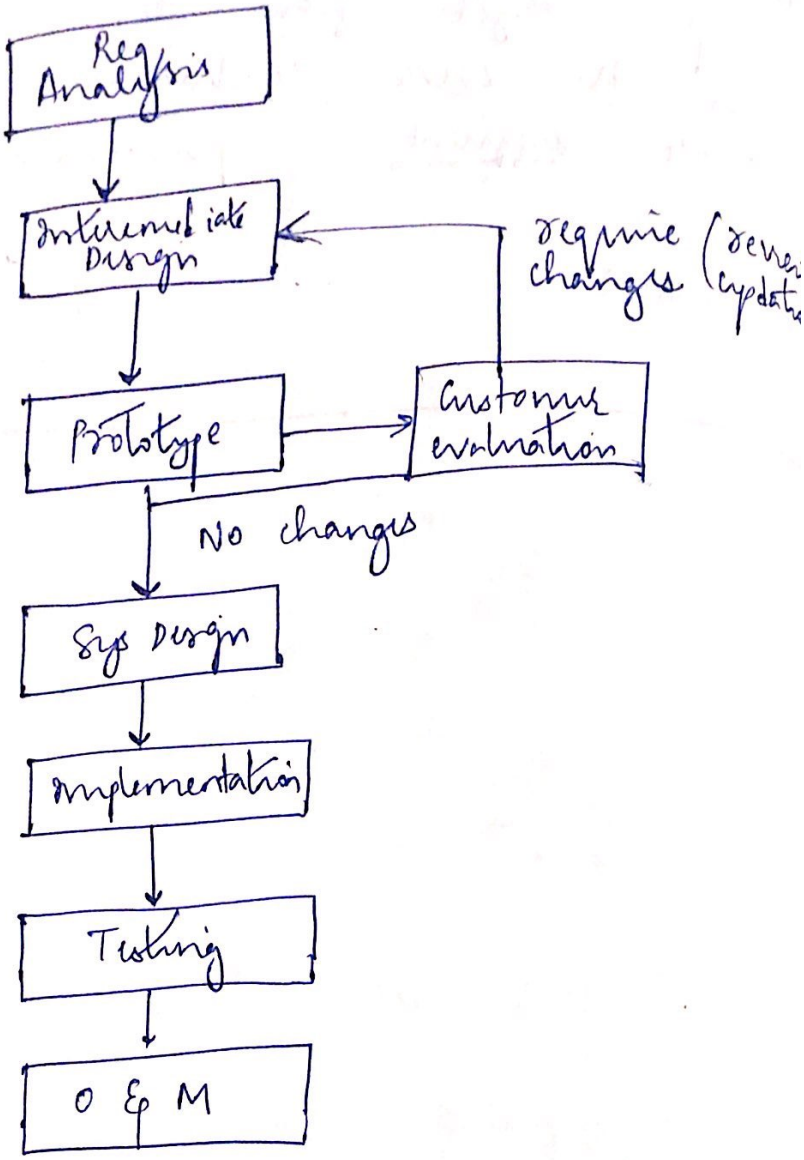
PROTOTYPE MODEL



→ Multiple iterations happen in case of this model

Advantages

→ Customer will be able to see a working prototype quite early and can provide valuable inputs.

→ Earlier identification of bugs

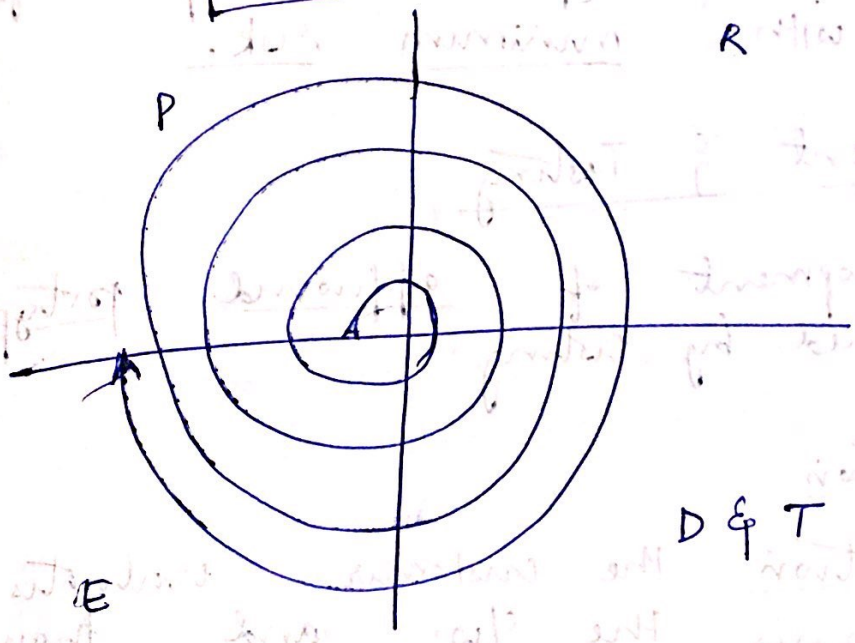
→ This is useful when requirements are changing rapidly.

Disadvantages :-

A prototype may not include all the functionalities of the actual end product.

The end-user goes on adding new features rather than identifying the error, it may delay the product delivery unnecessarily.

BOEHM'S SPIRAL MODEL



→ Can be used for large projects.
→ Risk analysis is an important feature.
→ Barry Boehm described in 1986
→ Four Phases of Spiral model are:—
a) Planning
b) Risk Analysis
c) Development
d) Evaluation
& Testing

Planning:-

→ Requirement Analysis
→ Project Cost Estimation.
→ Possible solutions for the proposed problem statements is also done.

Risk Analysis/Design

→ Possible Risk for the various solutions identified.
→ By evaluating the risks, identify the best solution.
→ Then a prototype is developed for a soln. with minimum risk.

Development & Testing

→ Development of approved prototype followed by testing.

Evaluation

→ Evaluation the customer evaluates & examines the S/w. and provides feedback.
→ This feedback is provided to the planning phase.
→ This keeps on iterating until the customer is satisfied.

Planning :-

Req elicitation from customer & objectives are identified & analyzed.

The alternative soln. possible for the phase are proposed in this quadrant.

Risk Analysis :-

All the possible solutions are evaluated to select best possible soln.

Then the risk associated with that soln. is identified & risks are solved

At the end of this quadrant a prototype is built for the best possible soln.

Risks :- legal problem, some M/c learning is needed (you have no employee)

Dev & Testing

Identified features are developed & verified through testing.

Evaluation

This allows the customer to evaluate the o/p of the project before project conclusion to next spiral.

Customer provides feedback and approval.

In the end planning for next phase is started.

When to use Spiral Model?

a) Large projects. (long term - continuous customer interaction).
b) Risk is large.
c) Requirements are complicated.
d) S/w requires significant changes.
e) Enough time frame is there.
f) Releases are required to be frequent.

Advantages:-

1) Risk Analysis & handling
2) large projects.
3) Flexibility in Requirements
4) Customer Satisfaction.
5) S/w is produced early.

Disadvantages:-

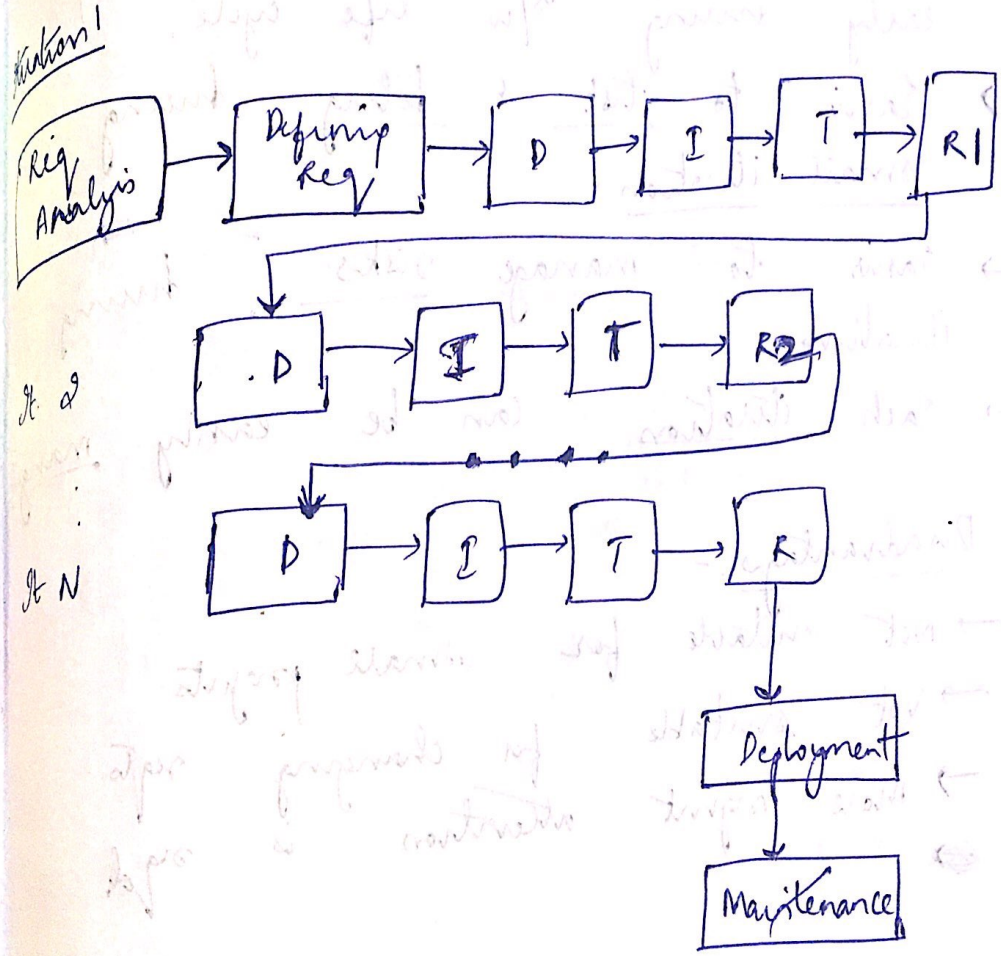
1) Spiral is more complex than SDLC models.
2) Not suitable for small projects as it is expensive.
3) Costly for small projects (risk analysis, interacting with customers)
4) As the no. of spirals is unknown at the start of the project so time estimation is very difficult.

ITERATIVE MODELS

Start with some of the specifications and develop a first version of the S/W.

After first version, if there is a need to change, then a new version is created with a new iteration.

Eg: Do a sketch, then again add a few colors and then again corrects, then finish o/p.



When to use:-

→ When Reqts are clearly defined & understood.

→ When project is big.

→ Major reqts must be defined however some details can evolve with time.

Advantages:-

→ Generates working s/w quickly & early during s/w life cycle.

→ Easier to test & debug during small iteration.

→ Easier to manage risks during iteration.

→ Each iteration can be easily manged

Disadvantages:-

→ Not suitable for small projects.

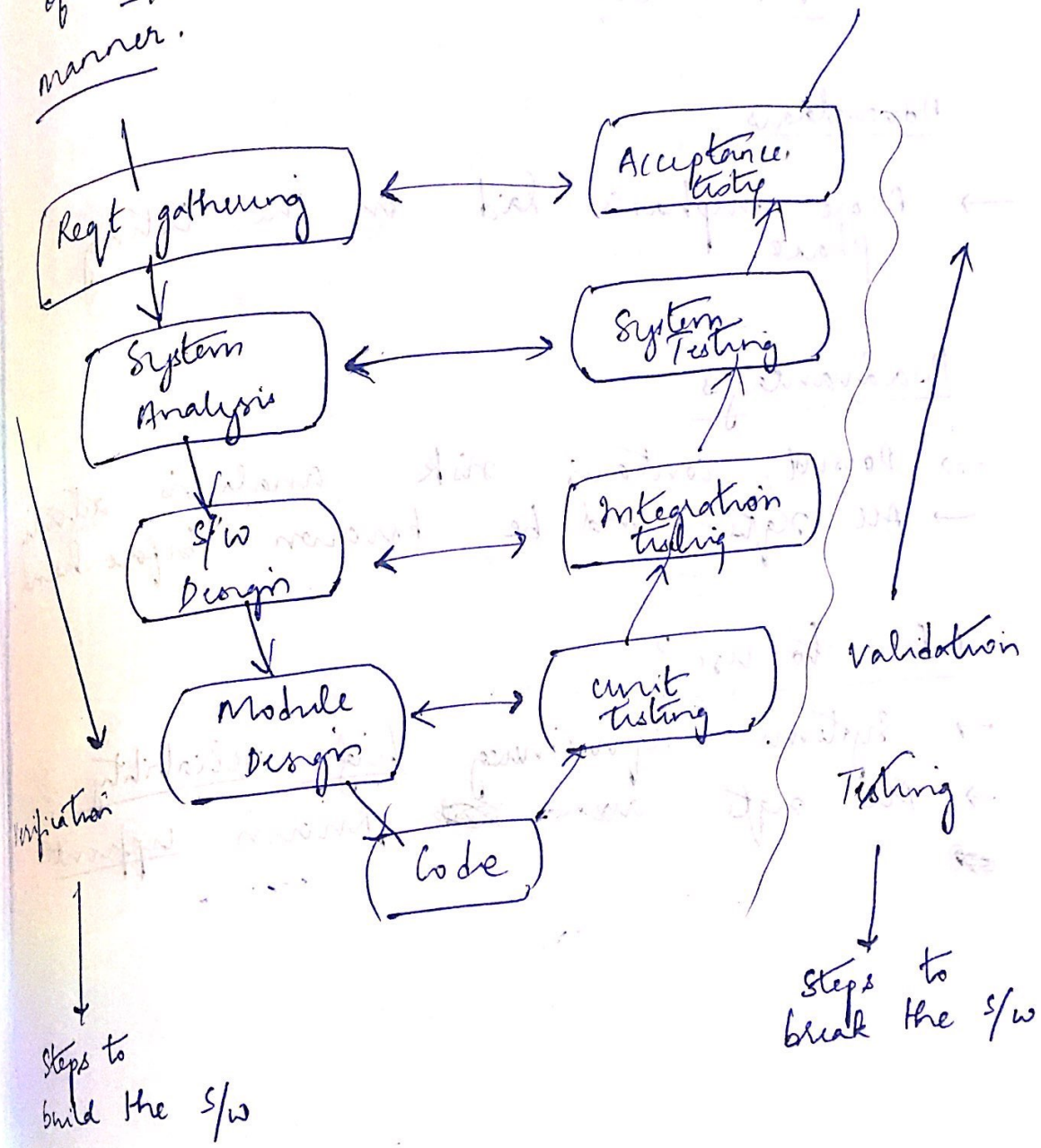
→ Not suitable for changing reqts.

→ More mgmt attention is reqd.

V-MODEL

The major drawback of waterfall model is that we move to next stage only when previous phase is finished.

V-model provides means of testing of s/w at each stage in a reverse manner.



- At every stage, test plans and test cases are created to verify and validate the product according to the requirement at that stage.

→ This model is also known as V-V model

Advantages

→ More emphasis laid on the testing phase.

Disadvantages

→ Doesn't contain risk analysis activities
→ All rqts should be known before hand.

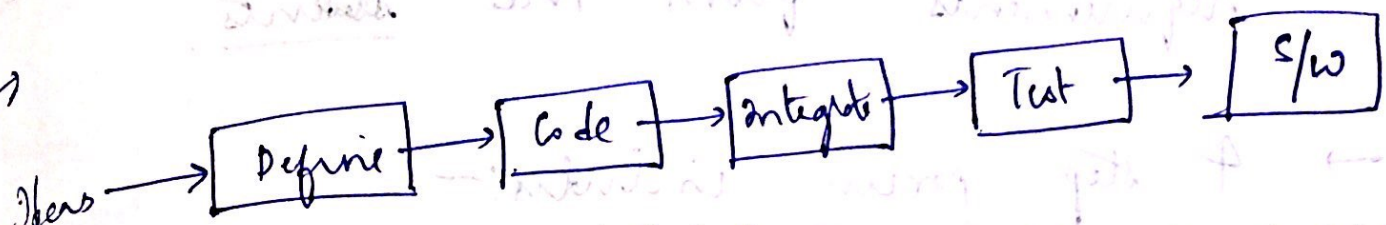
When to use?

→ Systems requiring high-reliability
→ All rqts are known upfront.

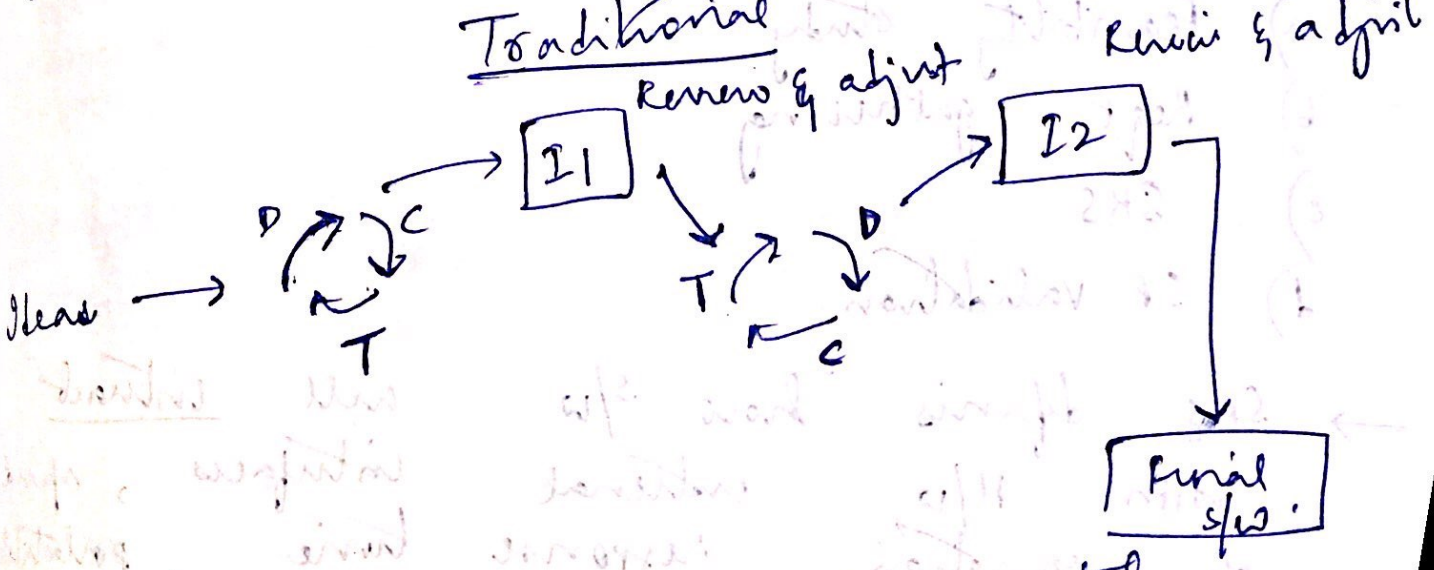
AGILE METHODOLOGY

Agile is a s/w dev methodology to build the s/w incrementally using short iterations of 1 to 4 weeks. so that dev is aligned with changing business needs.

Instead of single phase development where requirements & risks are predicted upfront it adapts fragment feedback by delivering workable product after 1 to 4 week iteration.



Traditional



Agile is iterative & incremental.