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**Compare Waterfall and RUP:**

* Plan-driven methods.
* Waterfall methodology and RUP have defined fixed phases.

| **Waterfall** | **RUP** |
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| 1. Stable requirement. 2. Waterfall methodology is a sequential process, steps by step process. 3. Inflexible partitioning of the project into distinct stages. 4. It is a serial schedule, released after completing the entire process. 5. Mostly used for large systems engineering projects. 6. Waterfall methodology is a prescriptive concrete process, only appropriate when the requirements are well-understood. 7. At the same time, only a few things are in process and only one position in the work team. 8. Have the checklist of what tasks have been completed. | 1. Unstable requirement. 2. RUP is an iterative process, each iteration has similar phases as waterfall (all the branches of the team will work concurrently). 3. RUP develops the product in several stages based on feedback from the stockholders. 4. It can release the product for customers earlier than waterfall. 5. RUP reduces unexpected development costs and prevents wastage of resources. 6. RUP is an adaptable framework of software processes. 7. At the same time, every position in the team project can work together and cooperate with each other. 8. More difficult to control the process. |

Reference:

1. <https://www.differencebetween.com/difference-between-waterfall-methodology-and-vs-rup/>
2. <https://www.geeksforgeeks.org/software-engineering-classical-waterfall-model/>
3. <https://www.geeksforgeeks.org/rup-and-its-phases/>