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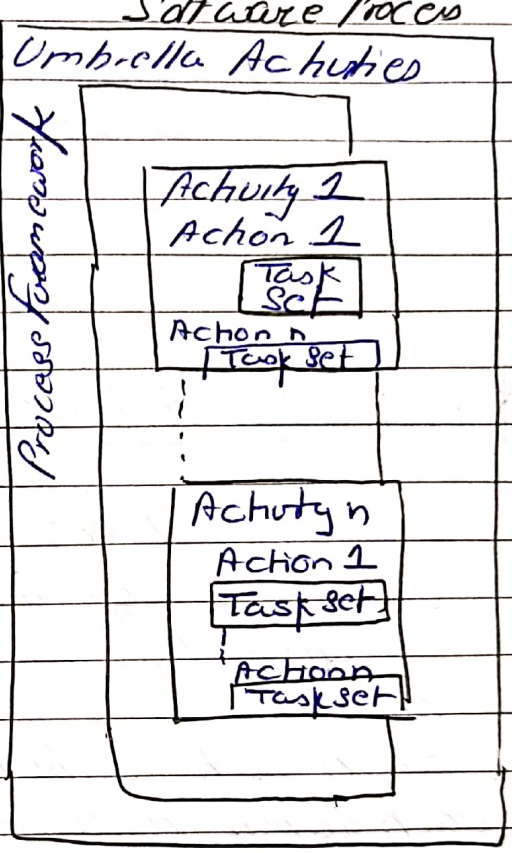
5 Software Process Framework:

framework: It is a foundation for software complete process that we follow for development.

Software Framework consists of set of different software activities called as Umbrella Activities.
Umbrella activity is a set of actions and actions are set of task

→ Activities
  → Actions
    → Tasks



Umbrella Activities:

*Generic framework Activities: It is a part of every S/w process. To complete our to develop S/w these Generic activities are performed.

(1) Communication: It involves Customers to gather requirement, we need collaboration with customer through meeting, questionare.

(2) Planning: It involves a planning of S/w process. It includes resources required, gather information about risk, what work product S/w, resources required are calculated.

3) Modeling: It involves creation of different models, ~~that~~ designing part of different model.

(4) Implementation: Actual coding is performed & testing.

(5) Deployment: Work product is delivered to customer & feedback is taken from the customer.

* Umbrella Activities

Software process, divide in different Umbrella Activities and under different Umbrella activities consist of different activities from 1 to n for each activities, perform set of actions. ~~are taken~~ In each action there are different task set

(1) S/w Project tracking & Control

(2) Risk Mgmt;

(3) Quality Assurance: It define assurance of quality.

(4) Reusability mgmt: how s/w or its component can be reused.

(5) Work Product preparation: It involves preparation of documents, log, design, models, form.

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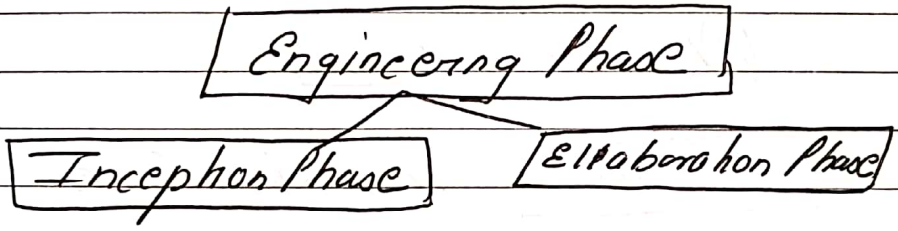
6. Software Project Mgmt. Life Cycle Phase

Life Cycle phase consists of various seperated modules with defined functionalities. It describe various phases of project mgmt.

Life Cycle Phases are mainly divided into two broad categories

① Engineering Phase

It involves establishing the goal & define overall scope of the project It involves small team size & usually less predicted.

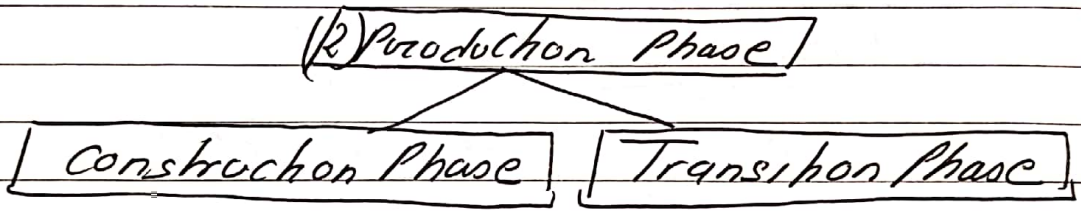


(A) Inception Phase It involves establishing goals & gathering the requirement need for the s/w development.
→ It involves the cost estimation & identifying risk factors
→ In this phase we work on the scope of the project & architecture.
→ Feasibility study also an impart part of Inception phase.

(B) Elaboration Phase
① It involves indepth evaluation & study as well as establishing the

strong architecture & infrastructure.
→ In this phase are work on effiency of our architecture.
→ In this phase, we analyse use case and other diagram.

(2) Production Phase
→ In this phase we focus on implementation of project & optimization include the reduce cost & risk factor of our project.
→ It also involve testing for effective deployment of project
→ It involve large team size & most of time predictable.



(A) Construction Phase
→ In this phase we perform implementation of the plan.
→ In this phase we minimize risk & eliminate it. All the feature and component are integrated into an application.
→ We perform strict testing & process optimization is done.
→ Minimize development cost & work to improve efficency
→ It emphasize on development & testing.

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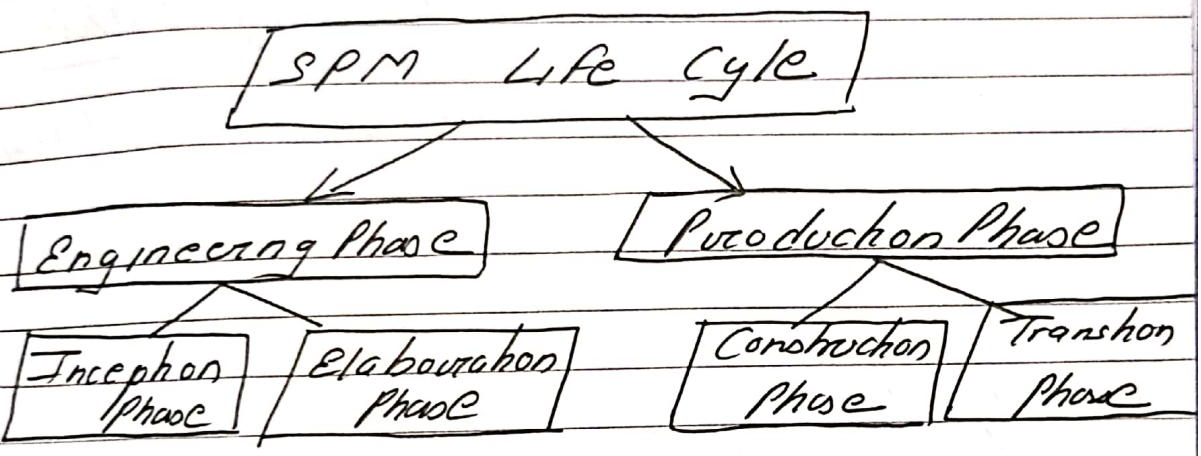
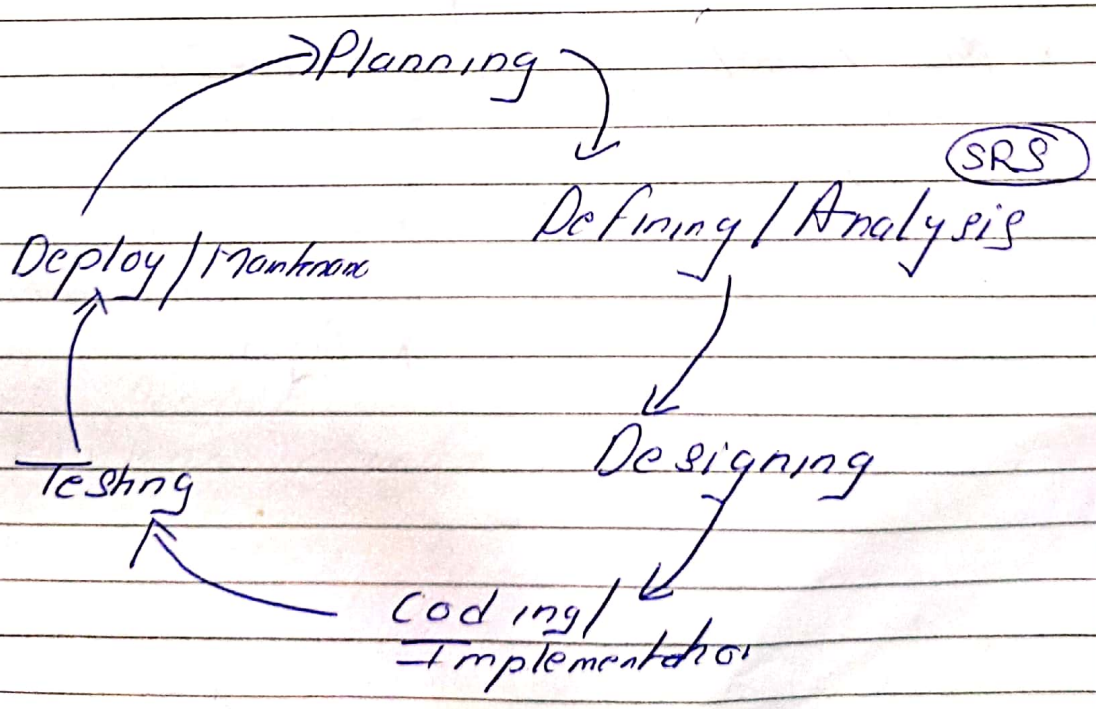
(B) Transition Phase

→ After receiving feedback from the user we perform some changes in our S/W.

→ In this phase developer work on project with a user once to make S/W more supportable & user friendly



(7) Software Development Life Cycle (SDLC)



(8) # Waterfall Model
(Classical)

* Feasibility Study
* Requirement Analysis & Specifications (SRS docum)
* Design
* Coding & Unit testing
* System testing & Integ (α, β, acceptance testing)
* Maintenance

* Developed in 1917. It is oldest model. Small Project waterfall model is used. It is called waterfall model because it has systematic step.

* Advantage
  * Basic model
  * Simple & Easy
  * Small Project

* Disadvantage
  * No Feedback
  * No Experiment
  * High Risk
  * No Parallelism
  * 60% Effort in maintenance
  * Rigid

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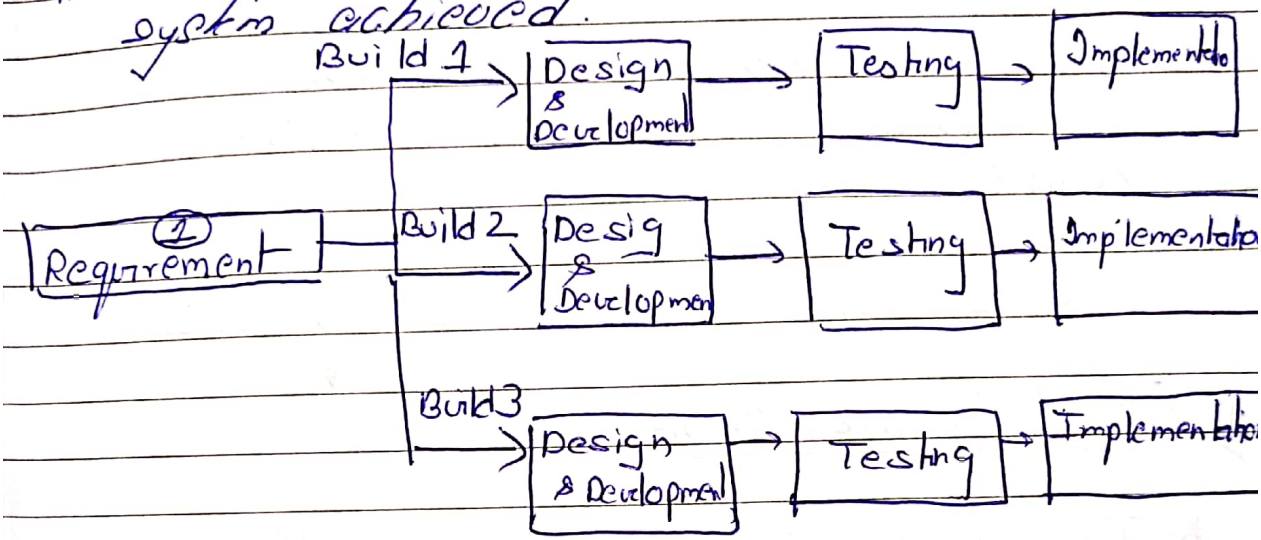
(9) Incremental Model in s/w engineering

* In Incremental model, requirement divided into multiple standalone modules of the software development cycle.
* Each module goes through requirement, design, implementation & testing phase.
* Every Subsequent release of module add function to the previous release.
* The process continues until the complete system achieved.



When to use Incremental Process Model

1. Requirement are clearly specified, understood & are known up front
2. When customer demands quick release of product
3. You can develop prioritized requirement first
4. When Software team are not very well skilled or trained
5. Lower Initial delivery cost.
7. Such methodology is more in used for web application & product based companies.

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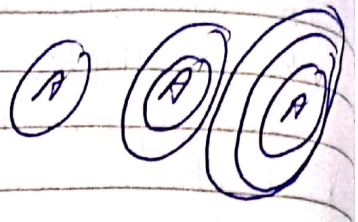
Advantage of Incremental Model

- Model by Model working
- Customer Interaction
- Layer Project
- Early Release Demand
- Flexible to changes



Ex LMS : Learning Mgmt System
Incremental Model used for large products.

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10 Evolutionary Model

- It is a combination of Iterative & incremental model.
- Increment model first implement a few basic features & deliver to customer. Then build the next part & deliver to the customer again and repeat this step until the desired system is fully realised. No long term plan are made.
- Iterative model main advantage is to feed back process in everyday.
- And known as Design a little, build a little, test a little, deploy a little.

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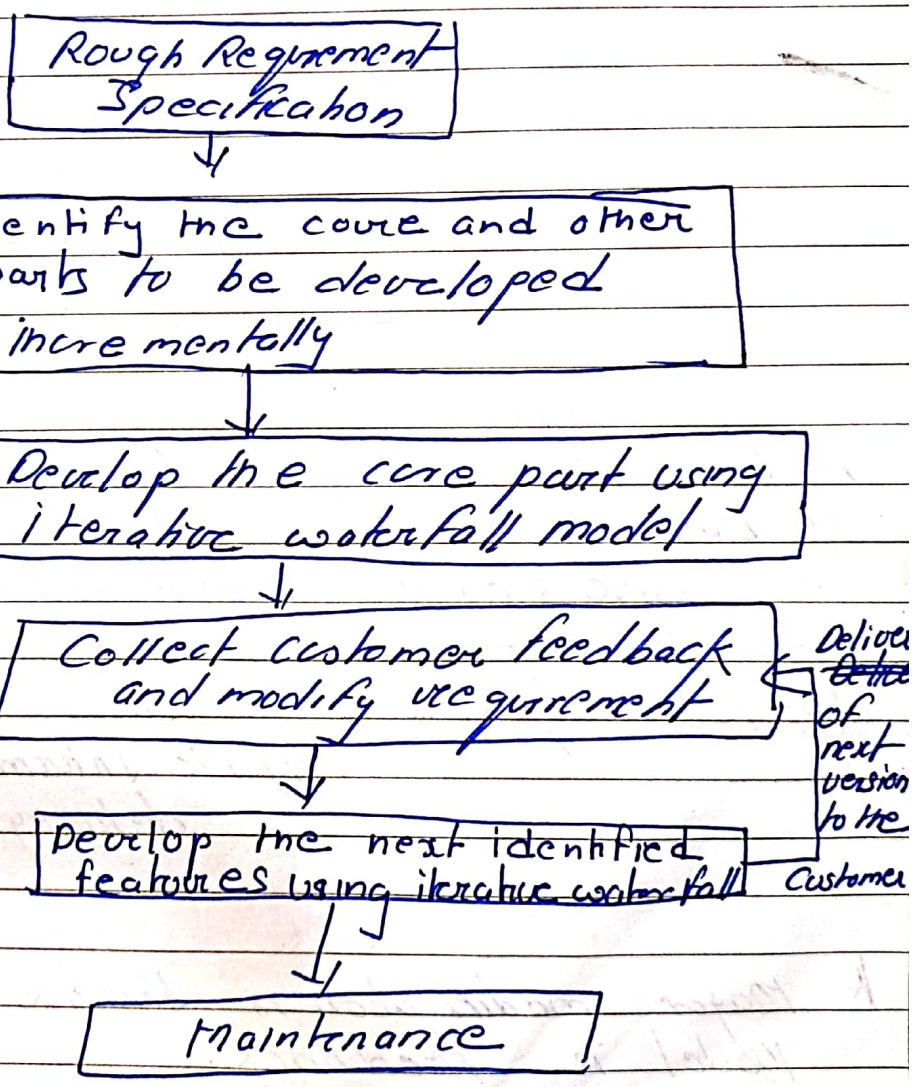
Advantage

- Customer requirement are clearly specified
- Risk analysis is better
- It support changing environment
- Initial operation time is less
- Better suited for large mission critical project

Disadvantage

- Not suitable for smaller project
- Cost
- Highly skilled Resources are required.



flow &
for next pr...

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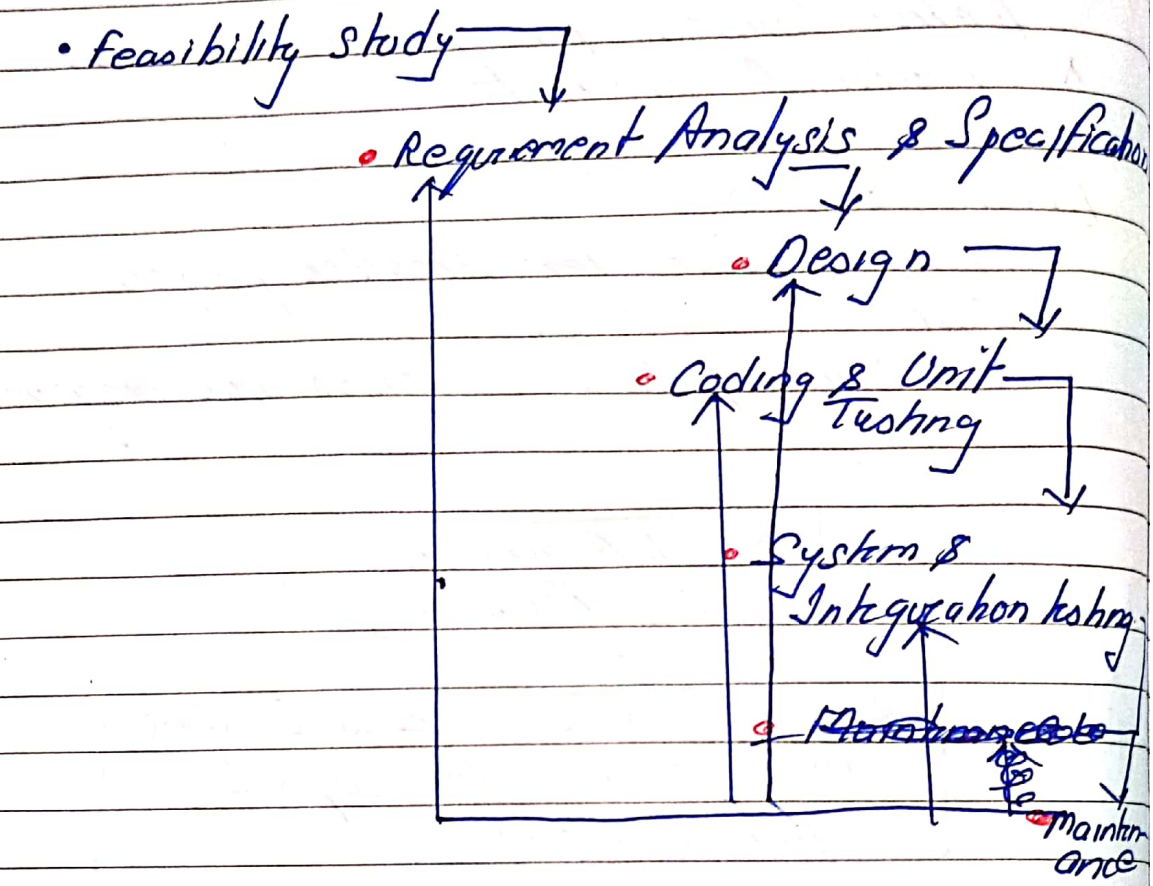
Iterative Waterfall Model

* It is modified version of classical waterfall model.



Advantage

(1) Base Model
(2) Simple & Easy
(3) Small Project
(4) Feedbacks

Disadvantage

(1) No Phase Overlapping
(2) Rigid (No changes)
(3) Less Customer Interaction
(4) No Intermediate delivery

* Major modification in Iterative Waterfall Model is feedback.

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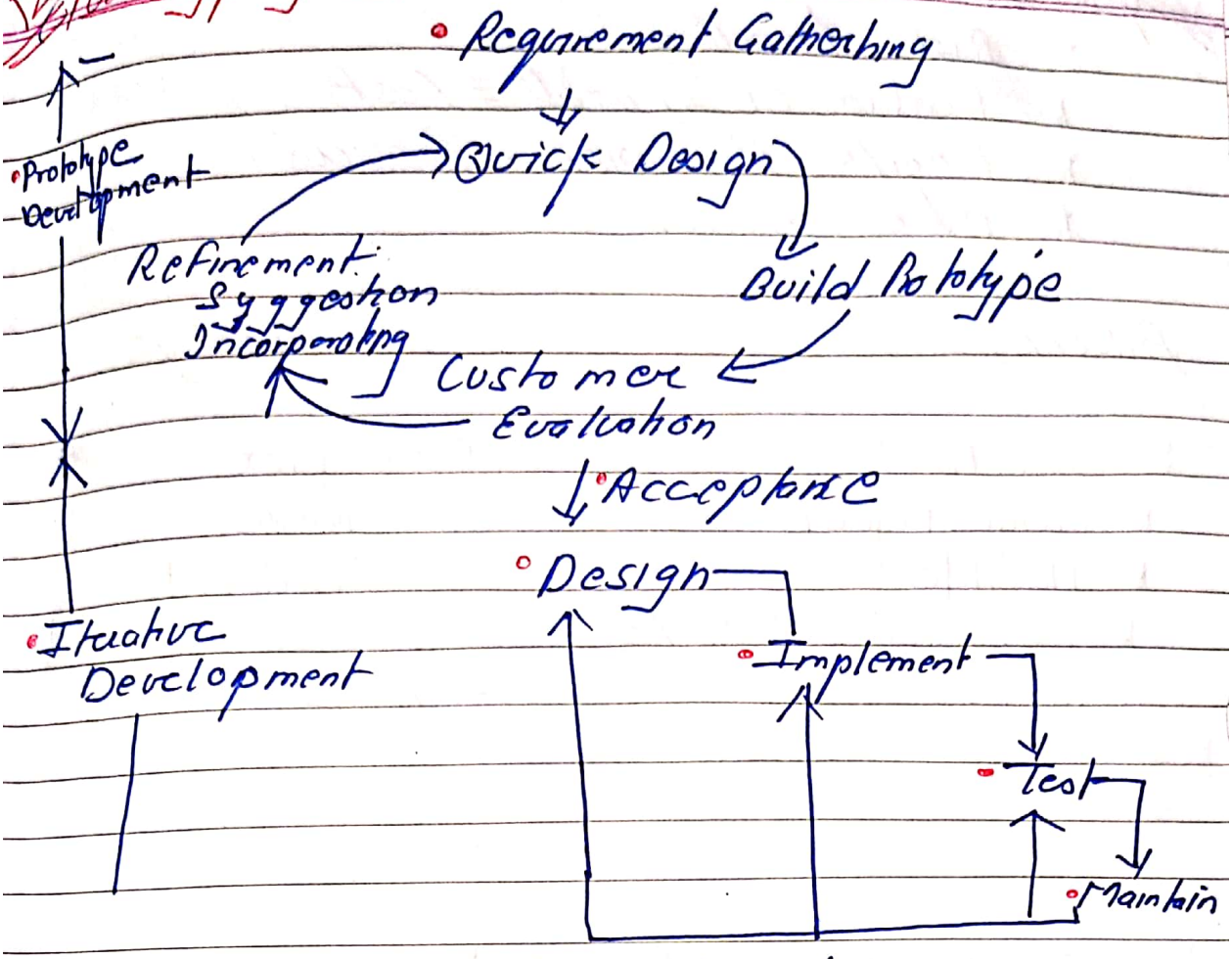
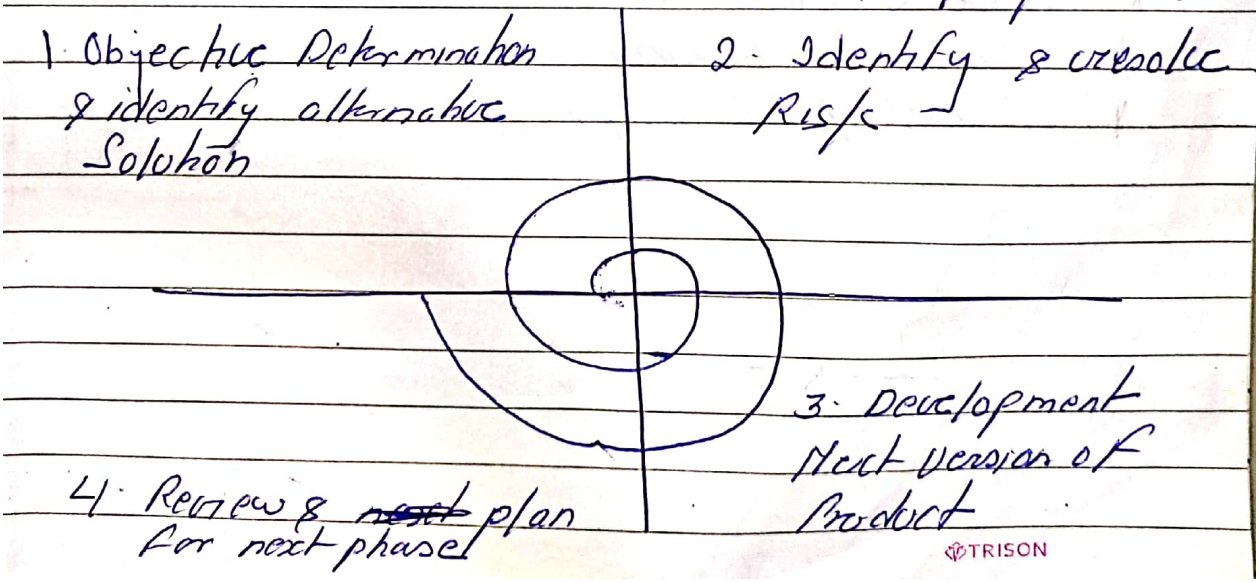
2. Prototyping Model



* Customer Not clear with idea
* Throwaway Model
* Good for technical & requirement Risk
* Increase in Cost Development

3. Spiral Model (Risk Analysis / Risk Focus)



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Spiral Model

* Risk Handling
* Radius of spiral = Cost
* Angular Dimension = Progress
* Meta model

Advantages

* Risk Handling
* Large Project
* Flexible
* Customer Satisfaction

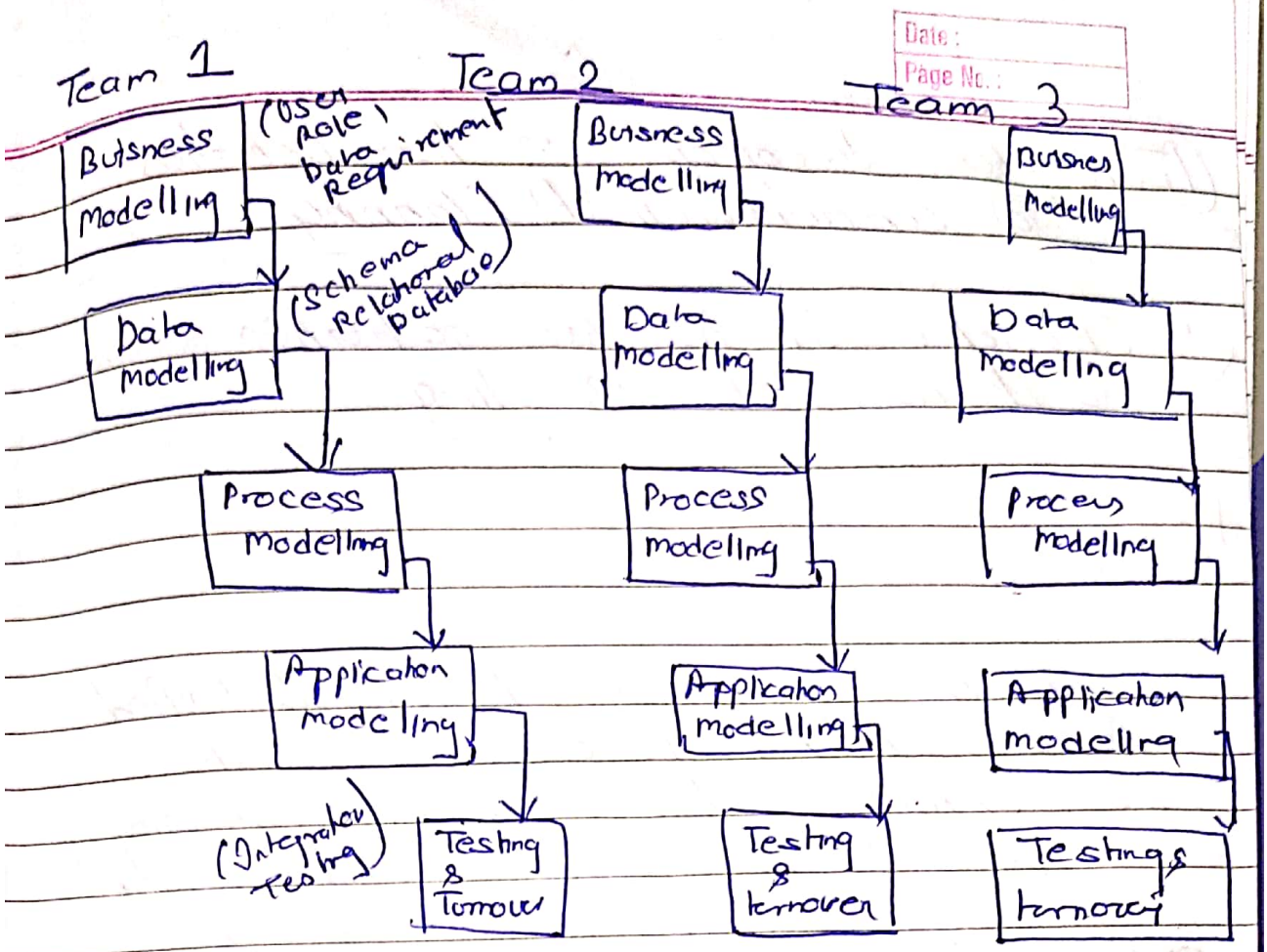
Disadvantage

(1) Complex
(2) Expensive
(3) Too much Risk Analysis
(4) Time

RAD Model (Time)

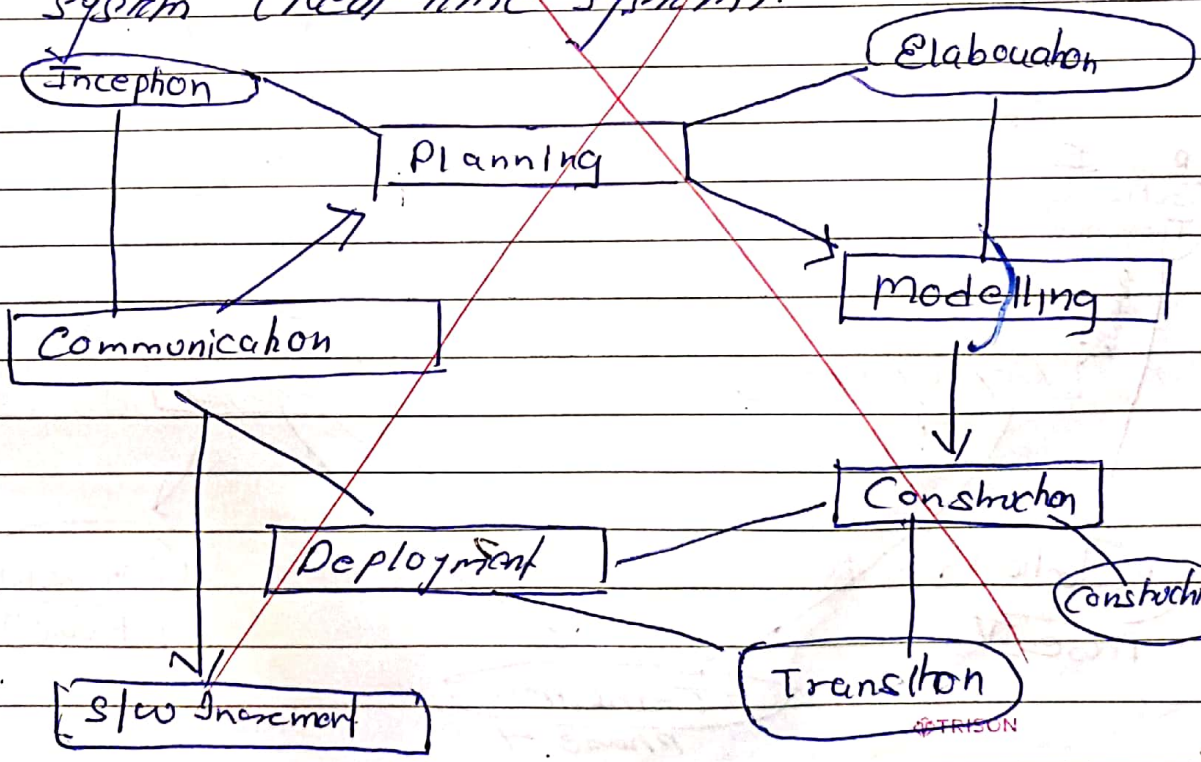
Raid Application Development

* Quick Prototyping
* Iterative Development
* Incremental Release
* User Involvement
* Time — Boxing
* Parallel Development



The Unified Process

Used only in case of object oriented system (Real time system).

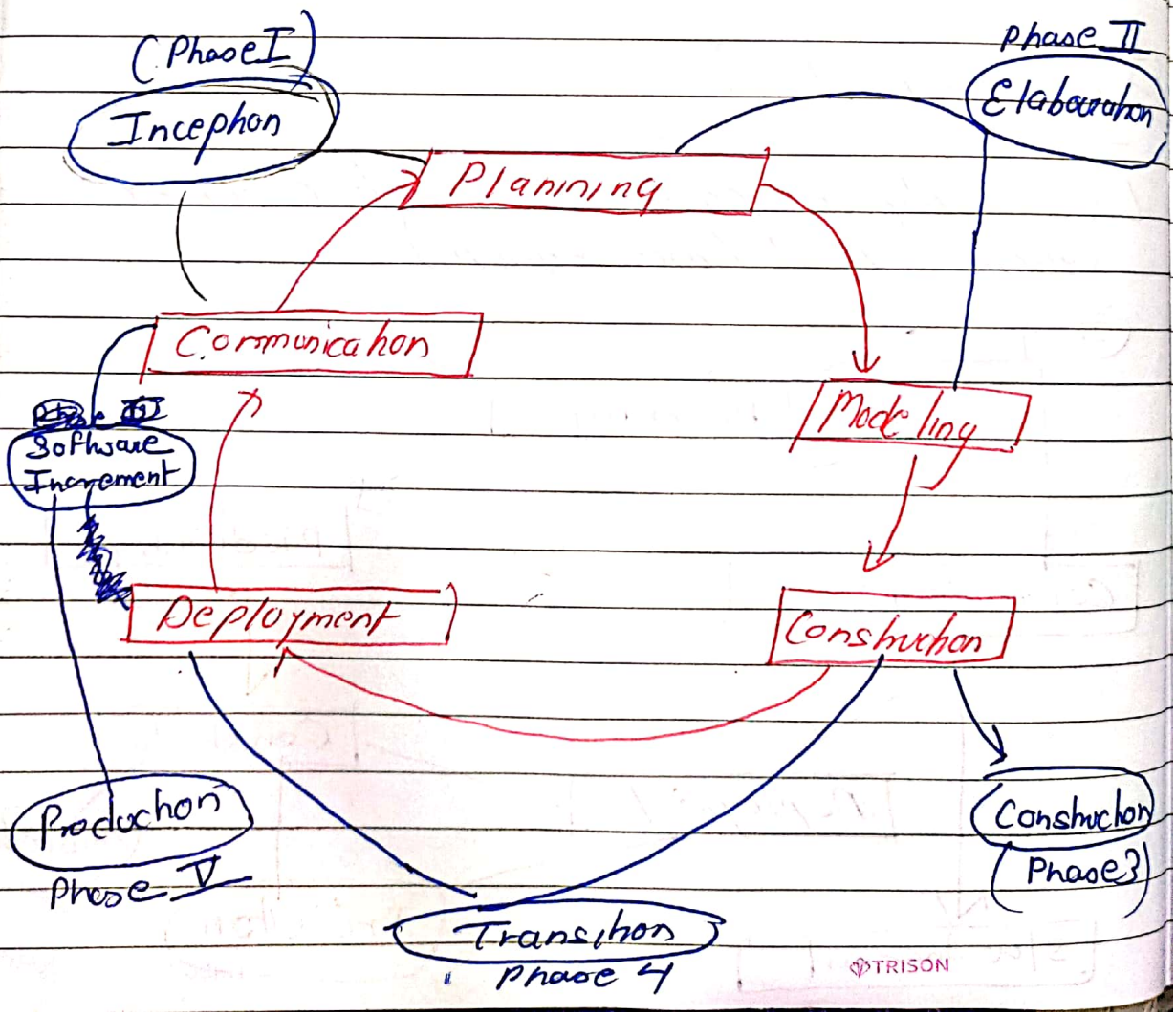


(1) Incephon: Inceapon has two achithes
(a) Communcahon (b) Planning

(2) Elaborahon: It has two achithes
(a) Planning (b) Modelling

15 Unified Bocess

The Unified process or Relahonal Unified Bocess (RUP) is a framework for object oriehd software engineering using UML (Unified Modelling language) It is only used in case of Object Oriehd Systm (Real hme Systm).



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I. Incephon Phase:

It include both customer communicahon & achvihes by collaborahng with the customer & endbe to collect business requirement & plans are proposed.

II Ellaborahon Phase

It ~~is~~ encompasses the planning & modelling achvihes of the generic proless model
→ Here elaboahon for the use case to analyse, design, implement & development of model (in UML).

III Construchon Phase

Using architectural model as input the construchon phase develops the software component that will make each use case operahon & further carried out for tesking.

IV Transihon Phase

Here the ~~for~~ software given for tesking to end user ~~for~~ & tesking use At the end final produche~~n~~ is ready.

V Pxoduchon Phase

After releas more need by the user will ~~be~~ by the user will be added as per requirement.

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Advantage

1. It cover the complete s/w development life cycle.
2. The best practice for software development are supported unified process model
3. It encourage designing in UML

Disadvantage

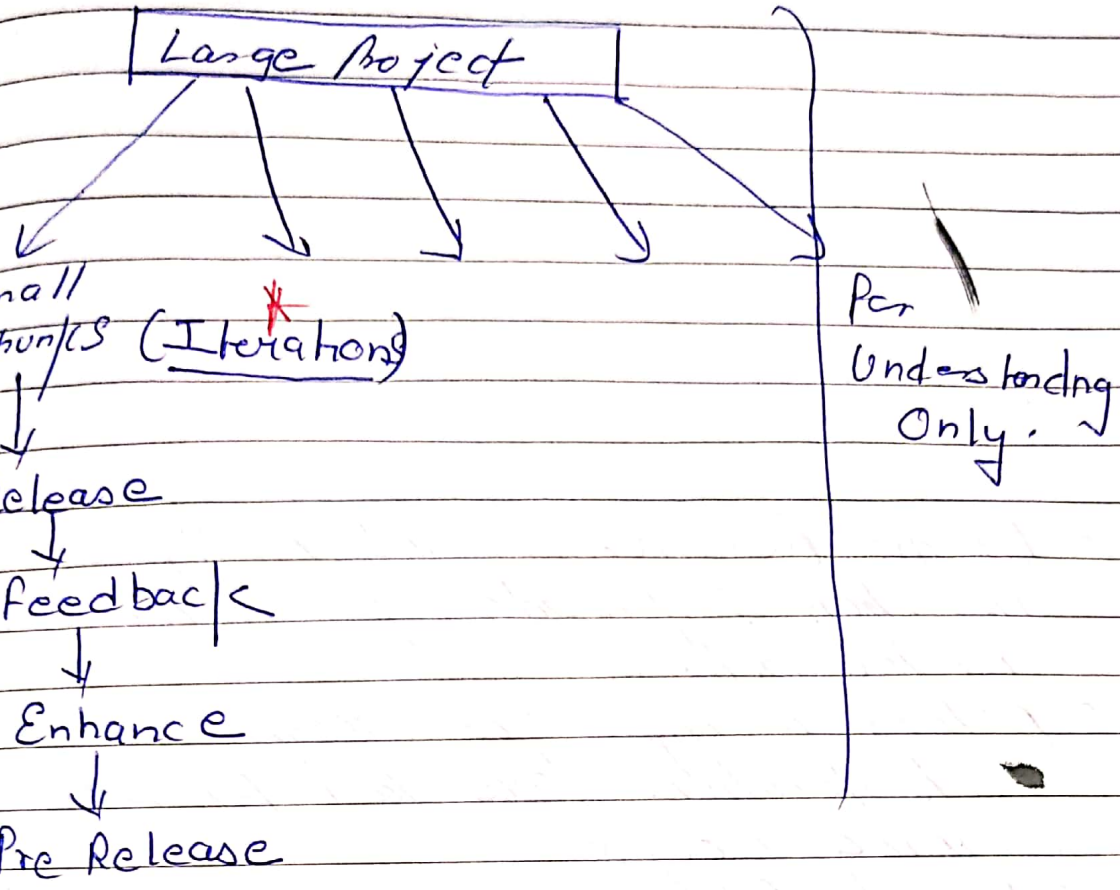
1. It could be complex to implement
2. It is heavy weight process
3. Experts are needed for it
4. The cost cannot be determined.

16

AGILE (used by facebook, google by Agile model)

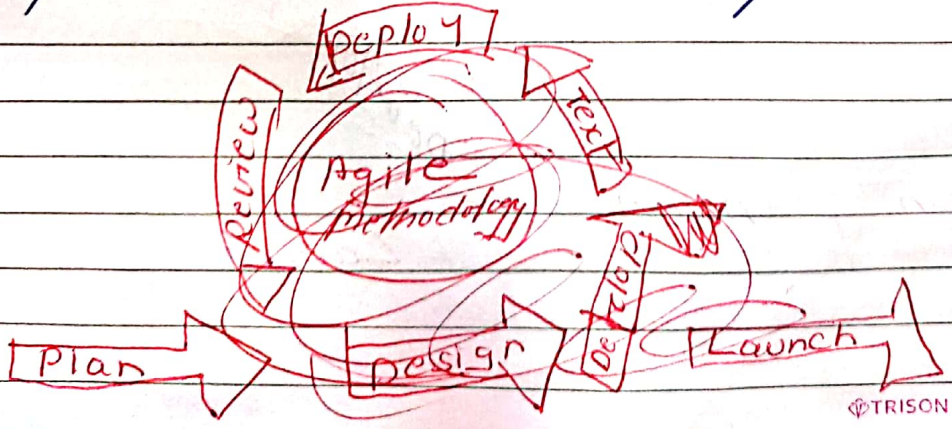
Advantage	Disadvantage
1. Frequent Delivery	1. Less Documentation
2. Face to face communication	2. Maintenance problem
3. Changes	
4. Time	

Agile (More Quickly)



Agile

- Agile means "The ability to respond to changes from requirement, technology & people.
- It is an incremental & iterative process of s/w development



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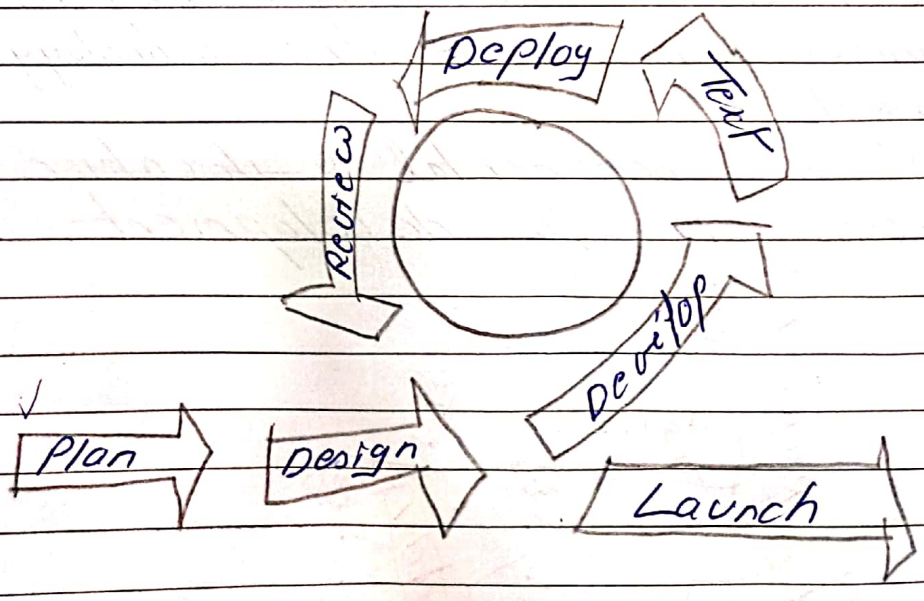
Working With Example

- Divides Requirement into multiple iteration & provide specific functionality for the release
- Delivers multiple s/w increments
- Each iterations are last for two or more weeks
- Direct collaboration with customer
- Rapid Project Development



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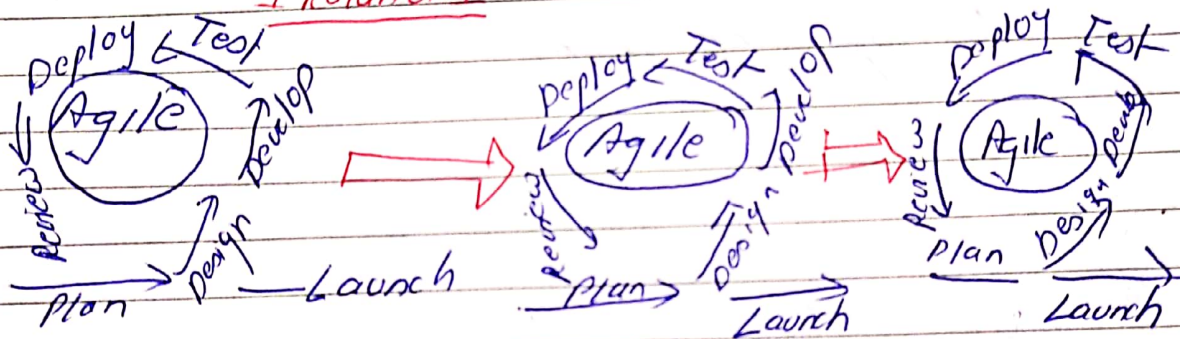
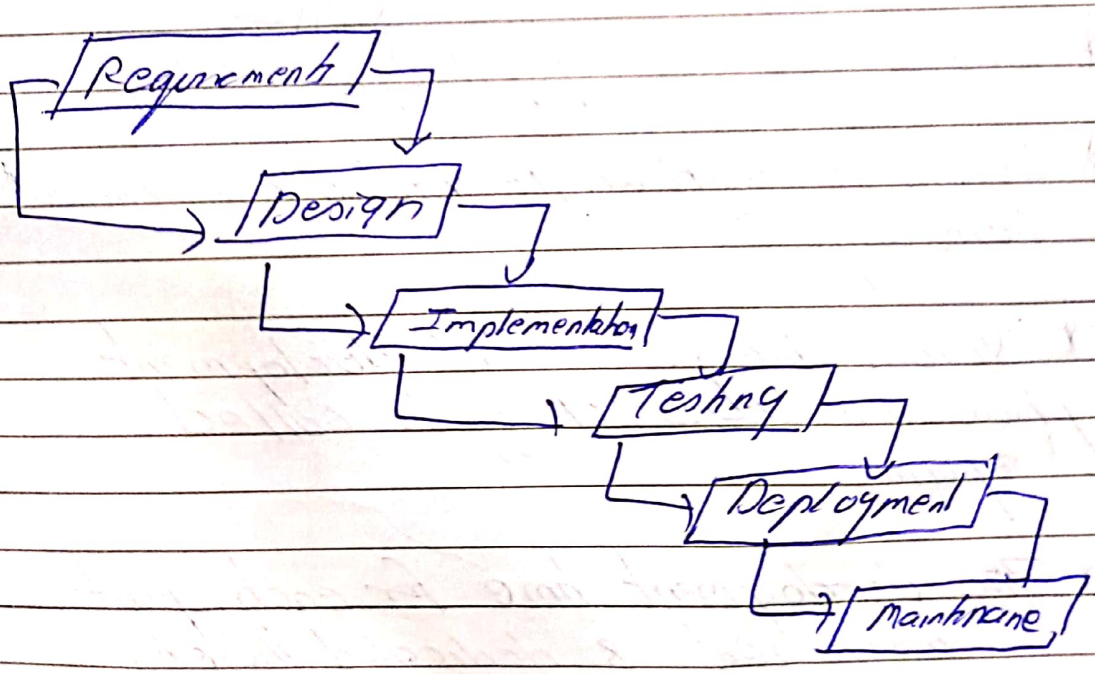
For Example
Instagram Social Application
Requirement etc.

1. Follow — Unfollow Option
2. Edit Profile
3. Search
4. Messaging
5. Post Photos
6. Upload Story
7. To make Reel
8. Go Live

Agile Model





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Agile Principle

1. Highest priority to satisfy the customers to early & continuous delivery of software.
2. Transparency between business people & developer and requires them to work together.
3. Working on frequent & short deliveries like couple of days or months with preference.
4. Face to face communication as the most effective way to communicate between customer & development team

SCRUM MODEL

* One of the most popular Agile methodology.
* Scrum is lightweight iterative & incremental framework.
* Scrum breaks down the development phase into stages of cycle called sprints.
* The development time for each sprint is maximized & dedicated thereby managing only one sprint at a time.

* Scrum team has scrum master & product owner with constant communication on the daily basis
* Keyword: Scrum, Scrum master, Product owner, Backlog, Daily Scrum

Advantage

- Freedom & Adaption
- High Quality / low Risk Product
- Reduce the development time upto 40%.
- Scrum Customer satisfaction is very important
- Reviewing the current sprint before moving to new one

Disadvantage

* More efficient for small team size.
* No changes in the sprint.

16 XP (Extreme Programming)

* One of the most popular methodology in Agile methodology

XP values

(1) Communication
(2) Simplicity
(3) Feedback
(4) Courage
(5) Respect.

XP Extreme Programming is widely used approach to agile software development

* XP uses an object oriented progamming

The planning activities (also called the planning game) begin with listening → a requirement gathering activity that enable the technical members of the XP team to understand the business context