

Reasons for Project Delay :

- Unrealistic Deadline : - Set by someone outside the development environment.
- Changing requirements.
- Honest underestimate:- Underestimate of the efforts or the number of resources.
- Technical difficulties
- Human difficulties

System Development Methodologies

System development methodologies must be chosen based on clients requirements

- Waterfall model
- Prototype model
- Rapid application development model
- Spiral model
- Rational Unified Process Methodology

Rational Unified Process

- **Rational Unified Process (RUP)** is a software development process for object-oriented models. It is also known as the Unified Process Model.
- It is created by Rational corporation and is designed and documented using UML (Unified Modeling Language).
- This process is included in IBM Rational Method Composer (RMC) product.
- IBM (International Business Machine Corporation) allows us to customize, design, and personalize the unified process.

Phases of Rational Unified Process

There are five phases in RUP

- Inception
- Elaboration
- Construction
- Transition
- Production

RUP Phases

1. Inception –

1. Communication and planning are the main ones.
2. Identifies the scope of the project using a use-case model allowing managers to estimate costs and time required.
3. Customers' requirements are identified and then it becomes easy to make a plan for the project.
4. The project plan, Project goal, risks, use-case model, and Project description, are made.
5. The project is checked against the milestone criteria and if it couldn't pass these criteria then the project can be either canceled or redesigned.

In the inception phase, the team decides the purpose of the project.

Determines the structure and the basic idea behind the project.

Success criteria, estimated cost, risk assessment, scheduled time and resources required to complete it.

Major Tasks in the inception phase :

Scheduling resources

Cost and time estimation

Planning

Risk Assessment

At the end of the inception phase :

The objective of the project becomes very much clear.

RUP Phases

1.Elaboration –

1. Planning and modeling are the main ones.
2. A detailed evaluation and development plan is carried out and diminishes the risks.
3. Revise or redefine the use-case model (approx. 80%), business case, and risks.
4. Again, checked against milestone criteria and if it couldn't pass these criteria then again project can be canceled or redesigned.
5. Executable architecture baseline.

- Analyse the project plan and eliminate the high risk elements from the project.
- Team finally decides whether to start the development or not.

Major tasks in Elaboration phase are –

Analysis of problem domain

Use case diagram development

System architecture development

RUP Phases

1. Construction –

1. The project is developed and completed.
2. System or source code is created and then testing is done.
3. Coding takes place.

Conclusion of the construction phase

All the modules are built and integrated.

Checking whether the release is stable or not

Checking whether it meets all the customer requirements

Actual resource cost vs planned resource cost acceptable ?

2. Transition –

1. The final project is released to the public.
2. Transit the project from development into production.
3. Update project documentation.
4. Beta testing is conducted.
5. Defects are removed from the project based on feedback from the public.

RUP Phases

- **Advantages:**

- 1.It provides good documentation, it completes the process in itself.
- 2.It provides risk-management support.
- 3.It reuses the components, and hence total time duration is less.
- 4.Good online support is available in the form of tutorials and training.

Disadvantages of RUP

- **Disadvantages:**

1. Team of expert professional is required, as the process is complex.
2. Complex and not properly organized process.
3. More dependency on risk management.
4. Hard to integrate again and again.

Business Process Modelling

A business process model is a graphical representation of a business process or [workflow](#) and its related sub-processes. Process modeling generates flowcharts containing critical insights into the functioning of a given process, including the following:

- Events and activities that occur within a workflow
- Who owns or initiates those events and activities
- Decision points and the different paths workflows can take based on their outcomes
- Devices involved in the process
- Timelines of the overall process and each step in the process
- Success and failure rates of the process

Business Process Modelling

Process models are typically rendered using one of two standardized styles of graphical business process notation: Business Process Modeling Notation (BPMN) — also called Business Process Model and Notation — or Unified Modeling Language (UML). Within these notation systems, certain visual elements have universally recognized meanings when used in a process model. Whether an organization uses UML diagrams or BPMN diagrams, these standardized notation methodologies allow process models to be easily shared and read by anyone:

1. Arrows represent sequence flows
2. Diamonds represent decision points or gateways
3. Ovals represent beginnings and endpoints of processes
4. Rectangles represent specific activities within a workflow
5. Swimlanes are used to identify who owns which components of a process