# QUALITY MANAGEMENT

## Quality Management Overview

### Organization, Responsibilities, and Interfaces

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| **Name** | **Role** | **Responsibilities** |
| Tran Binh Duong | Supervisor | * Helps define product quality expectations. * Determines final acceptance of product’s quality. |
| Le Van Quy Hoang | PM | * Creates quality plan * Facilitates resolution of quality issues, escalating as needed |
| Nguyen Thi Hong Nhung | Test leader | - Provides test and test management |
| Team members:   * Le Van Quy Hoang * Tran Dinh Hoang Huy * Nguyen Van Quyen * Nguyen Khac Hoang * Kieu Cao Khanh | Developer | * Provides feedback on quality plan, help determine metrics and criteria for this project * Be a part of quality reviews and provide feedback on deliverables |

### Tools, Environment, and Interfaces

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| **Tool** | **Description** |
| **Cause-and-effect diagram** | Used to analyze the causes and effect of a problem. Used to find the root cause problem when their are a complaint about quality problems. |
| **Control chart** | Used of control charts is to prevent defects. Apply Seven Run Rule. |
| **Flowchart** | Used to analyze how problems occur and how processes can be improved |

## Quality Planning

### Define Project Quality

* ***System output:***+ A Web application to support admin manages entity ship system.

***+*** A Web applicationto support store manages own orders fast and convenient.

+ An Android application to support shipper’s business (find the best way of transfer, grad order...)

* ***Functionality:***

+ Web application:

* + - For Admin: allow admin to login, add/ block/ updateshipper or orders and analyze and export reports.
    - For Store: allow login to system, create order, tracking state of shipper, feedback for each shipper and view reports.

+ Android application has main functions: The system can find best way to go to target location, shipper can pick order and view report about delivered history.

* ***Performance:***

+ Time delay for find shipper who nearest with place of delivery is less than 10s.

+ Time delay on web application for tracking state of shipper on map is less than 5m.

+ Server can handle least 2000 clients concurrently.

+Other functions of server perform well while have many order running on application.

* ***Reliability:***

+ The application is available 24/7.

+ Find the way to go to places of receive and place of delivery are at least 90%.

* ***Maintainability:***

+ Web application is easily to maintain withoutany crashes. Source code is readability, organized into groups of skeleton(modules) and complies with coding convention.

+Android application is easily to be updated and synchronize with Web application without any crashes.Source code is readability, complies with coding convention.

+ System’s architecture has to be design to be easy to extend.

* ***Security:***

+ Information of admin/ root admin / data on server is secured.

+Information of store and shipper on server issecured.

### 1.2.2 Measure Project Quality

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| **Metric** | **Goal** |
| Accurate | * Find the way to go to places of receive and place of delivery are at least 90%. * Display the current position of shipper on map exactly. |
| Response of web application | * Time delay for find shipper <= 10s |
| Bugs/Lines of Code | * UT: 8 – 9 bugs / KLOC * ST: 2 – 4 bugs / KLOC   *(based on Fsoft norms)* |
| Maximum deep of loops | <= 4 |
| Android Program Size | <= 100 MB |
| Algorithm complexity | <= O(n^2) |
| Android version support | Support Android version 4.4.2 Kitkat to 5.0.1 Lollipop |
| Android screen support | Multiscreen  Must be tested on 320x480, 768x1024, 768x1336,1080x1920 screens |
| Website support browser | Support Chrome version 41.0.xxx, Firefox version 36.0 or later. |

## Quality Assurance

### 1.3.1 Analyze Project Quality

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| **Milestone** | **Deliverables** | **Goal** | **Review and Approved** |
| 10/04/2015 | Final Software Requirement Specification Document | * Have content right with actual research process. | HoangLVQ |
| 11/29/2015 | Final Interface design | * Good looking & easy-to-use. * Cover all functions specified in SRS. | HoangLVQ |
| 11/23/2015 | Final Software architecture design document | * Design to be easy to extend. * Cover all functions in SRS document | Supervisor |
| 11/29/2015 | Web application | * Information of admins / root admins and shopkeeper on server are secured. * Provide information of order and push notification for mobile application. * Time delay for searching a order <=3s. | HoangLVQ.  Supervisor |
| 11/29/2015 | Mobile application | * Tracking road and received order. * - Notify to system when have issue on delivered process. | HoangLVQ,  Supervisor |
| 12/4/2015 | Integration test report | * 30 – 34 test cases / KLOC * 2 – 4 bugs / KLOC | NhungNTH |
| 12/4/2015 | System test report | * 30 – 34 test cases / KLOC * 2 – 4 bugs / KLOC | NhungNTH |

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### 1.3.2. Improve Project Quality

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| **Issue** | **Action** |
| Difficult to track project’s progress | * Submit weekly report to supervisor * Meeting up team member everyday (work 6 days / week). Sometime extending the last days to keep deadline and fix bugs. * Using kanbanflowtool to track team members’ work([www.kanbanflow](http://www.kanbanflow)) * Using GIThub to manage source of project (documents, source code) |
| Coding application does not match with User Requirement | * Team has to define clearly requirementspecification and Software Architecture Design. * Develop Team must study about the document and comply with the content of document. * Any changes in process have to approve of PM |
| Maintainability | * Specify coding conventions document * Spend a lot of time to research architecture design. Then, decide the most appropriate architecture for maintaining easily. |
| Low quality code | * Create and execute types of test (unit test, integration test, system test). * Peer review, peer coding among developers. * Using Open Source and Framework to improve the quality code: NodeJS, AngularJS, Ionic framework. * Developers have to comply with the coding convention document. |
| Technology | * Predict and list the problems of technologies that are the bottleneck of project. Then, organize research to find solution from the beginning. * Have knowledge-training schedule for members. |
| Reward and discipline | * Teambuilding to increase communication ability between project’s members * Have punishment rules when:   + Member comes late or Miss meeting  + Make mistake in member document writing. Reviewed by Supervisor.  + Submit terrible code (which causes to re-coding more than 10%)  + Miss deadline |
| Acceptance of users | Do survey to discovery what features user want from this projects. Do it before design progress. |

## Quality Control

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| **Deliverables** | **Goal** | **Quality control activity** | **Frequency /**  **Interval** |
| Interface design | * Good looking &easy-to-use: don’t using many button, don’t many minor detail. * Cover all functions specified in SRS | Designer has to:   * Ask for advice of some other designer * Take comment from friends on completed work * Have approve from SRS leader | Each time designa new screen |
| Software architecture design | Design to be easy to extend | Have review and judgment from Supervisor | On completion |
| Web application | * Information of admins / root admins and shopkeeper on server are secured. * Provide information of order and push notification for mobile application. * Time delay for searching a order <=3s. | Testers execute security test and system test | On completion |
| Mobile application | - Tracking road and received order.  - Notify to system when have issue on delivered process. | Testers execute system test | On completion |
| Integration test report | 30 – 34 test cases / KLOC  2 – 4 bugs / KLOC | PM requires testers to report on work | Weekly |
| System test report | 30 – 34 test cases / KLOC  2 – 4 bugs / KLOC | PM requires testers to report on work | Weekly |

## . Action Plan

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| **What** | **Who** | **When** | **How** | **Output** |
| Define coding convention | HoangLVQ,HuyTDH | 25/09/2015 | * Read standard coding convention of NodeJS * Extract and modify to reuse it | Coding Convention Document |
| Training kanbanflow | All team | 16/09/2015  to 17/09/2015 | * Hoang LVQ guides team members how to use kanbanflow | Understand how to use kanban tool and use this tool in processes. |
| Market research | All team | 9/10/2015 to 9/13/2015 | * Enjoy survey in practice * Analytics and evaluate market depend on survey document. | Survey summary |
| Training NodeJS,  AngularJS, | HoangLVQ | 10/12/2015 to  10/13/2015 | * Read AngularJS documents * Find out how to set up and complete ‘Hello World’ tutorial. * Try some core class and functions for image processing. | Guide & tutorial document |
| Training design UI | HoangLVQ, KhanhKC | 10/12/2015 to  10/13/2015 | * Guide developers understand how to design and use design tool | Guide & tutorial  document |
| Training for Ionic frame work | HuyTDH  QuyenNV | 10/12/2015 to  10/13/2015 | * Read Ionic frame work document. * Routing in ionic frame work * Find how to setup Ionic using plugin of cordova: geolocation, device. | Guide & tutorial document |
| Training Unit Test | NhungNTH | 10/12/2015 to  10/13/2015 | * Training how to create and perform Unit Test | Understand the types of test, how to use in project |
| Create a specific WBS | HoangLVQ | 9/20/2015 | * List all tasks in each process. * Define larger tasks to smaller tasks for individual and add into MS Project. * Assign tasks for suit member | - Tasks are assigned to suitable member.  - All team members know about their tasks and can complete it on time  - PM can manage tasks via WBS in MS Project |