* 1. 1.2 Design a Week in Agile Development week 9

The project team contains 4 developers, 2 test engineers and 1 team leader.

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| **Time** | **Activity** | **Team Involved** |
| Monday AM | Team leader will host the start-up meeting using ‘WebEx’, collection and analysis of requirements, description of the collected requirements | All Team members |
| Monday PM | Write software and test case design.  Generate documentation and submit to the HP quality centre | All Developers and the Test Engineers |
| Tuesday AM | Review software design in pairs of the four Developers.  Test Engineers review test cases between each other. | All Developers and the Test Engineers |
| Tuesday PM | Pair programming with ‘linter’ (a real time code style checker)  One Test Engineer writes the system test cases  One Developer writes integration test cases  Developer Code review  Developer Run test cases | All Developers and the Test Engineers |
| Wednesday AM | Pair programming  One Developer writes integration test cases of the modules  Developer Code review  Developer Run test cases | All Developers |
| Wednesday PM | A meeting is held for the whole team to trace the team’s progress  Code review with the ‘collaborator’ tool takes place (for online code review) | All Team members |
| Thursday AM | Both Test Engineers perform system tests on the beta version in the staging test environment  Developers fix bugs according to the priority and time designated by the HP quality centre | All Developers and the Test Engineers |
| Thursday PM | Control system tests and regression tests are conducted based on the test report generated by the quality centre | All Team members |
| Friday AM | The documentation is finalised for presenting the demonstration  Team leader presents this demo. | All Team members |
| Friday PM | The final demonstration is given using the ‘WebEx’ tool with the clients and the whole team | All Team members |

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| People | Role |
| Leader | Host meetings and control the overall quality of the project, periodly use reporting function in HP quality center evaluating the progress, initiate the quality assurance plan. |
| designer | 2 senior developers do the high level design and control code quality of implementation |
| coder | 2 junior developers implement design and write unit/integration test cases |
| Tester | 1 senior test is business analyst and controlling test progress, another is more responsible for performing test |

Propose a detailed design of the seven stages through the week. You must include the tasks required, how are they carried out, and by which member of the team.

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| Planning game | 1. BA Analysis and read the requirements 2. Designer schedule the development with respect to functionalities from requirements specification 3. Tester schedule the testing procedure with respect to different release version |
| Initial design | 1. Detailed design from functional requirements 2. Test cases design from functional and non-functional requirements 3. Import initial design into HP quality center |
| Design review | 1. Review detailed design with BA and tester 2. Review test cases design with designer and developers 3. Update information in the HP quality center |
| Coding | 1. 4 developers work in pairs continuous deliver the smaller release based on the functionalities 2. Review codes after implementation of each unit including automatic static code analysis 3. Run unit test cases 4. Perform integration test after each smaller release until the final version 5. Generate test reports from quality center and release reports to designers and coders 6. BA and tester work in pair write test cases in the HP quality center |
| Testing | 1. Perform system testing including functional test on individual function 2. Uninstall testing at the end of system testing, check the plugin is portable 3. Set daily regression test 4. Generate test progress reports including test coverage and completion, bug lists and status of bugs. 5. Report to leader with progress with automatic directing reports to leader |
| Before testing | 1. Final code review for all units 2. Perform all the integration test with all functionalities being implemented |
| Final prepare | 1. Finalise documents |

1.3 1.6

For this activity you assume that your company, PerfectSoftware has to decide which type of software development and project management methodology is going to use in all its products. They are undecided between convention Capability Maturity Model, or Agile Development. A decision needs to be made.

Read the document with the notes on Agile Development. Write a document in which you capture the advantages and disadvantages of Agile Development. The purpose is for you to collect your ideas so that you will have to convince upper management about the most appropriate methodology to adopt. Your argument must be very persuasive! Post a maximum three paragraph summary of your argument to either adopt CMM or Agile Development

*Agile development:*

A type of Incremental model. Software is developed in incremental, rapid cycles. This results in small incremental releases with each release building on previous functionality. Each release is thoroughly tested to ensure software quality is maintained. It is used for time critical applications.  Extreme Programming (XP) is currently one of the most well-known agile development life cycle model.

Advantages

1. Fast iteration: product could continuously improve along the short duration for each iteration, not trying to shorten the short the time of work, but try to improve the quality as fast as possible.

2. Quick decision and try new idea: shorten requirement gathering and analysis, avoid spending long time on them, willing to start building the product with minimal requirements.

3. Quick improvement: fast response to the feedback and changes after each iteration, improve the quality with collaboration between developer, business analyst and customers.

4. Widely communication: face-to-face communication, such as daily stand-up meeting

5. Simplify flow: keep documentations simplest, high coding and design standard to establish test-driven and behaviour-driven development, explain design and code in pairs instead of documenting them thoroughly.

Disadvantages*:*

While project size is growing, face-to-face communication would be more difficult, agile seems to fit with small team such as only 40 people.

Initial large amount of assumption and quick requirements gathering could lead the project to the wrong way,

since only effective feedback can help the improvement, large amount of useless feedback can worse the design of a product, do not notice the wrong thing until last submit, even more affords need to spend on redesign at that time.

Therefore, good automation techniques and a management tool are needed to support the version control, progress tracking, assignment of workload, iteration planning and defects and bugs tracking in the project.

Agile is quite suitable for starting up the product, but we should pay attention to level of minimal requirements and quality of feedback.

*SCRUM:*

Scrum is an agile software development model based on multiple small teams working in an intensive and interdependent manner. It is a management and control process that cuts through complexity to focus on building software that meets business needs. Scrum employs real-time decision-making processes based on actual events and information. This requires well-trained and specialised teams capable of self-management, communication and decision-making.

Role: it defines various type of responsibility of people in the scrum team, enhance the productivity, creativity and flexibility. It defines role, events, artifacts and rules of organizing them. It is a framework that people could resolve complex issues by adopting it, and deliver the high quality product in productive and creative way.

Event: it defines some common incidents occurred in the scrum project team, which has timeline. It has chances to evaluate and adjust.

Artifact: it express the work task and its value in the scrum project, which is used to evaluate and adjust the works, ensure transparency of information.

3 crucial guidelines to apply SCRUM

Develop small, incremental releases and iterate; complete each feature before moving on to the next; a collaborative & cooperative approach between all stakeholders (team members) is essential

Reference: <http://www.scrumguides.org/docs/scrumguide/v1/Scrum-Guide-US.pdf#zoom=100>

1.4 For this activity we assume that the PerfectSoftware has to decide which type of software development and project management methodology is going to use in all its products. They are undecided between convention Capability Maturity Model, or Agile Development. A decision needs to be made.

Agile development

Work for Outcome: Whenever problems or issues raised, simply work out the solution while not to find out the source of error.

Quick Fixes Become Quicksand, Damn the Torpedoes, Go Ahead

Continuous refactoring, increase the maintainability of code, spend more times on reading previous code and workout

The principle behind. Good unit testing also help.

Criticize Ideas, Not People do not be afraid to give the idea, try to see the pros and cons of each ideas

Keep up with change continuous learning

Invest in Your Team

Know when to unlearn get to know what is out date solution

Question until you understand

Feel the Rhythm continuously work on the small tasks

CMM

**Advantages:**

Driven process improvement also delivers real cost savings such as earlier and more effective error detection, and hence reduced cost of remediation, more effective management of change so you spend less on re-work, reductions in schedule variability and increased cost predictability.

Provides a proven approach that has enabled diverse organisations to drive out real benefits in terms of dramatically improved project predictability and consistency. Whilst any or all of the above factors may drive an organisation’s initial interest in CMMI, the key benefit from implementing the model that executives focus on is consistency in delivery.

**Disadvantages**

CMM certification focuses more on an organisation’s management processes and less on the quality of the software products produced

Only helps if it is put into place early in the software development process. For example, if there is a process that is in a crisis then CMM will not help overnight. It can’t be used as an emergency method of recovering from a difficult position.

1.5 Review the notes on agile development (agile\_development)

Review the content of the Validation and Verification notes with special attention to:

CMM: Where is its emphasis?

Agile: How is it defined?

Agile: How is it different?

Review the propositions on how to adopt a Scrum type of management scheme in an agile development environment.

客户成为开发团队中的一部分。（例如客户肯定对开发的结果真正感兴趣。）

和所有其他形式的敏捷软件过程一样，Scrum有频繁的包含可以工作的功能的中间可交付成果。这使得客户可以更早的得到可以工作的软件，同时使得项目可以变更项目需求以适应不断变化的需求。

频繁的风险和缓解计划是由开发团队自己制定。– 在每一个阶段根据承诺进行风险缓解，监测和管理（风险分析）。

计划和模块开发的透明 – 让每一个人知道谁负责什么，以及什么时候完成。

频繁的利益所有人会议，以跟踪项目进展 – 平衡的（发布，客户，员工，过程）仪表板更新 – 利益所有者更新 – 你必须拥有预警机制，例如提前了解可能的延迟或偏差。

没有问题会被藏在地毯下。认识到或说出任何没有预见到的问题并不会受到惩罚。

在工作场所和工作时间内必须全身心投入。– 完成更多的工作并不意味着需要工作更长时间。