MES – Machine Interlinking With SAP

Business Requirement

HeroMotoCorp

This guide includes the business information you need to work with the designed application. It contains detailed information about the application.

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REVISION HISTORY

Revision Number	Date	Prepared By	Reviewed By	Comment
1.0	15-07-22	Omkar Gaonkar	Hemant Gariyar	Machine Interlinking with SAP HMC

Abbreviations:

Client: Hero MotoCorp, henceforth will be referred to as HMC.

Vendor: Bar Code India, henceforth will be referred to as BCI.

TABLE OF CONTENTS

1 EXECUTIVE SUMMARY

This business requirement document is designed for the **MES – Machine Interlinking** required by HeroMotoCorp.

2 PROJECT DESCRIPTION

The project shall be deployed in the assembly line area for part loading onto the conveyor line. The application developed shall be used on the windows devices for SAP interlinking

2.1 SCOPE OF WORK

Following shall be part of the project scope and deliverable from BCI:

1. Windows application development
2. Backend / Integration application as per scope detailed in this document.
3. Integration with SAP using API (to be provided by HMC).
4. Implementation & Training

2.2 OUT OF SCOPE

The following areas are out of scope for this project:

1. Windows device (Android based)
2. Wireless Infrastructure
3. Server & Database (for offline support)
4. Connectivity to SAP

3 FUNCTIONAL REQUIREMENTS

The application functionalities are primarily in one components. A windows client deployed on a window device allowing system to perform the operations.

3.1 WINDOW SOCKET APPLICATION

The window client application shall be built for window device. It will be loaded on the window and shall communicate with SAP. The application shall provide OK or NOT OK status from the SAP.

3.1.1 USER AUTHENTICATION

The authentication will be done in the application while making the connection with SAP

3.1.2 SAP STATUS VALIDATION

The next operation shall be to confirm the status against the received inputs.

3.1.3 SAP CREDENTIALS

There will be provision to stored SAP credentials which shall be used to invoke the SAP API calls.)

3.1.4 WINDOW DEVICE COMMUNICATION

A communication service shall be deployed in the server which shall handle the communication between window application and SAP.

4 TECHNICAL PROPOSAL

The entire solution is based on 3-tier architecture where the mobile devices communicate to the database through a data synchronization application.

4.1 SOLUTION ARCHITECTURE

The interlinking shall be provisioned on a windows device which shall handle the communication with SAP ERP. There will be a frontend application provided for visibility of tasks.

4.2 HARDWARE & SOFTWARE REQUIREMENTS

4.2.1 SAP INTERLINKING APPLICATION

The solution would require the system with following configuration:

1. Windows Device where window application will be running
2. MOXA device details (IP and PORT)
3. SAP Client details

4.2.2 DESKTOP DEVICES

The desktop application would require the device where the application will be installed. One more device MOXA is required.

5 BCI SOFTWARE METHODOLOGY

5.1 PURPOSE

This document establishes a common and uniform standard for all application development for Bar Code India Ltd (BCI) regarding the Software Development Methodology (SDM). The document defines the SDM approach, different phases & milestones and engagement level with customer at each phase.

5.2 OBJECTIVE

The objective of the document is to define approach for successful completion of the project which shall be developed and executed by BCI. The document define project life cycle, customer engagement in different phases of the project and BCI deliverables in each phase.

5.3 PROJECT LIFE CYCLE

Below is the overview of BCI Project Life Cycle. Each phase has multiple iteration during the project and project moves to next phase only when the milestone in present phase are achieved.
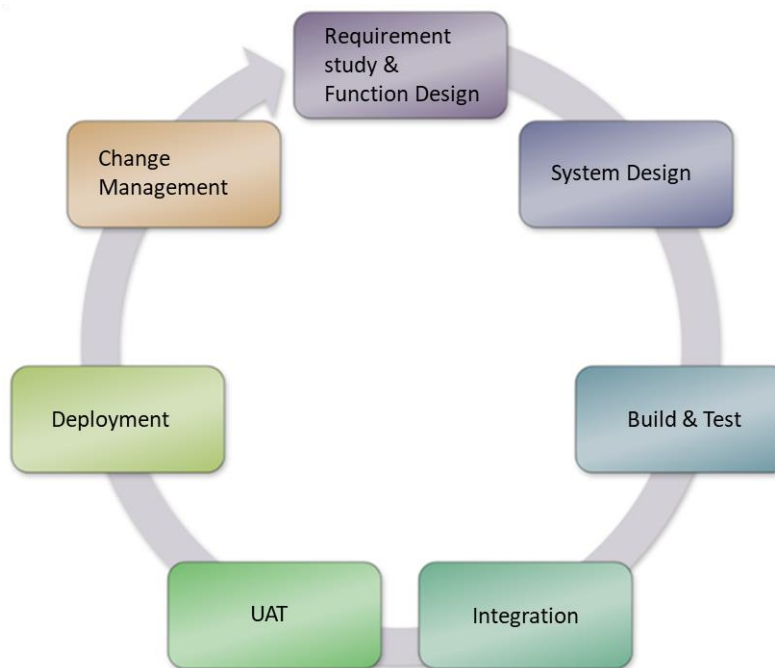
Project Life Cycle

5.4 PROJECT PHASES & DELIVERABLES

BCI follows a phased application development approach wherein, the project moves in the phases as summarized below. Each phase is detailed in this section to make customer understand BCI project process. The matrix also highlights the level of involvement from customer side.

5.5 PHASE WISE ROLES AND RESPONSIBILITY

5.5.1 REQUIREMENT STUDY

In this phase all the stake-holders form customer team, define clear project objectives, goals, scope of project, workflows & integration touch points with ERP. Any new requirements which were not identified or communicated during the estimation and having major impact on the project architecture or project timeline shall be managed through a Change Request and would result in a revision of estimates, timelines and cost. The Phase also identifies the Key Stakeholders with the following main objectives in mind:

1. To describe clearly the request from Customer perspective, and to document the goals, the justification, the risks, and the success criteria
2. To provide an understanding of the business process
3. Translating the business requirements from business language into logical and technical system requirements. Both the technical stakeholders and the project team analysts describe and model the behavior and characteristics of the system and verify that the business requirements are met.
4. Allowing the stakeholders to validate proposed technical approaches during which process they create a detailed description of the work for the technical implementation team and attempt to discover any technical constraints/risks.

Phase Deliverables

Deliverables	Responsibility
Detailed requirement/interface details	BCI / Hero MotoCorp
Functional Scope Document	BCI
Document Signoff	Hero MotoCorp

5.5.2 SYSTEM DESIGN

In this phase, a detailed System Requirement Document is prepared which contains window application interface touch points with ERP, necessary process flows, Data Flow Diagrams & flow charts for processes.

5.5.3 BUILD & TEST

Once the customer has signed off SRS document, the development is started at BCI development center. This phase has less customer involvement and mostly deals with building application modules, performing unit level testing. Customer has to provide test data during this phase so that the code is test before it's moved to next phase.

Phase Deliverables

Deliverables	Responsibility
System Codes	BCI
Test Data	Hero MotoCorp
Interface Development in ERP	Hero MotoCorp
Unit Testing	BCI

5.5.4 INTEGRATION

Once the development of all the modules is complete, the BCI moves to customer environment to do Integration Testing with ERP interface. The customer must be ready with interfaces which are to be developed in the ERP to integrate BCI Application.

Phase Deliverables

Deliverables	Responsibility
ERP Interface Details	Hero MotoCorp
Interface Test Data	Hero MotoCorp
Interface Testing / Development	BCI
Test Validation	Hero MotoCorp

5.5.5 USER ACCEPTANCE TESTING (UAT)

The purpose of this phase is to involve the End Users of the Warehousing Solution to test the Usability of the Application. End Users will create the Test Data and Business Scenarios which will be tested using window machine.

Phase Deliverables

Deliverables	Responsibility
Test Cases	Hero MotoCorp
UAT	Hero MotoCorp / BCI
Business Scenario Testing	Hero MotoCorp / BCI
UAT Signoff	Hero MotoCorp
Release for Go-Live	Hero MotoCorp / BCI
Go-Live Plan	BCI / Hero MotoCorp

5.5.6 DEPLOYMENT

Once the UAT has been signed off, the application shall be made ready for go-live environment. No new requirements shall be entertained after UAT completion and any new requirement must be parked by customer

Phase Deliverables

Deliverables	Responsibility
Software Installation	BCI
End user trainings	BCI / Hero MotoCorp
Change Management (Process)	Hero MotoCorp
Knowledge Transfer	BCI / Hero MotoCorp
Project Signoff	Hero MotoCorp

5.5.7 CHANGE MANAGEMENT

All the change management during different phases of the project shall be handled as per the following methodology. It's advised that no project team member insist / enforce the changes and expected to follow the defined methodology.

Deliverables	Responsibility
New Requirement	Hero MotoCorp
Approval of Requirement	Hero MotoCorp Project Manager
Effort Estimation & Impact Analysis	BCI Project Manager / TL
Estimation approval	Hero MotoCorp Project Manager
Release of Order	Hero MotoCorp
Implementation of Change	BCI

5.6 PROJECT GUIDELINES AND ASSUMPTION

5.6.1 GENERAL

1. A Steering Committee shall be constructed for the execution of the project jointly between BCI and Customer team.

2. BCI & Customer shall depute a single point of contact (SPoC) for the duration of entire project.

3. The Customers' SPoC shall be responsible for arranging the involvement of relevant stake holders, process owners and technical members during the engagement of the project. The SPoC shall be responsible for the sign off any document and change management.

4. BCI will follow its internal standards for the life cycle of the project. In case Customer wishes to use internal set of standards, they should be conveyed and explained to BCI team before commencement of the project.

5. All the communication during the project shall be through either Email or written/printed documents.

6. BCI would need two weeks for resource allocation after release of purchase order.

7. The ownership of Change Management/ Business Process Changes which are required to be done for the project shall be with Customer.

8. System Testing Plan and the Acceptance Criteria would have to be defined jointly by Customer and BCI during the project scoping.

9. Customer should provide necessary authorization and access to the systems as required by BCI during the engagement.

10. Customer's key users and management will be available on a timely basis to participate in completion of the SRS.

11. The approach is based on the information available to BCI and its understanding of the requirement. Any change in the information or the perceived scope will require change to this approach.

12. Customer would ensure correct representation from all business groups in SRS (Software Requirement Specification) discussions so that all requirements and concerns can be addressed correctly.

13. Customer's key users and management will be available on a timely basis to participate in completion of the Business Requirement Document.

14. BCI resources are trained to follow a standard project life cycle. BCI follow policy of no application change without documentation. In no event, Customer shall insist any BCI on-site developer to modify / change the application (major or minor) without proper documentation through change

management process. Encouragement of such modifications would result in poor quality code and non-tested modules.

15. All milestone deliverables will be deemed acceptable within a period of one week (5 working days) from submission of deliverable in case of no response. Any other decision / approval / signoffs will be deemed acceptable within period of 3 working days from submission in case of no response.

16. BCI will have full rights to change the members of their project team. However, BCI will give prior intimation to Customer and will ensure required continuity and skills profile.

17. Any data updating or data cleanup in legacy systems is w holly the responsibility of Customer.

18. BCI & Customer will not offer employment directly or otherwise to each other's staff for a period of two years from completion of this project.

19. Any Software, Hardware or additional licenses that need to be purchased for this engagement would be Customer's responsibility.

20. Customer   will provide necessary and adequate infrastructure to BCI Onsite staff including office Space, telephone, photocopying, fax, PC resources, unlimited access to internet, computer resource, software tools essential to the implementation of the project, to enable BCI to fulfill its commitment for the assignment (none of these facilities will be used for personal work). This will be applicable for each BCI onsite consultant associated with the project.

21. BCI will provide training only to the core team at the implementation site, end user training will be taken care by the core team members of Customer Team.

5.6.2 CHANGE MANAGEMENT

1. The estimation is based on the scope information provided by customer. In case any major process is identified during the detailed SRS phase, the same shall be treated as a new business requirement and would result in a revision of estimates, timelines and cost.

2. Any change to the agreed scope at the end of the SRS Phase will have to be addressed by a Change Management process and would result in a revision of estimates, timelines and cost.

3. Any change after the commencement of the development has to be parked till the development is not complete and then all the requirements shall be taken care after proper documentation. All such changes would result in the revision of estimates, timelines and cost. In the event a change is very critical and has to be implemented during development itself, an intermediate Change Request document shall be prepared and approved by all stake holders before handed over to development team.

4. Any Customer specific application development compliance shall be extra and would result in revision of estimates, timelines and cost.

5. BCI will endeavor the availability of their staff as per the project plan for this assignment. In case of any difficulty, BCI will inform about the non-availability of the particular person in advance. The Steering Committee will evaluate the impact of any core team replacement on the project schedule and cost.

6. Customer will endeavor the availability of their staff as per the project plan for this assignment. In case of any difficulty, Customer will inform about the non-availability of the particular person in advance. The Steering Committee will evaluate the impact of any core team replacement on the project schedule and cost.

7. BCI will provide training only to the core team at the implementation site, end user training will be taken care by the core team members of Customer Team.

5.7 OPERATING PRINCIPLES

BCI agrees to the spirit of the operating principles defined under scope of work and would like to make the following observations:

1. **Resource Deployment:** The resource deployment has been done keeping in mind the starting and ending of different functionality under different phases and other integration points. This is to ensure that optimal resource is deployed on the project.

2. **Non-Poaching:** It is understood by Customer and their subsidiaries/associates will adhere to non-poaching clause for employees of BCI or its subsidiaries till 2 years after the completion of the engagement. During such period, Customer will not employ any of BCI's or its subsidiary or associate companies' employees whether directly or indirectly.

3. **Documentation:** It is expected that prior to commencement of the project, Customers' team shall compile and document all the business processes. This shall significantly reduce the time of design document by BCI.

4. **Training:** The cost for the training has been considered on the basis that the core customer team Shall be trained by BCI which would further train end -user. In case extensive end-user training has to be provided, the same shall be on the basis of number of users and the total training requirements.

5. **Warranty & Post Go-Live support:** BCI team will provide 3 months post go-live support with one resource. Any changes during the warranty period shall be as per the effort requirements.

5.8 CRITICAL SUCCESS FACTORS

While the overall responsibility for the Project rests with BCI, the following factors are identified as those, which Hero MotoCorp will strictly follow and perform in order that the implementation is successful and individual milestones as per the Project plan are delivered:

Functional Requirements: Finalizing function requirements is a joint exercise where customer is expected to identify, communicate and validate all requirements as per the initial scope of work communicated during presales engagement. As its manpower driven activity, BCI team captures these requirements, document them and share with Customer team to validate and check if anything is missed. Customer team review the document, identify any gaps and then discuss with

Clear documentation of all processes to be included for implementation as per scope defined, with standardization and uniformity across different units. The initial document shall be compiled by Hero MotoCorp team based on the existing systems, which shall be used as the basis for further implementation. This shall be completed prior to the commencement date of this project.

1. Hero MotoCorp will provide for suitable hardware, operating system, communication software and all software products to enable effective testing of solution, as per the mutually agreed schedules.
2. Hero MotoCorp will also provide for a suitable office infrastructure for the project team. All such infrastructure facilities will be provided well in time for use in the project effectively.
3. Hero MotoCorp agrees to restrict the software modifications to the minimum. Such modifications are to be approved by both the BCI and Hero MotoCorp Project Managers in consultation with the Steering Committee.
4. Hero MotoCorp is responsible to provide sample test data as per the schedules.
5. The Hero MotoCorp Project Manager will give final approval and sign off on all deliverables as and when required.
6. Hero MotoCorp agrees for a max 3 day(s) of response times from the time of registering of the input with the concerned personnel.

5.9 ROLES & RESPONSIBILITIES

In order to ensure the proper project, progress the following role and responsibilities shall be put in place both by BCI & Hero MotoCorp:

Hero MotoCorp Steering Committee: The Hero MotoCorp Steering Committee makes decisions related to the project that cannot be resolved by the project teams. The Steering Committee would also be responsible for the following:

1. Reviewing the progress of the project as per the plan
2. Resolving cross-functional issues and policy related issues

BCI team

1	Project Champion
2	Project manager & Team Leader
3	Developers
4	Testers
5	Technical Writer

Hero MotoCorp team

1	Project Manager
2	Functional process Owners
3	ERP Technical Consultant
4	ERP Interface developers

6 COMMERCIALS

Based on effort estimation, following is the cost for the project as per the requirement stated in the document. This costing is worked on the basis that there are no delays in the information availability from the customer.

6.1 EFFORT ESTIMATE

The effort estimate is calculated based on the following resources to be deployed for the project

6.2 COSTING BREAKUP

Below is the costing breakup for different services to be delivered.

6.2.1 BILLING & SCHEDULE OF PAYMENTS

Milestone / Phase	Payment due	Criteria
Advance with Purchase Order	25%	Resources assigned on receipt of PO with payment
Completion of Design Phase (SRS)	30%	Customer to close SRS in 3 iterations within15 days
Completion of Development & UAT	35%	Customer to close UAT in 3 iterations within 20 days
Completion of Go-Live	10%	Go-Live to be achieved within 25 days of UAT
TOTAL	**100%**	

Important Note

1. In the event of delay from customer side, BCI shall raise the invoice for the milestone while resources are kept engaged. In the event there is significant delay due to any unjustified reasons, the resources shall be removed from project and allocated to another project. The resources will only be moved back to projects when they are free from the on-going project.

2. In the event of delay from BCI, the resources shall be increased and kept engaged in the project without any change in the costs. However, if it's identified that delays are due to unclear requirements or increase in the scope of work, then a fresh change request shall be prepared and order for same shall be released by customer.

3. The prices & timelines quoted for Go-Live & Implementation are based on the complete project Implementation in one go. However, if customer changes the plan and wish to implement in a phased manner, then the additional prices shall be quoted based on the exact implementation plan and engagement requirements.

6.2.2 WARRANTY

There will be 90 days warranty post go-live for the bug-fixes and off-site support.

6.2.3 TERMS & CONDITIONS

Prices	Ex-works Gurgaon
Taxes	Extra GST as applicable at the time of billing
BD Manager:	
Solution Architect:	Hemant Gariya hemant.gariya@barcodeindia.com
Others:	Any other requirement beyond the scope detailed in this document shall be treated as new requirement and shall have impact on both timeline and project costs

Business Requirement

[Hero MotoCorp-Machine Interlinking with SAP]

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