The major differences between the waterfall model and agile model

1. Approach
    - Waterfall: Sequential and (linear) process.
    - Agile: Iterative and incremental development.
2. Flexibility
    - Waterfall: Rigid; changes are difficult once a phase is completed.
    - Agile: Highly flexible; changes can be made at any stage.
3. Project Size
    - Waterfall: Best for small, well-defined projects.
    - Agile: Best for large, evolving, and dynamic projects.
4. Customer Involvement
    - Waterfall: Limited to the beginning and end because everything is done Maintenance stage no customer interaction upto the final phase.
    - Agile: Continuous customer feedback and involvement.
5. Testing
    - Waterfall: Done only after development is completed.
    - Agile: Continuous testing during every interaction so the changes can be made easily.
6. Delivery
    - Waterfall: Final product is delivered at the end of the project.
    - Agile: Software is delivered in small increments (sprints).
7. Documentation
    - Waterfall: Extensive documentation is required upfront.
    - Agile: Minimal documentation; focuses on working software.
8. Risk Handling
    - Waterfall: High risk, as errors are found late in the process.
    - Agile: Low risk, as issues are identified and fixed early.
9. Cost & Time Efficiency
    - Waterfall: Can be expensive and time-consuming if changes are needed.
    - Agile: More cost-effective due to early issue detection.
10. Team Collaboration
    - Waterfall: Works in silos (teams work separately on different phases).
    - Agile: Encourages cross-functional team collaboration.

SERVICE MODEL

THE MAIN COMPONENTS IN THE SERVICE MODEL
1. DATA
2. APPLICATION
3. RUN-TIME
4. MIDDLEWARE
5. OPERATING SYSTEM
6. VIRTUALIZATION
7. SERVER
8. STORAGE
9. NETWORK

In service model there are four types
1. SAAS : software as a service
2. IAAS : infrastructure as a service
3. PAAS : platform as a service
4. FAAS : function as a service

1. SAAS : software as a service
SaaS provides a full application stack as a service that customers can access and use.it is like a software application that we can use over the internet .this applications are designed for a end user or a customer . These are like ready to use applications or an app. Automatic updates and maintenance . Accessed via browsers
Example : gmail ,dropbox , google drive ,other food delivery apps etc

2. IAAS : infrastructure as a service
It provides the virtualized computing resources over the internet .no worries about the underlying the physical machine. It is an Infrastructure without managing hardware. In this we can decide data , applications, run-time,middleware ,operating system . and virtualization ,servers, storage , network are managed by the vendors. Most of the IT admins use this .
Example : AWS, microsoft azure ,google compute engine etc

3. PAAS : platform as a service
It delivers and manages hardware and software resources for developing, testing, delivering, and managing cloud applications. It had no control over the underlying architecture.we can create our own applications and keep it in google search engine. This is mostly used by the testing team, developers building and deploying applications without managing infrastructure .
Example : google search engine ,AWS etc.

Key points of the SAAS , IAAS , PAAS
IaaS: Best for companies needing full control over infrastructure (e.g., hosting servers).
PaaS: Best for developers who want a ready-to-use environment for coding and deployment.
SaaS: Best for businesses and individuals using software without managing it.