**The biggest difference between iterative and waterfall development methodologies are**

Waterfall methodology mainly have four phases such as Planning, Analysis, Design, and Implementing. The project goes into next phase until the current phase has been done. For iterative methodology, it can recycle the phases multiple times to upgrade the deliverables. So I think the biggest difference between them is the process of project.

Waterfall is straight up path, and iterative is spiral rise path. Take an example for waterfall, we cannot develop the systems before the analysis is completed. The project manager could assign specific time to do every phase and rely on milestone to identify the goals. However, for iterative, the project can produce some deliverables in one or two weeks. Then they check and review these prototypes to find which need to be improved. So the path seems like to do same jobs as before (analysis, design, coding, testing, and demo). However, some new functions can be implemented in new cycle. So the path is raised.

Two methodologies have different ways to address dependency. The reason that these two methodologies have different processes is the different view with dependency. For iterative methodology, every Sprint is relatively independent. We can perform a whole life cycle in it which cannot be affected by previous Sprint. And within this Sprint, QA can do the testing job at the beginning rather than at the end. So there are multiple paths that workflow can pass through. The demo does not need to wait until the end of project. We can go forward to produce deliverables and look backward to improve our solutions with the feedback. According to this closed loop, we can approach user’s expectation continually. For waterfall, the dependency is strong. We need to do the project step by step. So previous phase would impact on following phase strongly. And also there is no chance to do any phase twice. So we need to double check the requirements with customers, otherwise the implement system cannot fulfill customer’s expectation. It is hard to display the demo to customer when the project work through analysis phase because development can start when design phase is completed.

Change control processes are different based on different delivery strategies. For iterative methodology, the team can response quickly to the change requirement. Since one iteration will be short so that the team can reschedule the agenda dynamically. However in the waterfall, every step would influence following tasks. So the change control process would be well defined. Project manager should consider the influences in many processes because the team cannot come back to previous phases.

In conclusion, different processes of methodology could be applied to diverse projects. We need to identify the advantages of each and find an appropriate one.