# 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 | * Create quality plan * Facilitate resolution of quality issues, escalating as needed |
| Nguyen Thi Hong Nhung | Test leader | Provide test and test management |
| Team members:   * Tran Dinh Hoang Huy * Nguyen Van Quyen * Nguyen Khac Hoang * Kieu Cao Khanh * Le Van Quy Hoang | Developer | * Provide 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 problem. |
| **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:***+ An Web application to manage shipper, order for admin and tracking order for Store.

+ An Android application to tracking order and pick order for shipper.

* ***Functionality:***

+ Web application. For Admin, allow admin to login, add/ block/ update shipper and analyze and report. For Store, allow login to system, create order, tracking state of shipper, feedback for each shipper and view report.

+ Android application has main function: 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.

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

+ Server can handle a 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 be create order, tracking shipper and synchronize with Android application without crashes. Source code is readability, organized into groups of skeleton 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 has to be design to be easy to extend.

* ***Security:***

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

+ Information of shopkeeper and shipper on server are secured.

### 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% |
| 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** |
| TODO | Interface design ver1.0 | * Good looking & easy-to-use. * Cover all functions specified in SRS . | TODO |
| TODO | Software architecture design ver1.0 | Design to be easy to extend. | Supervisor |
| TODO | 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. | TODO |
| TODO | Mobile application | - Tracking road and received order.  - Notify to system when have issue on delivered process. | TODO |
| TODO | Integration test report | 30 – 34 test cases / KLOC  2 – 4 bugs / KLOC | NhungNTH |
| TODO | System test report | 30 – 34 test cases / KLOC  2 – 4 bugs / KLOC | NhungNTH |

### 1.3.2. Improve Project Quality

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| **Issue** | **Action** |
| Difficult to track project’s progress | * Weekly report, team work 6 days / week * Using kanbanflow to track team members’ work |
| Maintainability | * Specify coding conventions document * Concentrate on architecture design |
| Low quality code | * Unit Test, System test * Peer review, peer coding among developers * Using Open Source and Framework: NodeJS, AngularJS, Ionic framework. |
| Hard to gain 90% accuracy of find the way to go to places of receive and place of delivery | Early study google map API, google place API and combines some algorithms together to get higher precision |
| 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 design a 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 | HuyTDH | 25/09/2015 | Read standard coding convention of NodeJS  Extract and modify to reuse it | Coding Convention  *(10.1 in this document)* |
| Training kanbanflow | All team | 16/09/2015  to 17/09/2015 | Hoang LVQ guides team members how to use kanbanflow |  |
| Market research | All team | 29/08/2015  to 13/09/2015 | Do survey to find out what functions users need | Survey summary |
| Traning NodeJS, AngularJS | All team | 14/09/2015  to 20/09/2015 | * Read AngularJS documents * Find out how to set up and complete ‘Hello World’ tutorial. * Try some core class and functions for image processing. |  |
| Research for Ionic frame work | HuyTDH  QuyenNV | 7/09/2015  to 20/09/2015 | - Read Ionic frame work document.  - Routing in ionic frame work  - Find how to setup Ionic using plugin of cordova: geolocation, device. |  |
| Training Unit Test | [TODO] | [TODO] | Training how to create and perform Unit Test | Training Report |