design, develop and deploy suitable data Preparation mechanisms on the cloud front for:
  + Staging, Transformation and Preprocessing
  + Data Pipelining
* Data Contextualization

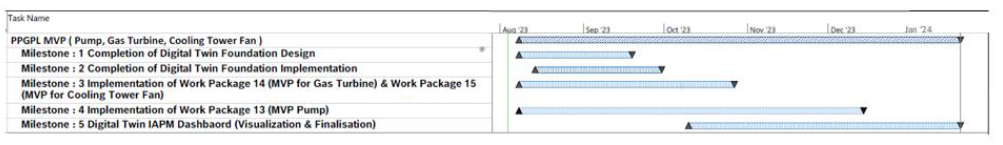
Cloud and Infrastructure set up activities

* Design the Cloud deployment architecture as per requirement and finalized Landscape
* Implementation of Network landscape with security best practices
* Prepare the Infrastructure as a Code modules for the Azure components
* Provision Azure resources as per the approved design and BoM (bill of materials) for Production, QA and Dev environments as appropriate
* Support Application Team to deploy application on Azure cloud for Development, Quality and Production Environment
* Configuring high availability for required services
* Setting up the Azure native backup for supported services
* Plan, Design and Deploy the below capabilities on Azure cloud
* Logging and Monitoring - Azure Log Analytics and Azure Monitor
* Threat Protection & Vulnerabilities - Microsoft Defender for cloud
* Configure the Monitoring and alerts in Azure Monitor

Design, develop and deploy

* Suitable Data Preparation mechanisms on the cloud front for handling multiple sources of data from Pump, Gas Turbine & Cooling tower Fan
* Creating Multiple pipelines for processing and stream analytics
* Contextualize multiple streams of data based on source
* Configuration of platform services for Real-time processing of batch data
* Suitable APIs to communicate external sub-system
* Suitable data extraction methods from frontend for user to export historic data
* Data factory creation and aggregation of multiple data sources on to a single data store
* Various APIs shall be provided to communicate with external Microsoft applications
* Suitable Data Storage mechanism on the cloud front to store field data for further usage
* Suitable API Management mechanisms to communicate amongst various sub-systems
* Suitable data retrieving mechanisms to make the stored data available to the users
* Exploratory data analysis for data sanctity check and completeness with respect to algorithm building.
* Building simulation models for cavitation and validation
* Creation of data correlation matrix and basic statistical analysis on data points
* Creation of synthetic parameters or features based on relevance to model building
* Featuring engineering based on first principal and AI/ML approach – Based on vibrations and MCSA approach.
* Design and Development of data driven vibrational analysis algorithms to detect patterns in vibration shoot up
* Design and Development of standard decision support system algorithms to detect faults in the asset related to driving and driven equipment
* Training, testing and validation of the prediction models based on the collected datasets
* Hosting of the models on the kInAPM platform for inferencing and creating the required pipelines
* Notification of alerts/alarms in email and SMS.
* Visualization
* Alerts and notification on the key KPIs such as faults and important performance parameter of the asset.
* Reporting the performance of the asset based on data driven models
* Presentation of advanced data analysis and analytics model inferencing, fault detection modules and predictive insights generation modules
* IAPM dashboard configuration - provisioning of intuitive UI based dash boards to present various aspects of IAPM including but not limited to – fleet view, cluster view, live sensor data, insight engines, event history, inventory predictions, etc.
* System integration and testing

**Major Milestones:**



**Project/Managed Service Details**

|  |  |
| --- | --- |
| Project ID\_Project Name | PJ-109491\_PPGPL\_01\_DT-IAPM\_PPGPL |
| Project Type | Development |
| Project Category | C |
| PM Name | Ashok S Mallya |
| Proxy PM Name | Swetha Venkatesappa |

**Matrix Project/Managed Service**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Project/Subproject Name** | **Project Type** | **PM Name** | **Level** | **Inherited Project Category** | **Inherited Value Contribution** | **Parent Project Name (in case of sub-projects)** |
|  |  |  |  |  |  |  |

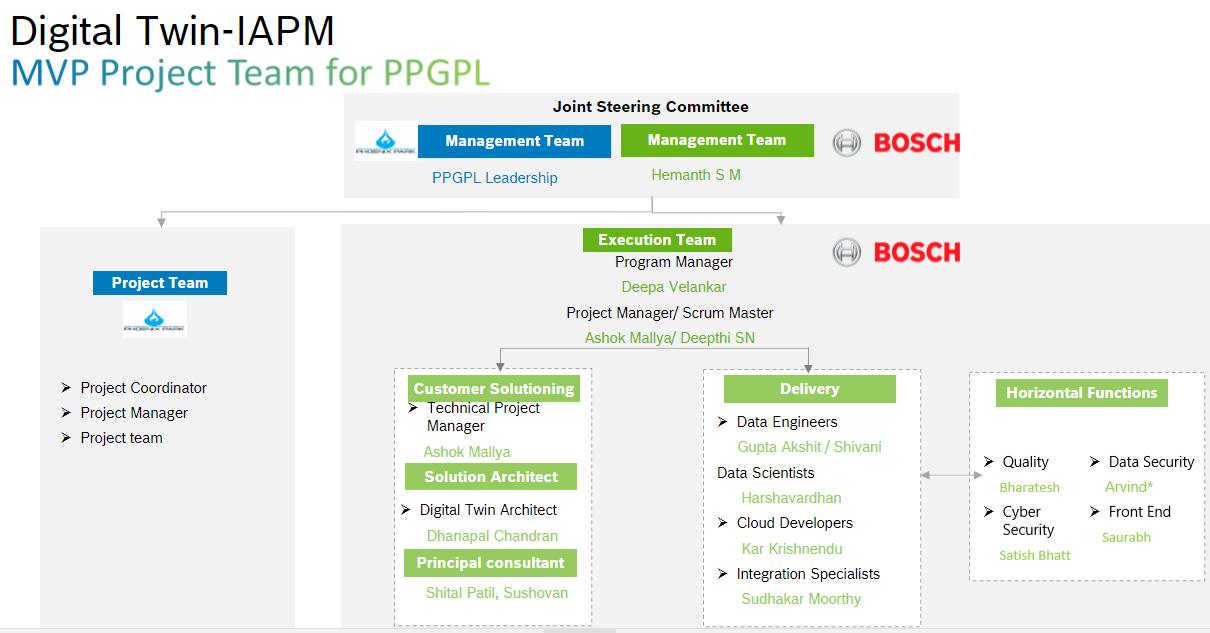
**References**

This is a child project of PJ-109491.

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No.** | **Description / Project** | **Ver./Project ID.** | **Location** |
| 1. | |  | | --- | | PJ-109491\_VHIT-DT-IAPM-SPR - VHIT-DT-IAPM | | SubProject | PROMISE |

**Roles and Responsibilities**

 Responsibilities of the roles are as defined in QMS



**Project/Managed Service team**

|  |  |  |  |
| --- | --- | --- | --- |
| **Role** | **Person** | **Substitute** | **Effort in %** |
| Expert | Sushovan Chakraborty |  | 75 |
| Developer | Harshavardhan Amirthalingam |  | 100 |
| Developer | Shashank Sekhar |  | 100 |
| Developer | Akshit Gupta |  | 100 |
| Developer | Shivani Yadav |  | 100 |
| Developer | Krishnendu Kar |  | 100 |
| Scrum Master | Deepthi S Narayan |  | 25 |
| Prj Safety Manager | Satish Chandra Bhatt |  | 25 |
| Product Owner | Ashok S Mallya |  | 100 |
| Developer | Saurabh Sharma |  | 100 |
| Others | Arvind Kumar C |  | 25 |
| Support Manager | Swetha Venkatesappa |  | 100 |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**Customer**

|  |  |  |
| --- | --- | --- |
| **Role** | **Name / Dept.** | **Responsibilities** |
| Customer Co-ordinator | Rajesh Kothandan | Customer Solutions for acquisitions |
| User Co-ordinator | Ashok Mallya | Agile Project Management |
| Product Owner (in Scrum Projects) | Ashok Mallya | Agile Project Management |
|  |  |  |

**Supplier Agreement Management**

**No hardware supplies, hence not applicable.**

|  |  |
| --- | --- |
| **Provider** |  |
| **Type of acquisition** |  |
| **Details related to evaluation of alternate providers, if any** |  |
| **Agreement details** |  |
| **Agreement on Security aspects in supplied items be it “internal” or “external” -** (details in Proview)  **1. Compatibility with Bosch Products and**  **2. Support Bosch product in fulfilling security requirements and policies** |  |
| **Deliverables** |  |
| **Milestones** |  |
| **Monitoring of activities** |  |
| **Verification and Validation method before accepting the deliverable** |  |
| **Plan to transition the deliverable into the project** |  |

**Stakeholder Management**

**Legend**

R – Responsible  -         Who is Responsible for seeing the task through to conclusion?  
A – Authority/Approval -  Who has Authority to make the final decision?

S – Supportive  -           Who provides Support to the person who has overall responsibility?  
C – Consulted -            Who is to be Consulted during the process?  
 I –  Informed -              Who is to be Informed at the conclusion of the process?

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Stakeholders** | **Project Team** | | | | | **Customer** |  | **Product Owner** | **Provider** | **Support Functions** | | | | | | | | | **Management Support** | |
| Activities | PM-L2 (Project Manager) | PM-L1 (Associate Project Manager) | Team Members / Scrum Team | EPQ | Scrum Master | Customer Co-ord | User    Co-ord |  |  | Legal | Security Manager | Data protection Manager | Personnel | Training | Facilities | ISY/DSO | Purchase | DQA | FLM | Middle Mgmt |
| Contract (PLA) | R | S | I | C | - | C | C | I | - | C |  |  | - | - | - | - | - | C | A | A |
| Project Management |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Project  Planning | R | S | I | C | - | - | - | C | - |  |  |  | - | - | - | - | - | S | A | I |
| Project Monitoring and Control | R | S | S | - | - | I | - | - | - | - |  |  | - | - | - | - | - | - | I | I |
| Training | R | S | I | - | I | - | - | I | - | - |  |  | - | S | - | - | - | S | A | - |
| Decision Analysis and Resolution | R/A | S | S | C | I | - | - | C | - | - |  |  | - | - | - | - | - | - | A/I | I |
| Configuration  Management | R/A | R | S | C | - | - | - | - | - | - |  |  | - | - | - | - | - | - | - | - |
| Risk Management | R/A | S | S | S | I | - | - | C | - | - |  |  | - | - | - | - | - | - | I | - |
| Causal Analysis and Resolution | R | S | S | I | - | - | - | I | - | - |  |  | - | - | - | - | - | - | I | - |
| Measurement and                Analysis | R/A | S | S | I | I | - | - | I | - | - |  |  | - | - | - | - | - | C | I | I |
| Project Mgmt Review | R | S | S | - | - | - | - | - | - | - |  |  | - | - | - | - | - | - | I | - |
| Joint Reviews / Sprint Review | R | S | S |  | - | C | - | R | - | - |  |  | - | - | - | - | - | - | I | - |
| Management Review of Project (MRP) | S | I | I | S | - | - | - | - | - | - |  |  | - | - | - | - | - | C | S | R |
| Purchase Activity | R | I | I | - | - | - | - | - | - | - |  |  | - | - | - | - | R | - | A | A |
| Quality Assurance | R | S | S | S | - | - | - | - | - | - |  |  | - | - | - | - | - | C | I | I |
| Closure | R | S | S | S | - | - | - | - | - | - |  |  | - | - | - | - | - | C | A | I |
| Information Security requirements in Product | R | S | S | C | I | I | I | I | - | - | S | - | - | - | - | - | - | C | A | I |
| Data Protection regulations met in Product | R | S | S | C | I | I | I | I | - | - |  | S | - | - | - | - | - | C | A | I |
| <Other Activities> |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Engineering RASIC:**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Stakeholders** | Project Manager | Associate Project Manager | Principal Consultant | Architect | Scrum Master | Specialist | Team Member / Scrum Team | Product Owner | Customer |
| **Engineering /Development** | | | | | | | | | |
| Requirements |  |  |  |  | I |  |  | R |  |
| Design |  |  |  |  | I |  |  | I |  |
| Coding / Task Execution |  |  |  |  | I |  | R | I |  |
| Integration (if applicable) |  |  |  |  | I |  | R | I |  |
| Test Specification Preparation |  |  |  |  |  |  | S |  |  |
| Unit |  |  |  |  | I |  |  | - |  |
| Integration |  |  |  |  | I |  |  | - |  |
| System |  |  |  |  | I |  |  | - |  |
| Test Execution |  |  |  |  |  |  |  |  |  |
| Unit Testing |  |  |  |  | I |  |  | - |  |
| Integration Testing |  |  |  |  | I |  |  | - |  |
| System Testing |  |  |  |  | I |  |  | - |  |
| Technical Reviews |  |  |  |  |  |  |  |  |  |
| Requirement Review |  |  |  |  | I |  |  | - |  |
| Design Review |  |  |  |  | I |  |  | R |  |
| Code Review |  |  |  |  | I |  |  | - |  |
| Test Specification Review |  |  |  |  | I |  |  | - |  |
| **Maintenance and Release** | | | | | | | | | |
| Release |  |  |  |  | I |  | R | C |  |
| Maintenance |  |  |  |  | I |  | R | I |  |
| Sprint Planning |  |  | R |  | R |  |  | C |  |
| <Other Activities> |  |  |  |  |  |  |  |  |  |

**Security Engineering Related RASIC:**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Stakeholders** | **Project Team** | | | | | **Product Owner** | **Support Functions** | | | | |
| **Activities** | **PM-L2 (Project Manager)** | **PM-L1 (Associate Project Manager)** | **Project Sponsor** | **Project Security Manager** | **DSPiE** |  | **Product Security Officer** | **Data Protection Officer** | **Product Responsibility Dept** | **PSIRT** | **ProVIRT** |
| Security DIA with customer | R | C | A | S | - | R | I/C | I/C | - | - | - |
| Security Relevance Assessment | R | R | A | S | - | R | I/C | - | - | - | - |
| Data Protection / IoT Principles Assessment | R | - | A | - | C | R | I/C | I/C | - | - | - |
| Security with Supplier | R | I | - | S | I | R | - | - | - | - | - |
| Threat and Risk Analysis | R | C | A | S | C(1) | R | I/C | I/C | - | - | - |
| Security Concept | R | C | A | S | C(1) | R | I/C | I/C | - | - | - |
| Security V&V | R | C | A | S | - | R | - | - | - | - | - |
| Penetration Test | R | C | A | S | I/C | R | R(3) | I/C(2) | - | - | - |
| Secure Implementation | R | A | - | C | - | R | I/C | - | - | - | - |
| Security Monitoring | S | S | - | S | - | S | I | - | R | S | R |
| Security Vulnerability Management | S | S | A | S | - | S | I | - | R | R | R |
| Security Incident Management | S | S | A | S | - | S | I | - | R | R | R |
| Security Changes | S | S | - | S | - | S | - | - | R | - | - |
| Changes to Data protection regulations | - | - | - | - | - | - | - | S | R | - | - |
| Decommissioning – Security aspects | - | - | - | - | - | - | - | - | R | - | - |
| Data Protection and IoT Principles Check | R | R | A | S(4) | C | R | I/C (4) | I/C | - | - | - |

(1) Applicable if data protection is identified as relevant in the Data Protection / IoT Principles Relevance Assessment

(2) Communication of the work product of penetration test to ProSO

(3) Right to veto

(4) Applicable if technical security controls are resulting from data protection compliance requirements

**Communication Management**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Communication type** | **Objective of communication** | **Communication mode** | **Frequency** | **Participants**  **/Recipients** | **Responsible** | **Remarks / Links** |
| Weekly Synch meetings | Weekly alignment of open topics | Teams Meeting | Weekly | Core team | Deepa Velankar |  |
| QPM | Quaterly Progress meeting | Teams Meeting | Quaterly | grow Board and Core Funtion Team | grow-IN |  |
| DSM | Daily Stand Up Meeting Technical | Teams Meeting | Daily | Project Team | Ashok Mallya |  |
| DSM Scrum | Daily Standup for Scrum | Team Meeting | Daily | Project Team | Deepthi S N |  |
| Weekly customer connect | Weekly alignment of open topics | Team Meetin | Weekly | Customer, Bosch Team | Ashok Mallya |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

<Include Security topics in the discussions with Management>

**Project/Managed Service Management**

**Assumptions, Dependencies, Constraints**

|  |  |  |  |
| --- | --- | --- | --- |
| Description of Assumption / Dependency / Constraint (Availability of Test Equipment, hardware items etc.,) | Impact (Schedule, Quality, Cost) | Required By | Status  (if tracked using schedule, need not be filled) |
| Availability of quality data for low frequency | Schedule Impact | Before 2nd milestone delivery | Status being tracked with PPGPL at architecture reviews |
| Access to PhD Server | Schedule Impact | Before 2nd milestone delivery | Is a risk maintained at project risk |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**Resources, Methods, Tools, and Techniques**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl.No** | **Point under consideration** | **Quantity\*** | **Details / Remarks** |
| 1 | Computer system | Cloud | Azure |
| 2 | Programming language | Python  Javascript  Typescript | **Configuration tool:** Azure DevOps      **IDE used:** VS (Visual Studio) Code   **PROMISE Application:** Artifacts (PP, Risk, QGs, Milestone, Team structure etc..) will be maintained as part of PROMISE   **Technology Stack    Description** Angular - Front End  Python - Back End  Azure    Cloud Host  Azure devops    CI/CD    Tensor Flow, Azure ML Studio - ML Models |
| 3 | Software tools | VScode |  |
| 4 | Case tools | DevOps | Azure DevOps |
| 5 | Number and type of personnel |  |  |
| 6 | Communication links | Teams |  |
| 7 | Laboratory facilities | DT-Lab BAN 601 G09 |  |
| 8 | Travel |  |  |
| 9 | Secure coding guidelines to be followed |  | < Before development starts, the secure coding guidelines to be followed shall be identified (if not available project manager should ensure basic guidelines is created and published to the team). This guideline should be the reference item for code reviews. > (details in Proview) |
| 10 | Static analysis checks for Security |  | < Prior to development activities, the Security Manager shall identify the tool to be used to carry out static analysis checks > (details in Proview) |

**Risk Management**

**Top 3 Risks**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Risk Statement** | **Source** | **Category** | **Risk Factor** | **Risk Identification Date** |
| IF Duplicate and Inconsistent records from PhD Server THEN it affects the ingestion and processing of low frequency data | Customer | Quality | 1.5 | 20-Oct-2023 |
|  |  |  |  |  |

**Estimation**

The requirement/ scope of work was used to identify the list of feature. Each feature is broken down into activities and tasks.

The user stories taken up during the sprints comprise of the activities.

Work breakdown Structure is used to estimate the effort for the user stories.

https://inside-share-hosted-apps.bosch.com/DMS/GetDocumentService/Document.svc/GetDocumentURL?documentID=P15S170185-808998765-553

**Project/Managed Service Schedule**

Schedule for the project shall be created in PRIME, based on estimated effort and resources. Refer PRIME for more details.

<Based on scope of responsibilities agreed with customer, consider the dependencies of completion of SEP process and Data protection compliance ad IoTP requirements> (details in Proview).

**Critical computer resources**

Not applicable as we do not have any hardware dependency/supply.

**Functional Safety for ISO 26262 compliance**

Not applicable as this is non automotive application.

**Decision Analysis and Resolution**

Not Applicable as there is no alternative design used for PPGPL

**Training**

<Plan for mandatory organizational trainings and project specific training. Provide the link to appropriate Competency Plan here.>

Refer to the [Training Plan and Tracker](http://sgpvm070:8080/pkit/go/pelement.do?id=337918&type=Artifact&anon=1) template in PROVIEW.

< Provide the link to the Skill Matrix maintained in the project folder here.>

Refer to the [Skill Matrix](http://sgpvm070:8080/pkit/go/pelement.do?id=337916&type=Artifact&anon=1) template in PROVIEW.

* **Essential trainings**
  + Before kick-off of the project, all members should have completed training on  SEP-Basics (WBT ISP042 in TrainM)
  + Project Manager, Security manager, Architect, Team members –  SP-SEC-SEP-A (booking in TrainM)
  + Declaration of Confidentiality – WBT ISP005
  + ISP instructions – WBT –ISP001
* **Role based trainings**
  + DSPiE – ISP043 training (booking in TrainM)
  + Project Security Manager, Architect –
    - Secure Product Design - Basics (booking in TrainM, search for SP-SEC-SPD-B)
    - Secure Connected products-Basics (booking in TrainM, search for SP-SEC-SCP-B)

(details in Proview)

**Project Management Reviews**

| **When (Phase)** | **What** | **References** | **Objectives** | **Periodicity** | **Who** |
| --- | --- | --- | --- | --- | --- |
| Initiation(once common to whole project) | Contract | 1.      Proposal | § Detect changes from Proposal  § Impact of changes | One time or any major change | Sales |
| PP | 1.   PP template  2.   PP checklist | § Completeness & clarity of project plan  § Adequacy of tailoring of processes  § Detection of deviations (for waiver approval) | 6 months or any major change | EPQ, Peer PM and FLM |
| Throughout the project | ·        Periodic Project-progress Reviews        ·        Management Review of Project (MRP) | 1.      Revision of  Project plan  2.   Project Schedule  3.   Project Status Report format    1.      Management Review of Project Checklist | § Project Tracking  § Impact of changes on project plan (schedule, estimates, resources, commitments, goals, measures, improvement/innovation proposals)  § Review of risks & estimation  § Corrective & Preventive actions  §      Refer [**Project Tracking Procedure**](http://sgpvm070:8080/pkit/go/pelement.do?id=22828&type=Activity&anon=1) | Monthly | Middle Mgmt, FLM, APM, DQA and EPQ as appropriate |
| Engineering Start, Delivery & during the development | Milestone Review | 1.Project Performance checklist  2.All associated documents & records | ·        Gauge extent of completion of activities due for completion  ·        Extent of adherence to project plan  ·        Decision for further action | Monthly | EPQ, Peer PM and FLM |
| Before any delivery | Pre-delivery check | 1.      Pre-delivery checklist  2.      All associated documents & records | § Check completeness, consistency and correctness of deliverables  § Approval to deliver | Before releasing the solution | EPQ,  PM |
| Closure phase(once common to whole project) | Post-implementation review | Nil | § Lessons learnt - Technical,  § Process related, Project Management related |  | EPQ, Peer PM |
|  |  |  |  |  |  |

<Security and Data Protection related to be checked in all phases of lifecycle (details in Proview)>

Checklist\_Data\_Protection\_And\_Security\_for\_PMs\_ProjectStart - http://sgpvm070:8080/pkit/go/pelement.do?id=419354&type=Artifact

**Project/Managed Service Closure**

Project will be closed based on the time schedule mentioned in the contract or this project shall remain in force until terminated by either party by giving the other a written notice as per contract.

The following BGSW/QMM procedures will be followed during closure.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Phase** | **Entry criteria** | **Exit criteria** | **Inputs** | **Outputs** |
| Closure | · End of contractual period  · Acceptance of Deliverables | · Approval of QG4 | · Contract | · Computation of metrics  · Release of Resources  · QG4 Work On Approval  · Post project evaluation reports  · Archival of project related information |

**Engineering**

**MVP Release Description**

This software package includes the necessary Workflow, data transformation, data management cloud infrastructure, authentication mechanisms, and the IAPM dashboard with Digital Twin IAPM of Centrifugal Blower Template. The same components shall be reused to embed multiple templates.

Reuse Components: Workflow, data transformation, data management cloud infrastructure, authentication mechanisms, IAPM dashboard and algorithms common across multiple templates.

**MVP Release Scope**

* Provisioning of Azure Cloud Infrastructure for deployment of the solution:
  + Necessary Services and related configurations
  + Logging
  + Backup
  + Authentication
* Configuration of cloud services and required software for data ingestion
* Configuration of database and required software for the functioning of the solution
* Configuration of cloud services and required software for data pre-processing, transformation and storing
* Configuration of cloud services and required software for creating data pipelines
* Configuration of cloud services and required APIs for functioning of the solution
* Configuration of cloud services and required models for fault detection and insights generation of a centrifugal blower:
  + Engineering Insights: Bearing Faults, Eccentricity, Impeller Condition, Misalignment, Rotor Bar Condition, Velocity and Acceleration Severity
  + Operational Insights: Power, Load, Motor Thermal Efficiency, Valve Block, RUL
* Configuration of cloud services and required front end software for the IAPM dashboard

Refer "**Major Actvities"** section for PPGPL scope.

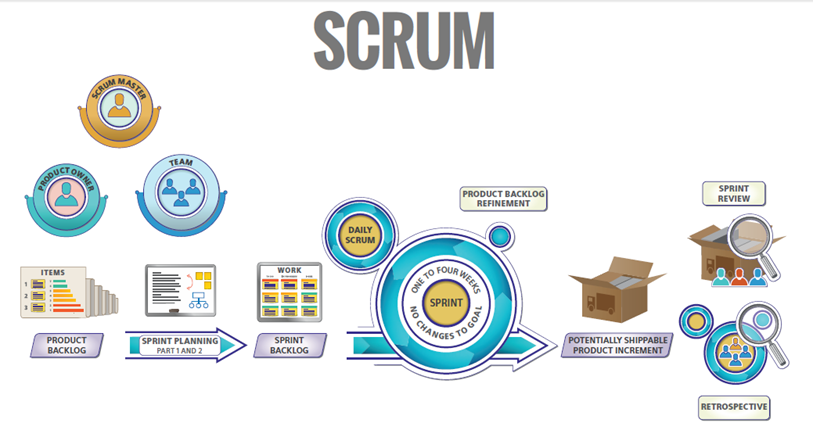
**MVP SW Release Strategy**

Software package will be provided once the quality gate is approved.

Note: Customer sign off to be available before software release

**Engineering Lifecycle**

**Development Projects:**



**Requirements**

The requirements will align with the customer requests and discussion

For Each Sprint there will be requirements planning and estimation meeting and requirements are documented JIRA

Track and Release R4J plugin will be used to handle requirements engineering activity

**Requirements Analysis techniques and documentation**

Track and Release tool will be used for requirements documentation and analysis of the requirements. The comments field and optionally the attached documents in Track and Release would explain the requirements.

<https://rb-tracker.bosch.com/tracker13/plugins/servlet/com.easesolutions.jira.plugins.requirements/project?detail=DTIAPMPPGPL>

**Requirements Validation**

The requirements milestone will be share with Customer team to align with customer requirements. The documented requirements and milestone will be shared with Customer team. Customer and Development Team will have a joint responsibility to validate the requirements

In addition, task coordinators are added as “Watchers” in Track and Release, they will intimate in case there is any difference in understanding of requirements.  Else, requirements are considered as validated and frozen.

Internally, the PM or the tool responsible shall check if all the mandatory fields such as Impacted Items, Implicit Requirements and Assumptions are correctly filled for the tasks.

**Requirements Elicitation**

Requirements elicitation is the set of activities where information is given by stakeholders, users, and customers to be applied to the design of the initiative or the solution.

Elicitation is a perpetual process during a project development. The project's success depends upon the accuracy, completeness, and detail of the stakeholder requirements. Eliciting requirements not only involves obtaining documented criteria but also uncovering latent or potential needs.

Requirements Workshop & Brainstorming are two functions are used to analysis and capture all the requirement to prepare the user stories as output.

**Requirements Analysis techniques and documentation**

**Requirements Validation**

Requirement validation and clarification is done with the customer product manager by the architects.Requirement sign-off is obtained on the baselined requirements.

**Traceability Management**

Vertical traceability technique will be followed. Traceability would be maintained using the Track & Release-Tracker 13 from requirements to testing.

**Design**

Design document will be completed before implementation.

**Design Methodology**

**Levels of Design**

* HLD Phase: Architecture diagram, component diagram will be created  for new features / work packages. HLD will not created for all modules and will be done only on case to case basis if required.
* https://inside-share-hosted-apps.bosch.com/DMS/GetDocumentService/Document.svc/GetDocumentURL?documentID=P15S170185-808998765-624

Formal design reviews may be done in the case it is seen as necessary and will be recorded in JIRA itself

**Design Validation**

Formal design reviews may be done in the case it is seen as necessary

**Design Methodology**

In the realm of cloud event-driven architecture, the designated project architect will offer comprehensive design directives, while the team will share partial responsibility for design tasks.

Initially, a broadly outlined objective-driven System Requirements Document (SRD) is crafted for analysis. Acknowledging that this broad architectural approach theoretically aligns with the objectives, detailed design for each component will be conducted following a top-down approach. However, the design analysis and the actual design may proceed concurrently. In practice, the outcomes of one activity can inform the other in a swift feedback loop via an iterative process. Both analysis and design can be executed incrementally, enabling the architecture to continuously evolve rather than being fully developed in a single instance.

Some common input elements for object-oriented design within this context include:

* **Conceptual Model:** Derived from object-oriented analysis, it captures concepts in the problem domain. This model deliberately remains independent of implementation details, such as concurrency or data storage.
* **Use Case:** Describes sequences of events leading to a system performing a valuable function. Each use case presents scenarios demonstrating how the system interacts with users (actors) to achieve specific business goals. Actors can be end users or other systems, often visualized through use case diagrams.
* **System Sequence Diagram:** Illustrates events generated by external actors for a specific use case scenario. It depicts event sequences, their order, and potential inter-system events.
* **User Interface Documentation:** Documents the visual and functional aspects of the end product's user interface, aiding designers in visualization, although not obligatory.
* **Relational/Non-relational Data Model (if applicable):** Describes how data is represented and utilized, providing an abstract model of data usage.

System Sequence Diagrams are utilized to create the design document, which is then submitted for review. The team is not authorized to modify this document unless specified by the Project Architect.

**Levels of Design**

Figma is used for UX Design.

Swagger documents for REST API

High level architecture diagram using Draw.io

**Design Validation**

Architecture board will perform the following activities as part of the design analysis and resolution.

1. **Design Analysis:**
   * **Examination:** Careful assessment of the design's components, structure, and functionality.
   * **Identification:** Recognizing strengths, weaknesses, opportunities, and threats within the design.
   * **Evaluation:** Assessing the design's effectiveness in meeting its intended goals and requirements.
   * **Analysis Tools:** Using various tools, techniques, and methodologies to evaluate the design thoroughly.
2. **Design Resolution:**
   * **Problem Solving:** Addressing identified weaknesses and issues in the design.
   * **Innovation:** Introducing creative solutions to enhance the design's efficiency and effectiveness.
   * **Optimization:** Streamlining the design elements to improve performance, usability, or other desired attributes.
   * **Implementation:** Applying the resolved design changes, which might involve alterations, additions, or complete redesigns of specific elements.
   * **Testing:** Verifying the effectiveness of the implemented solutions through testing and validation processes.

Architecure design is formally discussed with the architecture board and final architecture is placed in below loaction

https://bosch.sharepoint.com/sites/msteams\_7283993/\_layouts/15/AccessDenied.aspx?Source=https%3A%2F%2Fbosch%2Esharepoint%2Ecom%2Fsites%2Fmsteams%5F7283993%2FShared%20Documents%2FForms%2FAllItems%2Easpx%3Fcsf%3D1%26web%3D1%26e%3DFyfK18%26cid%3Ddc084fa8%252D9eda%252D45f0%252Da260%252D738c0b1bf60a%26FolderCTID%3D0x01200059F14A55876CC8489AD4A8FD49E83F19%26id%3D%252Fsites%252Fmsteams%255F7283993%252FShared%2520Documents%252FGeneral%252FDigital%2520Twin%2520Track%252FARCHITECTURE%26viewid%3Dc01be145%252D4baa%252D441d%252D97ba%252D57ec8e0dc216%26OR%3DTeams%2DHL%26CT%3D1698392964638%26clickparams%3DeyJBcHBOYW1lIjoiVGVhbXMtRGVza3RvcCIsIkFwcFZlcnNpb24iOiIyNy8yMzA5MjkxMTIwNSIsIkhhc0ZlZGVyYXRlZFVzZXIiOmZhbHNlfQ%253D%253D&correlation=8d24e8a0%2D8099%2D7000%2D8834%2Dfd72966f9cb6&Type=item&name=6edac57e%2D735c%2D4f51%2Da9ff%2D236df090a23d&listItemId=507&listItemUniqueId=47770e47%2D87c5%2D4e20%2Db89c%2D5b97939e32de

**Coding /Task development**

The task development process follows these steps in Azure DevOps:

 Step 1: Create a logical Work Breakdown Structure for each requirement or a combination of similar requirements from User stories.

 Step 2: Further decompose each high-level task into multiple levels until there is clarity and independence in development.

 Step 3: Estimate the effort required using Story points for each independent task and record it in Azure DevOps under the backlog.

 Step 4: Assign tasks to team members with a unique task code in Azure DevOps.

 Step 5: Team members are responsible for updating the task status daily and adjusting the status accordingly within Azure DevOps.

 Step 6: After the completion of implementation and review, the task status in Azure DevOps will be set to resolved/closed.

 Step 7: Upon review closure, the Official Project Log (OPL) will be sent back to the Project Manager for final closure.

**Integration (as applicable)**

Operates independently and will run within the Azure cloud environment. It includes a frontend web application, a backend application cluster hosted in AKS (Azure Kubernetes Service), and two databases: CosmosDB and ADX.

**Verification**

The project development team is responsible for the Verification of tasks. The resources are identified during project planning to conduct verification of tasks. The verification activities include reviews.

Each requirement shall be linked to the code where it has been implemented.

A static code check shall be performed to confirm adherence to standard coding guidelines based on Pylint back-end.

<https://pypi.org/project/pylint/>

A software analysis report shall be generated and all warnings and errors shall be assessed.

**Technical Reviews**

* Design Review:
  + The design components shall be reviewed to ensure conformity to all the requirements
* Code Review:
  + A detailed software review shall be conducted to ensure conformity to the design
  + Code review shall ensure adherence to coding standards
  + Code review shall ensure baselined components are considered in case of re-use
  + Code review shall ensure there is no additional functionalities available in the software other than what is mentioned in the requirements
  + Code review shall ensure latest available libraries are used for development
* Test Review:
  + Test spec shall be reviewed to ensure coverage of all new requirements
  + Test cases shall cover both functional and nonfunctional requirements
  + Only baselined test artifacts shall be taken over in case of re-use

**Technical Reviews**

Technical Reviews will be done as below

* Developer analyzes the assigned task, seeking clarity from the architect and product owner.
* After obtaining necessary details, development begins in a new branch, adhering to naming standards in the documentation.
* Completed development results in a Pull Request (PR) creation.
* Reviewer assesses the PR and provides comments for improvement.
* Comments are addressed, and the PR undergoes final review.
* Gated check-in procedure prevents accidental submissions.

| **Phase:** (To be done before artefact is baselined: Refer schedule) | **What** | **References** | **Objectives** | **Review Method** |
| --- | --- | --- | --- | --- |
| Requirements and Definition | RS | 1.      Req.  Template  2.      Req. Checklist | 1.   Review for Completeness & Accuracy  2.   Feasibility of implementation |  |
|  | ATP | 1.      RS  2.      Test Plan Checklist | 1.  Coverage of Req.  2.  Completeness & adequacy of test cases as per test plan |  |
| Design | High Level Design Document (HLD) | 1.      Design Template  2.      Design Checklist  3.      Design rules  4.      RS | 1.      Design completeness  2.      Traceability to Requirements  3.      Clarity and consistency |  |
|  | ITP | 1.      HLD  2.      ITP  3.      Test plan checklist | 1.      Coverage of design  2.      Completeness & adequacy of test cases as per test plan |  |
| Development | LLD | 1.      Design Template  2.      Design Checklist  3.      Design rules  4.      HLD | 1.      Design completeness  2.      Traceability to HLD  3.      Correctness, Clarity, Codability, Testability and Consistency |  |
|  | UTP | 1.      LLD  2.      UTP  3.      Test plan checklist | 1.      Coverage of LLD  2.      Completeness & adequacy of test cases as per test plan |  |
|  | Source Code | 1.      Coding standards  2.      LLD  3.      Static Code Analyzer tools  4.      Code Compiler tools | 1.      Completeness & correctness of code w.r.t LLD  2.      Adherence to coding standards |  |
| Integration | Customer Documentation /User manual | 1.      RS  2.      Documentation Standards | 1.      Completeness w.r.t. requirements  2.      Clarity / Readability  3.      Usability |  |
| Maintenance | CRH Log  RDCT Document  Test Specification  Source Code |  |  |  |
| Before any delivery | Pre-Delivery Check |  |  |  |
|  |  |  |  |  |

**Joint Reviews**

| **Phase** | **Work Product** | **References** | **Objectives** | **Review Method** |
| --- | --- | --- | --- | --- |
| Requirement | Requirement Engineering | Client Requirements | Understanding of user stories | Formal technical  review |
| Coding | Design | Design guideline | To validate the design | Brain storming with in the team |

**Testing**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Testing type** | **What is Tested?** | **Acceptance Criteria** | **Verified by** | **Tools / Methods** | **Where** |
| Unit Testing | Coding Tasks | User Story / Task level  DoD | Developers | Automated/TestNG JUnit | Local Dev + CI (as part of build) |
| Integration Testing | User Story / Components / controllers etc | Link to acceptance criteria/ Please type | Developers / Technical architects | Automated/ Rest client etc | Local Dev + CI (as part of build) |
| System Testing | Scenario Testing , Userflows/User Journeys/ Performance / Cyber Security tests | Link to acceptance criteria/ Please type | Manual QA / PO | Automated/Exploratory testing | Staging /Test Environment |

**Validation**

**Test strategy:**

[**https://sites.inside-share5.bosch.com/sites/170185/\_layouts/15/guestaccess.aspx?guestaccesstoken=YZyGktG8un5r1Wr%2f1qttFjPVkC5mphuTcxO5zK64xvI%3d&docid=2\_116e9f33e820147e9bde4622a3532deeb&rev=1**](https://sites.inside-share5.bosch.com/sites/170185/_layouts/15/guestaccess.aspx?guestaccesstoken=YZyGktG8un5r1Wr%2f1qttFjPVkC5mphuTcxO5zK64xvI%3d&docid=2_116e9f33e820147e9bde4622a3532deeb&rev=1)

**Problem Resolution Management**

**Triggers for Problems**

|  |  |  |  |
| --- | --- | --- | --- |
| **Triggers** | **Frequency** | **Technique** | **Stakeholders** |
| Internal Software Bug | As and when it occurs | Ishikawa Diagram, Pareto Charts , 5 why analysis | Project team and support by EPQ/QMM |
| Software issues reported by customers | After delivery | 8D analysis | Project team and support by EPQ/QMM |

This is aligned with BGSW QMM PD(**Bharatesh C E**) and BGSW QMM EPG(**Raghavendra M N**).

**Release (as applicable)**

< Before release, Pen test results (conducted by independent team) along with residual risks related to security shall be reviewed by ProSO. (details in Proview)>

**Post Delivery / Bug Fix / User Support (as applicable)**

**Plan for Transition**

<Plan transition to operations and support at the end of the development life cycle wherever applicable.

Use [Transition Plan](http://sgpvm070.apac.bosch.com:8080/pkit/go/pelement.do?id=361635&type=Artifact&anon=1) template from Proview to plan for transition.>

**Software Update Strategy**

|  |  |
| --- | --- |
| ****Software Update Strategy:**** | |
| **Scope** | <SW update package delivery (or) SW update campaign orchestration > |
| **Target System** | <Target system can be ECUs, Mobile, Home appliances etc. > |
| **Update Frequency** | < regular intervals like quarterly, yearly etc. (or) on-demand (or) based on specific triggers or events > |
| **Update Channels and Delivery** | < over-the-air (or) local network (or) physical media > |
| **Testing and Support** | <Provide info on "Test Environment setup, Responsible to perform compatibility testing and Support details" > |
| **KPIs** | <SW update success rate, SW update completion time etc. > |

**Engineering Support**

**FMEA**

|  |  |  |  |
| --- | --- | --- | --- |
| **FMEA Scope** | **Estimated Effort** | **Responsible** | **Deliverable**  (Yes/No) |
|  |  |  |  |
|  |  |  |  |

**DRBFM**

**Usage of Open Source Software (OSS)**

Evry MVP release OSS scans will be intiated and reports will be published

**Third Party SW License Management**

<Describe the usage of 3rd party SW license management in the project. Refer to the procedure in Proview>.

<https://proview.apac.bosch.com:8443/pkit/go/pelement.do?id=154010&type=Activity>

Tracker template:

<https://proview.apac.bosch.com:8443/pkit/go/pelement.do?id=80150&type=Artifact>

<Please provide the link to the 3rd party SW license tracker maintained in the project server.>

**Quality Assurance**

**QA Plan**

QA activities shall be carried out in the project as defined in the Quality Assurance Procedure of BGSW/QMS. The EPQ activities shall be planned and communicated using PRIME. Deviations, if any shall be mentioned here and captured as Alternate Practices or Waivers in the APW tool

Below activities are performed by EPQ as part of Process compliance check, Planning is done in QA module of PROMISE tool. Any deviations shall be tracked in PROMISE.

1. PQSR checks

2. Configuration Audits

3. Data Quality verification

4. Activities Observed

5. Pre- Delivery check before release.

6. Quality Gates

7. Work Product Audit

**BGSW QG**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **QG ID** | **Applicability** | **Planned Date** | **Status** | **Remarks**     QG Applicability: BGSW QG |
| **QG Plan / Release Name:** QG  **QG Type:** SW-QG - Software QG  **QG Scope:** System/Product | | | | |
| PJ-109491\_PPGPL\_01\_SW-QG0\_11668 | Skipped | 10-Oct-2023 | Draft | QGO after Project Kickoff |
| PJ-109491\_PPGPL\_01\_SW-QGR\_11669 | Skipped |  | Draft | will be planned later |
| PJ-109491\_PPGPL\_01\_SW-QG4\_11670 | Skipped | 21-Dec-2023 | Draft | QG4 SW Release |
| PJ-109491\_PPGPL\_01\_SW-QG5\_11671 | Skipped | 17-Jul-2024 | Draft | QG5 after SW Release |

**Customer / Other QG**

Not applicable

**Quality Gates**

Refer Quality Gate module in PROMISE for plan and schedule.

**Usage of lessons learnt, reuse, sprint retrospective meeting outcome**

Lesson Learnt will be captured as part of Sprint Retrospective meetings.

https://inside-share-hosted-apps.bosch.com/DMS/GetDocumentService/Document.svc/GetDocumentURL?documentID=P15S170185-808998765-612

**Process Tailoring**

No Active APW's.

Process tailoring refers to the activity of adjusting (i.e. defining, altering, or adapting) the standardized process to meet the needs of a specific project and define the Project's Defined Specific Process.

|  |  |  |
| --- | --- | --- |
| **Process Area** | **AP / W** | **AP / W Description** |
| <Mention the Process area in which AP / W is intended> |  |  |
|  |  |  |
|  |  |  |

Alternate Practices (AP) or Waivers (W) identified, if any, shall also be captured in the APW tool

**Project/Managed Service Metrics**

The acceptance criteria for the software will be B1 issues = 0 and B2 issues  = 0, excluding B2 issues which cannot be solved due to dependencies or side effects as mutually agreed with customer.

**Goal setting and control metrics**

**Additional Metrics**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Quality and Process Performance Objective** | **Process** | **Metrics** | **Baselines and goals** | **Tracking Frequency/ Reports** | **Remarks** |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

**Plan to achieve the identified quality and process performance objectives**

Plans to reduce the Defects and improve productivity:

* Code Quality Check will be done for all the milestones release

**Product quality characteristics**

|  |  |  |
| --- | --- | --- |
| **Product Quality Characteristics** | **Applicable Metric** | **Verification and Tracking** |
| Reliability | >=70% Code Coverage | code coverage report |
| Security | No Blocker or critical defects open before release from Penetration Test and Vulnerability Report | 1.Penetration test report , Vulnerability report 2. Report verification and approval form SEP team |
| Quality | 0 (Zero) blocker/critical defects in System/API testing 0 (Zero) blocker/critical static issues | 1. Functional Test Report 2. Static Code Report |
| OSS Scan | 0 Disapproved issues, Commercial components should adher to license terms | Obligation Report and Attribution Report |

**Configuration Management**

This section describes the CM activities, the responsibilities for the same and the artifacts being maintained towards the same. Master list will updated and baselined before milestone release to customer and internally before every QG.

Masterlist link: https://inside-share-hosted-apps.bosch.com/DMS/GetDocumentService/Document.svc/GetDocumentURL?documentID=P15S170185-808998765-665

**Introduction to CM activities**

The purpose of the Configuration Management process is to have a defined procedure on how to store and control work products and SW artifacts.

Additionally it's important to have baselines for every delivery for restoring a special SW release at any time.

**Strategy for Configuration Management**

Azure Git will be used for source control and sequential development.

Technical and Other Documents will be kept in sharepoint.

Every Milestone release to customer and internal testing, Source code  will be baselined and branched out.

QG will be performed based on the milestone release to the customer. Incase of minor changes on the already delivered features PDC will be performed.

**Configuration Management Organisation**

**CM Responsibilities**

|  |  |
| --- | --- |
| **Task** | **Responsibility (Name)** |
| Configuration Management Set-up | DT Infra Team, Development team |
| Updating the CM Plan | PM, APM |
| Rights Allocation of the Project Team | PM,APM |
| Identify, record and archive the CI's | PM,APM |
| Identify and give a label for Software baseline | PM,APM &Team |
| Verify the completeness of the baseline | PM, APM |
| Branching / Merging | PM, APM & Team |
| Configuration Audits | EPQ |
|  |  |

**Baselining criteria and list of configuration items**

**Customer Supplied Items**

Requirement document

**Environment related Items**

Individual TMs would be responsible for their code

Baselining will be done based on features and milestones releases. Baselining will be done before release to the customer with Version, TAG.

Code Complexity will be captured and No Major, Critical issues will be there in each release.

**Storing and Retrieving Configuration Items**

The contents of a repository for storing configuration items, the directories maintained and the description of each of the directories are specified in the Master list. The soft copy of the entire project related documents shall be accessible as Read : to all the project team members and Write : to the designated Project Manager On any deviation from the above, the list of persons authorized shall be documented in the master list.

**Naming Convention**

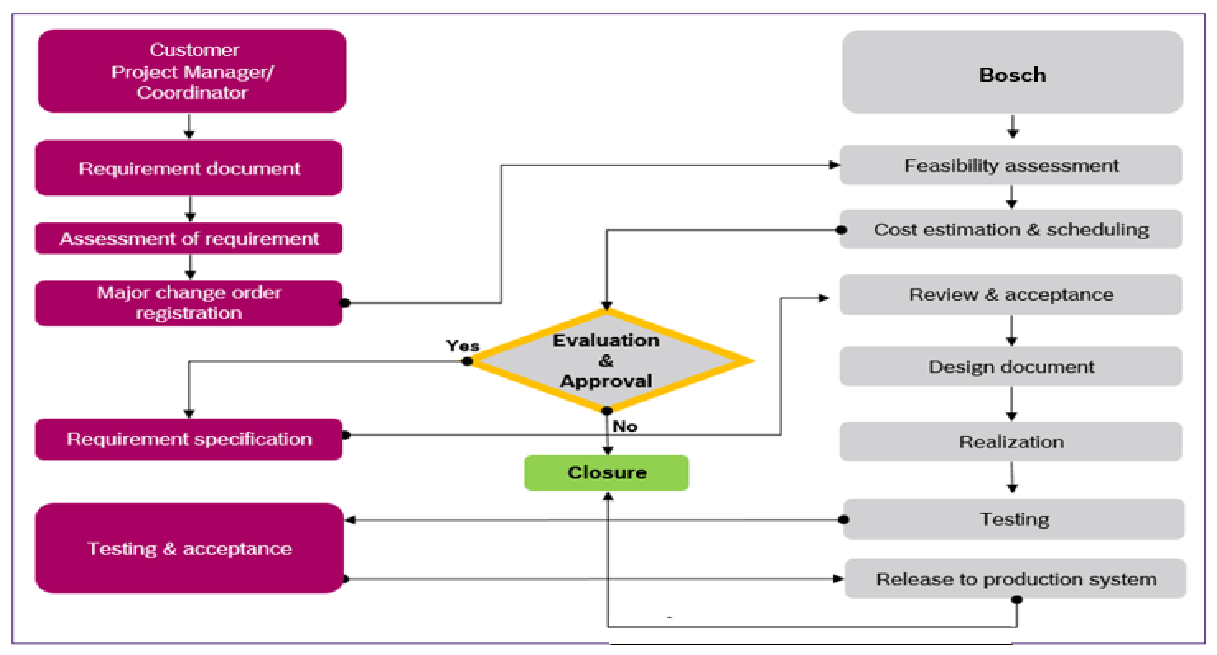
| **SL#** | **Category** | **Naming convention** |
| --- | --- | --- |
| 1 | Project Documents | YYYY\_MM\_DD\_Description\_ReportNo.pdf |
| 2 | Source Code | PPGPL Repository ([ppgpl-dev-dt-analysis-api - Repos (azure.com)](https://dev.azure.com/PPGPL/Digital%20Twin/_git/ppgpl-dev-dt-analysis-api" \o "https://dev.azure.com/ppgpl/digital%20twin/_git/ppgpl-dev-dt-analysis-api" \t "_blank)) |
| 3 | Branch Information | feature/<feature\_name>; hotfix/<hotfix\_name>; develop;main |
| 4 | Labels | vX, vX.X, vX.X.X |
| 5 | Code Review | Pull Request <no>: Commit Message |
|  |  |  |

**Change Management**

Follows the agile way of change management as defined in the Scrum/Agile process, where changes in approach, priority, technology are discussed as part of product backlog grooming for consequent sprint or sprints.

ADO tool will be used for any change management.

Any contract amendments required during the execution of the Program would be routed through the Change  
Request (CR) Process. The CR Process will be triggered under the following circumstances:  
i) Any addition /modification to the scope as outlined in the Program scope  
ii) Any change in the Program schedule due to delays from PPGPL in providing infrastructure, clarifications, and  
inputs



**Strategy for Branching, Merging and Versioning**

Version Management in the project shall be followed as mentioned in the [Configuration Management](http://sgpvm070:8080/pkit/go/pelement.do?id=23029&type=Activity&anon=1) Procedure.

**Interface Control**

Not Applicable. Software interface is out of scope.

**Configuration Status Accounting**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl. No.** | **Status Accounting Reports / artefacts** | **Frequency of updating** | **Responsibility** |
| 1. | CI Master-list Log | As and when change requests are made | PM |
| 2. | CRH Log | As and when change requests are made | PM |
| 3. | Release Log | For every release made to the Customer | PM |
|  |  |  |  |

**Configuration Audits**

Configuration audit will be done for every release by EPQ, if no release then audit will be performed atleaset once in every quarter.

**Additional V & V tasks**

**Backup and Recovery Plan**

**Backup**

Standard Tools are used for configuration control, Backup is taken centrally by CI team.

**Recovery**

The recovery process is as per “[Backup and Recovery](file://bosch.com/dfsrb/DfsIN/loc/Kor/QMM/RBIN_QMS/Corporate_Process/Information_Systems/QMS2_Procedures/QSP_BackupAndRec.docx)” Procedure.

Refer “[Recovery Request](file://bosch.com/dfsrb/DfsIN/loc/Kor/QMM/RBIN_QMS/Corporate_Process/Information_Systems/QMS3_Forms/QSF_RecoveryReq.dot)” Form

**Documentation and Records collection, maintenance and retention**

Documentation, Records collection, maintenance and retention of the documents shall be carried out as per the process defined in Document and Data Control Procedure of BGSW/QMS The identified list of documents and records of the project are maintained in Master-list The Master-list would be updated as and when the documents and records are created and approved. The Master-list is reviewed and approved by Project Manager

**Customer supplied items**

Not Applicable

**Backup**

The server and workstation backup is as per the Backup and Recovery Procedure.For details refer to Server Backup.

**Recovery**

The recovery process is as per “[Backup and Recovery](file://bosch.com/dfsrb/DfsIN/loc/Kor/QMM/RBIN_QMS/Corporate_Process/Information_Systems/QMS2_Procedures/QSP_BackupAndRec.docx)” Procedure.

Refer “[Recovery Request](file://bosch.com/dfsrb/DfsIN/loc/Kor/QMM/RBIN_QMS/Corporate_Process/Information_Systems/QMS3_Forms/QSF_RecoveryReq.dot)” Form

**Documentation and Records collection, maintenance and retention**

Documentation, Records collection, maintenance and retention of the documents shall be carried out as per the process defined in Document and Data Control Procedure of BGSW/QMS The identified list of documents and records of the project are maintained in Master-list The Master-list would be updated as and when the documents and records are created and approved. The Master-list is reviewed and approved by Group Manager / Project Manager

**Non conforming software**

Not Applicable

**Anti-Virus Policy**

Anti-Viruspolicy is as per Information Security and Privacy Rules for BGSW**.**

**Non deliverable software**

Not Applicable

**Information Security & Data Protection**

At Bosch, the Information Security and Data Protection practices stated in Central Directive 02900 ([link](https://rb-wam.bosch.com/socos-c/SOCOS/display.fcgi?exportExcel=0&lang=en&standard=&area=00000&def_disp_lang=en&mode=0&searchstr=c%2Fisp&GB_FB=RB&TOPIC=all&topicsAll=&orgAll)).

* For any project, where end deliverables (which includes deliverables either from internal and / or external suppliers) are used by Global customers (B2B or B2C), such projects shall comply with Security Engineering Process norms (SEP).
* For any project, where end deliverables may be used at enterprise level (within BGSW or at Bosch), such projects shall comply to Enterprise IT Security Architecture norms (EISA). Normally such projects will be developed based on the user requirements gathered by respective BU’s ICO and gets the IT systems conformance to security through CI/DAV organization and Data Protection from DSO.

 At BGSW,

* For product development, SEP process to be followed available in QMS : Link
* For enterprise applications, EISA process to be followed and available in docupedia: EISA

For essential and role-based trainings relate­d to Security refer section “Trainings” in PP .

<Please contact DSP( Data protection and Information Security Partner) of your department for any clarifications regarding the below objectives)>

|  |  |  |  |
| --- | --- | --- | --- |
| # | ISMS Objectives | Informations with SC2 and SC3 | Measures implemented |
| 1 | Confidentiality | * Development /Research data è C-SC3 * Product launch, Business strategies and mergers * Contracts and Agreements à C-SC2 * all development documents needing protection. E.g. development drawings with partly confidential content (C-SC2) * safety case ISO 26262, product FMEA, process FMEA (C-SC2) * CDQ0306 --Management of Special Characteristics * Patent documents - prior to filing the patent application (C-SC2) * Product-relevant reports to authorities e.g. reports according to TREAD Act (C-SC2) * Code used for software development->C-SC2 | Examples of measures     * Access control: no unauthorized use of the systems, e.g. safe passwords, automatic locking system, two-factor authentication, encryption of data carriers. * Maintain sensitive / confidential hard copy files in a lock and key condition * Encrypt while storing sensitive personal data * While processing personal data appropriate deletion concept has to be elaborated and implemented |
| 2 | Integrity | * There exists a high security requirement with regard to integrity, if a change is not at all permissible and falsifications have to be eliminated reliably, e.g. in case evidence or documents with a statutory duty to preserve records è I-SC3 * Insurance contracts à I-SC3 * Contractual agreements and Management meeting minutes-I-SC3 * Financial results of organization->I-SC3 * Management of incorrect and non-compliant products and processes-ISC2 * External, binding correspondence * Payroll and attendance data of associates->I-SC3 * Patents of the Bosch Group before publication– I-SC3 * Bosch external websites-I-SC3 | Examples of measures     * Definition and allocation of appropriate write authorizations * labelling and versioning of files * Printing of documents * Archiving of signed printouts * Plausibility check, , 4 eye check * Specific technical protection of the related IT Systems * Technical checksums, e.g.at data transmission * Commit/Rollback method at database –transactions * Digital Signature * Data access control: no unauthorized changing or deleting within the system, e.g. authorization concepts and specific access rights, logging of accesses to be enabled |
| 3 | Availability | * info in data centres à A-SC3 * production : Standstill of the production due to the malfunction of a computer, which provides production relevant data è A-SC3 * Product Approval Information à A-SC2 * Control of measuring devices, test equipment, tools, samples, and inventory à A-SC2 * Internet connection->A-SC3 | Examples of measures     * Availability control: Protection against coincidental or deliberate destruction resp. loss, e.g. backup strategy (online/offline; on-site/off-site), |
| 4 | Privacy | * Beliefs, opinions, race, biometrics, orientation, offences, health are PII (personally identifiable information) à C-SC3 * Medical records and history à C-SC3 * Products with personal data -> C-SC2 * Password à C-SC3 * Medical records and history à C-SC3 * Sexual orientation à C-SC3 * Financial information such as Bank account or credit card or debit card or other payment instrument details->C-SC3 | Examples of measures     * Encrypt while storing / transmitting sensitive personal data * While processing personal data appropriate deletion concept has to be elaborated and implemented * A "retention of data" is not allowed. Only those personal data which are needed for a specific purpose may be collected and processed. Only the minimum of data is allowed to be collected. |
| 5 | Legality | a)  Check for Legal permissions, work council agreement, collective agreement, contractual performance of the region where product is released etc. ->C-ISC3    b)  Do you need to take into consideration any special laws for this product?->C-ISC3 | Examples of measures     * All the required agreements to be in place |
| 6 | Continuous improvement | * Internal and external audit reports->C-SC2 * Internal Process review changes,metrics-C-SC1 and C-SC2 * Vulnerability assessments and penetration tests. C-SC2 * Monitoring of Security KPI’s and SLA’s. C-SC2 * Security engagement models for project management * Security incident reviews- C-SC2 |  |

Note: Security Class 0 = no protection requirement , 1 = low protection requirement ,2 = medium protection,3 = high protection requirement

For clarifications related to:

* Data Protection - contact BGSW/DSO
* Information Security –
  + For Captive projects (targeted for Global customers), contact respective GB Product Security Officer (like AE, CC, CM, PS) (refer list of ProSOs)
  + For non-captive projects (targeted for Global customers) contact **BGSW-Product Security Officer**

**PP Maintenance**

Person responsible for PP maintenance                 : Project Manager

Evaluation and approvals to changes in PP           : Group Manager

Communication to changes in PP                          : Project Manager shall inform the development team

Updating of plan                                                    : Plan shall be updated at the end of each phase and when changes occur

 Triggers for revisiting the Project Plan are as mentioned in Project planning procedure.