Omninet Test Levels

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- **If you were managing all the testing for Omninet, which levels or phases of testing would you plan? Why?**

  We would plan the following levels or phases of testing to provide an overall testing process:

  - Unit testing
  - Integration testing
  - System testing
  - Acceptance testing
  - Maintenance testing

  The reason we choose the first four testing phases is that we have chosen the V-model as the lifecycle model of Omninet, where those four phases are required. Applying the aforementioned phases before system release would be able to meet the functional and other non-functional requirements, guaranteeing system quality and reducing cost. And maintenance testing would contribute to troubleshooting after release, i.e. letting us find and fix the bugs. Another point is that in the Omninet's System Requirement Document, there are some 「TBD」 requirements, which means they have not been decided yet. Therefore maintenance testing is very likely to play an important role in the system's flexibility, making possible modifications in the future easier.

  In short, we think the five testing phases above would guarantee the quality of Omninet in its lifecycle.

- **What would the major goals of each level or phase of testing be?**

  - **Unit Testing**

  Unit testing is the first level of testing that focuses on testing individual components or modules of the system. Conducting unit testing aims to find and fix errors, defects and bugs

in functions/methods of currently decided features, including the following which are represented in Omninet's SRD:

- *Internet Access Features*

  Stable Internet connection, e-mail sending and receiving, access to websites through URL, and multi-language display etc.

- *Session & Payment Features*

  Payment through currency/cards, purchase more time during sessions, closing session 1 sec after expiration, closing sessions anytime by user etc.

- *Security Features*

  Firewalls, security event logs etc.

- *Administrative Features*

  Modifying or terminating user’ s sessions etc.

- **Integration Testing**

Integration testing aims to test the performance of Omninet's sub-systems which should work together and integrate seamlessly. Integration testing would find and fix the bugs of encapsuled APIs of the functions or methods of Omninet.

- **System Testing**

System testing aims to guarantee both the functional and non-functional requirements of Omninet, including its functionality, security, performance, efficiency and usability.

- **Acceptance Testing**

Acceptance testing mainly aims to ensure the system is ready to be released, which should now meet the requirements of product owners, stakeholders and end users. Also, it should ensure that the system will not fail when data errors occur, or the user's environment is partly known.

- **Maintenance Testing**

As mentioned in the previous question, maintenance testing aims to find and fix the bugs after system release, and ensure the system's flexibility, making possible modifications in the future easier.

- **What kind of acceptance test, if any, would you plan? Why?**

  We will plan the following acceptance test.

  - **User Acceptance Testing**

  Business users verify fitness for functional purposes.

- **Operational Testing**

Test acceptance by system administrators (e.g, backup-restore, disaster recovery, user management, maintenance, security)

- **Contract and Regulation Testing**

Verification of conformance to contractually-agreed or legally mandated requirements, regulations, or standards.

- **Field Testing (Alpha and beta testing)**

Testing and confidence-building by potential or existing customers, with beta testing and field testing are performed in the current environment(s).

Reason for conducting these testings includes user acceptance testing (UAT) determines if a system satisfies its users' needs and fits the business requirements.

- **How do these test levels relate to and affect the lifecycle model you selected in the previous exercise?**

  In different test level, we conduct different kinds of activities, these activities include checking the developed software to see if it meets specific requirements. If there are any defects in the product, testers work with the development team. In some cases, they have to contact the stakeholder to gain insight into different product specs. Validation and verification of a product are also important processes of the STLC.

  That means, in different phases, we detected and fixed different kinds of bugs. After the whole process of testing, we are able to guarantee the software can basically meet the needs of customers and be released to the market.

  What is more, according to testing principles, if we detect more bugs in the early stage, we will pay a smaller cost to detect and fix the bug later.