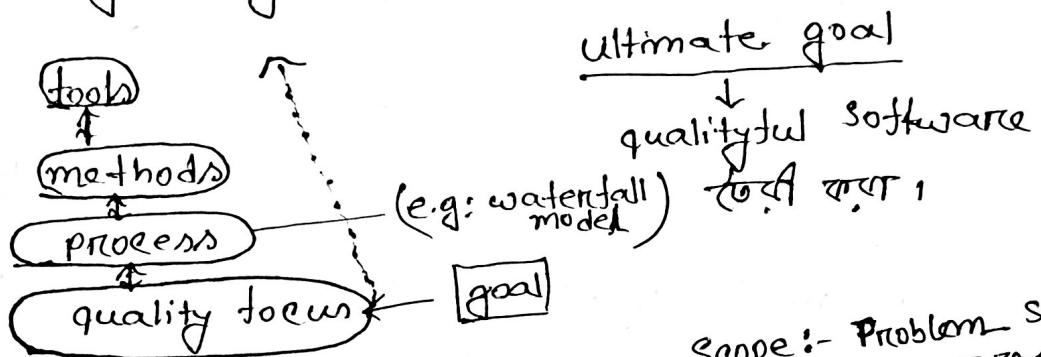


## Software Requirements Specification

- (i) Software is <sup>not</sup> manufactured.
- (ii) Software does not <sup>wear</sup> out.
- (iii) Software requirements is changing.

Software behaved like a transporter

# Software engineering is a <sup>tier</sup> layered approach.



Scope :- Problem solve  
কার্যালয় করা হবে  
ইর্দে তা কি হবে।

Engineering :- A systematic approach.

Requirements engineering :-

quality focus

কানো  
কর্মসূলী  
বিনা

visibility

Specification

Inception :- কে কৈ করবে,  
কোন কাজ করবে।

- (1) Inception (আপনাত) :- Ice breaking.
- (2) Elicitation (Enlight করা)

Problems in the  
scope

engineer

(১) যা যা করবে  
কোন কাজ করবেন  
কোন কাজ করবে না।

- (3) Elaboration :- Modeling.
- (i) Scenario based model
  - (ii) Data based model
  - (iii) Class based model
  - (iv) Behavioral modeling

problems in the  
understanding

customer যা চাই  
তা কুমার করবে।

change

করবে।

change

করবে।

assumption

করবে।

4. Negotiation :- Agreement (Win-win situation). Customer  
जी मार्ग समझोत तरीका

5. Specification :- Documentation तरीका ।

6. Validation : SME (subject matter expert)

7. Management :- version concluding management.

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Requirements engineering : a systematic approach to understand the requirements. It is the first step of the software process modeling.

Inception :- काया एक Problem है जो जानकारी लेने के लिए आवश्यक है। Stake holder जूँच देते हैं। अद्यता चाहिए समझ जानकारी एवं negotiation जी उनका।

Software process model steps :-

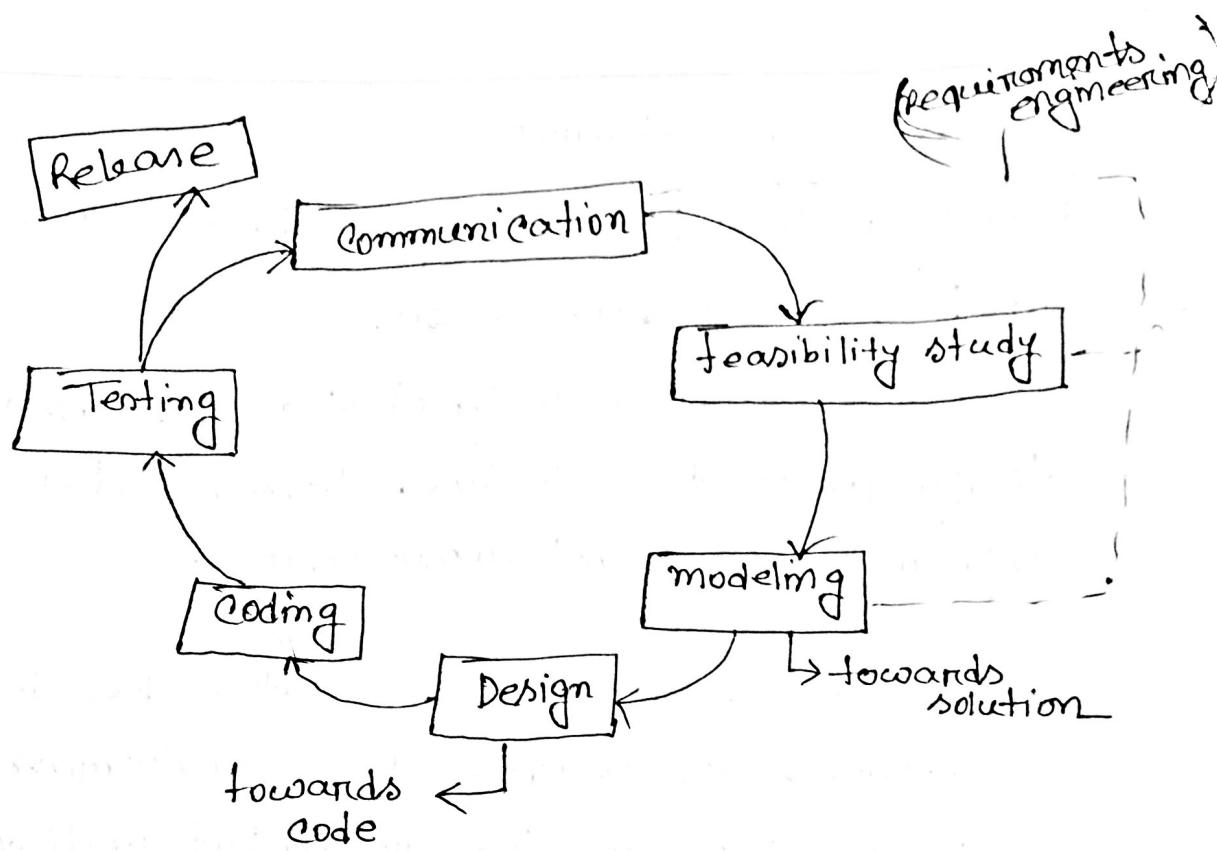
1. Understand the problem

2. Design :- Architectural view

3. Implementation :- Plan विस्तृती काढ देता।

4. maintenance (60 - 80%)

5.



Umbrella activities :- ৰ ক্ষেত্ৰে সফটওয়ার বানান্তাৰ্থ  
ক্ষেত্ৰে অন্যান্য মুক্তি না কিন্তু project success-  
full কৰ্যাকৰণ কৰতে হব। | Project timeline,  
Risk etc, manag.

20/07/17

Quality Focus :- (ৰ ক্ষেত্ৰে সফটওয়ার বানাতে হবে, সফটওয়ার কীৰ্তি  
কৰণ কৰকোৱা।

process :- software process model, activities (set of tasks),  
process :- software process model, activities (set of tasks),  
tasks (set of actions), actions. (e.g: Inception,  
Elicitation).

method :- algorithm অন্তর্ভুক্ত কৰা হবে

tools :-

#### \* Characteristics of software:-

1. Software is developed or engineered; it is not manufactured in the classical sense.

⇒ A software is a design of strategies, instruction which finally perform the designed tasks. And a design can only be developed, not manufactured.

2. Software does not wear out, but it does deteriorate.

⇒ Software is not susceptible to the environmental modalities that cause hardware to wear out. But undiscovered defects will cause high failure rates in the life of a program.

3. Software requirements are changing.

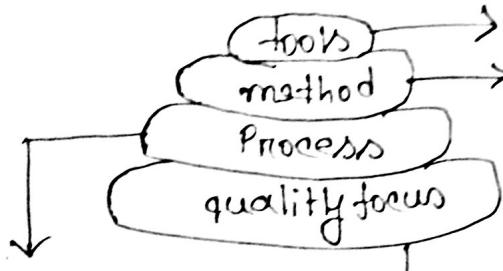
⇒ A software component should be designed and implemented so that it can be reused in many programs.

#### \* Software engineering is a layered technology.

The foundation of software engineering is the process layer.

\* Process:- Process defines a framework that must be established for effective delivery of software engineering technology.

## Software engineering :-



e.g.: waterfall model

provides technical how-to's for building software, for e.g. communication, requirement analysis, testing support, algorithm study.

a focus or goal on quality which provides a continuous process improvement culture.

Software process:- is a collection of activities, actions, tasks that are performed when a software product is to be created.

activities:- communication with stakeholders

action:- set of tasks. e.g. architectural design.

umbrella activities:-

(i) software project management.

(ii) software project tracking and control → plan तयारी करें और फिर संनियोजित करें and take any necessary action to maintain the schedule.

(iii) Risk management:- evaluate the quality of risks that may affect the outcome of the project or the quality of the product.

(M) Software quality assurance এবং নতুন পদ্ধতি বাস্তবে রূপ দিব।

(N) Re-usability management.

25/07/17 Inception :-

\* recognize multiple viewpoint :- স্বার্থ মতামতের মূল্য দিতে হবে।

Soma Apac \* working towards collaboration :- (you না we) client এর  
client এবং মাত্র না একই team members এর মত হবে।

\* set of requirements :- e.g. ① user friendly রূপ রেখ।  
e.g. ② security শর্ত রেখ।

① understand the problem :- Problem রূপ রেখ।

② Plan make a plan.

③ Carry out the plan :- implementation, change করতে হবে আবশ্যিক  
understanding থাকে।

④ examine the result of accuracy :- test  
for the quality, integrate.

change  
রূপ রেখ।

↑  
Essence of practice

of or software engineering.

\* travelling salesman problem.

7 major principles:-

① Actual reason for existing the software.

② keep it simple and stupid:-

③ maintain the vision :- ~~with efficient~~ software রাখতে চাই  
— একটু documentation, design is efficient রাখে।

④ what you produce, others will consume :- আবাসিক তা

— অন্যান্য শুধুর কাম। একটু সহজ রাখে।

⑤ Be open to the future :- যা যাতায়া আ future এ re-used রাখে।

⑥ অন্যান্য সোর্ট software এর extend রাখতে পারে।

⑦ Plan ahead for reuse.

⑧ we have to think. [to enhance our imagination power]

Inception :-

① establish a basic understanding of the problem.

② identify the people who want a solution

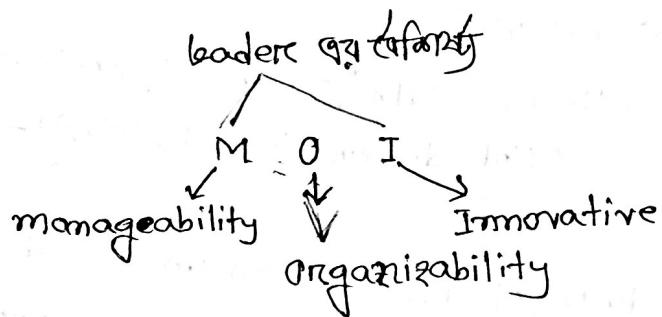
③ the nature of solution that is desired

④ the effectiveness of preliminary solution.

⑤ collaboration between the other stakeholders and the software team.

\* Stakeholders:- Stakeholder is anyone who has direct interest or indirect benefit from the system which is to be developed.

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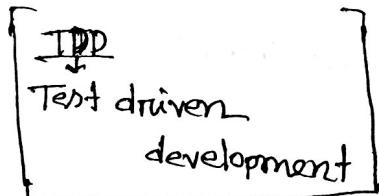
### Mythology

- (1) There is a book and it says everything.
- (2) We are behind schedule.  
we
- (3) If we hire people, then no fun.

management

### From the view of customer

- (1)



### Practitioners

- (i) When the software runs, we assume the work is completely done. But in reality, it's not true.
- (ii) It is not possible to assess the quality of software without the software is not complete.

## QFD :- Quality Focus Deployment

### Elicitation

\* In this step, we identify the requirements.

#### Requirements :-

- QFD
- 1) normal requirements :- customer <sup>or</sup> वास्तुविधि requirements.
  - 2) expected requirements :- normal requirements <sup>or</sup> वास्तुविधि यांत्रय अनुरूप या अनुसारी वास्तुविधि requirements.
  - 3) exciting requirements :-

◦ Working towards collaboration :-

⇒

07/08/17

#### Generic phase activities :-

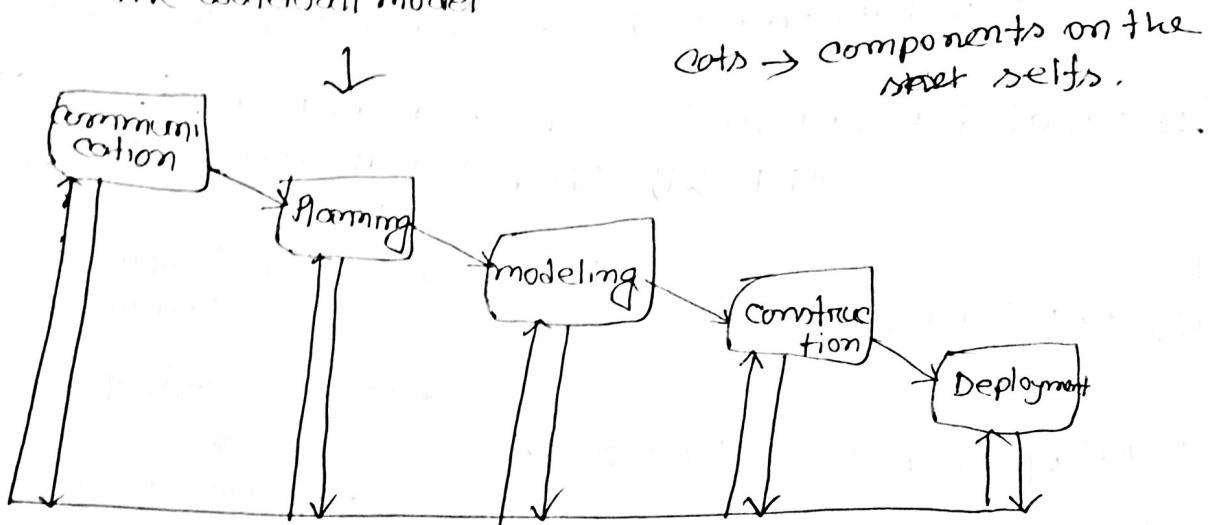
- (i) communication :- Negotiation, QFD, feasibility study, writing.
  - (ii) Planning :- what are the resources we have, what to do,
  - (iii) Design and modeling
  - (iv) Construction
  - (v) Deployment → maintenance
- ↳ umbrella activities

\* functional requirement  
    ↳ normal requirement

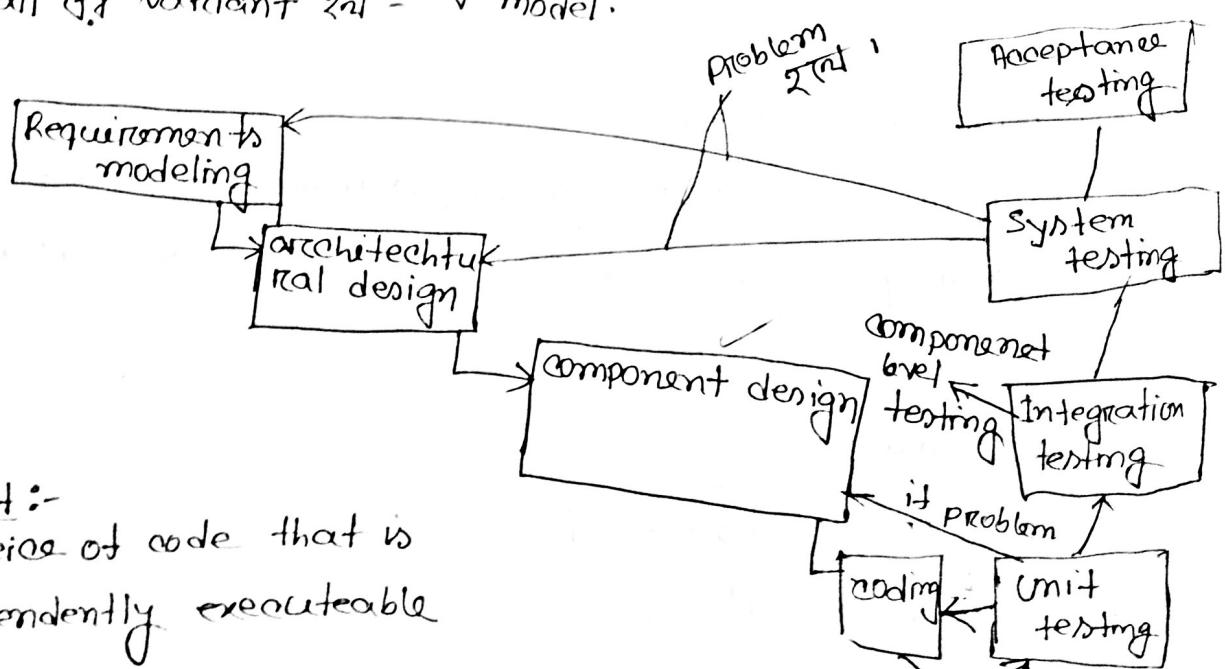
\* non-functional requirement  
    ↓  
expected requirement

Prescriptive model:-

- ① waterfall model :- नाम से भीड़जूँ | high skill विकास २५ +  
iterative waterfall model



waterfall का वर्तन २५ - V model.



Component :-

- a piece of code that is independently executable

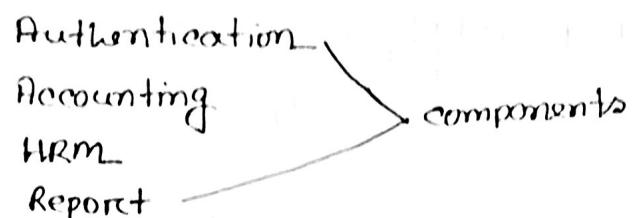
- ① Integration testing :- component जूँ

नियेदर मध्ये टिक मर काढे असे फला।

code का line by line check करा।

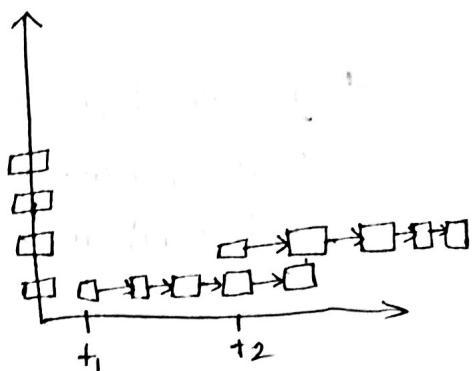
Component Based Architecture :-

(i) component source identity এবং interface connect API।



System testing :- Overall software পরিষেবা কার্যকর করা। ফিল মত  
কার্যকর করার একটি architectural problem.

Incremental Process Model :- waterfall use একটি individual component  
এর অন্ত।



Evolutionary model :-

~~Prototype model~~ :- একটি একটি আবৃত  
বানায়ে, then customer কে দেখায়।  
আবাব customer  
কা require-  
ment কৃত করে  
প্রোটো  
ট্রোট  
বানায়ে।

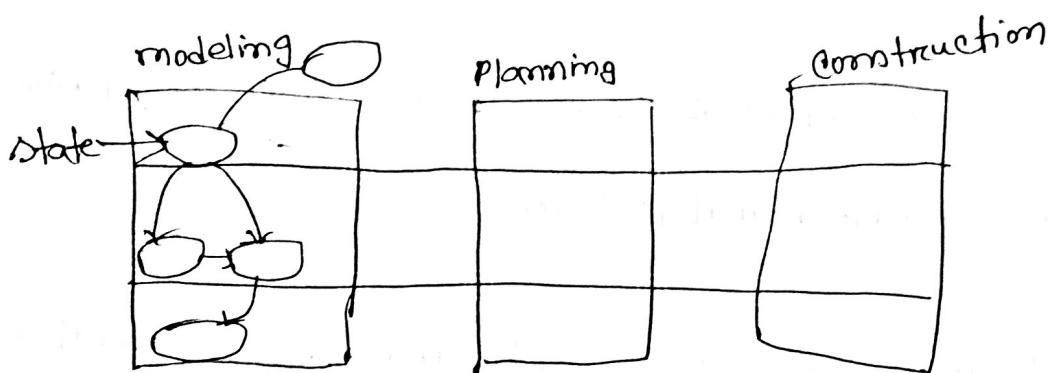
Spiral model :- one kind of  
evolutionary model



prototype :- পুরো একটি প্রণালীয়  
model (কোটি version বানায়ে)  
"You can feel it" 😊

Con-current model :- each and every activities ~~प्राप्ति~~ प्राप्ति चलते हैं।

\* concurrent एवं activities युद्धा parallelly execute वर्तमान में incrementally component ॥ ॥ ॥ ॥ ॥ ॥ ॥ ॥



\* Specialized process model :-

① Component based model.

② Formal method based model → समस्त कार्ड युद्धा के आवश्यक mathematics एवं convert करते होते।

③ Aspect oriented model :- Common feature युद्धा के लिए हिति AOP के द्वारा design.

मुख्य टेक्निक :-

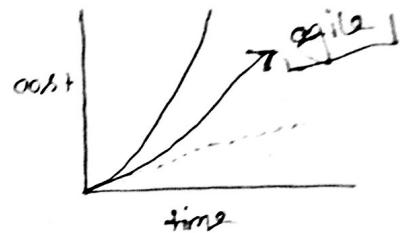
\* शब्दों द्वारा वर्णन करते हैं। १००० एवं छह Java एड.

### \* Aspect oriented model :-

Ready to accept the change.

### Agile process

1. will accept the change
2. will be incremental towards the goal.



### Characteristics/Assumption:-

- \* design and construction are interleaved.
- \* Unpredictability can address अज्ञान प्राप्ति।
- \* incremental शैली।

### Principle :-

1. Satisfy the customer through early and continuous delivery customer को regularly उत्पादन देखाते हो। ताकि easily change कर सकते हो।
2. welcome changing requirements.
3. deliver working software frequently.
4. business people and developers must work together.
5. motivated individuals. ← यहाँ agile process के मर्फ़त वाक्तव्य भाव में है।
6. face-to-face conversation ← informal रूप से हो। agile रूप से हो।
7. working software is the primary measure. ← यहाँ complete का अर्थ उत्पादन प्राप्ति।
8. constant pace indefinitely. ← daily एवं वारित वाक्तव्य रूप से हो।
9. continuous attention. ← focus फोकस बहुत रहत।
10. Simplicity
11. self-organizing team.
12. tune and adjust

Competitive :- You can do whatever you like.

\* fuzzy problem : Sudo

[BMS : 22 August  
12-11-11]

Planning  
Organizing  
Leading  
Controlling

16/08/17

Software architecture :-

Type of Agile process :-

(i) XP → extreme programming

5 values :-

a. communication → should be an informal as possible.  
তাই কোর্স শুনে বলে ফিরে,

b. simplicity → Think about present, don't think about future.

\* বনাটি কোরা হলে শেষ কাম হাতাখান  ← writing skill আবশ্যিক  
হবে।

3. feedback: Continuous feedback থাকত হবে।

- \* software itself is a feedback
- \* customer's expectation is feedback
- \* developers.

কোরা unit testing, integration testing এ Phone-এ important.

4. Courage:- আগামী design করা রয়ে, তা অন future-এ use  
করা প্রয়োজন।

5. Respect:- কাউকে স্বত্ত্বা respect, teammate দ্বাৰা স্বত্ত্বা respect,  
customer দ্বাৰা স্বত্ত্বা respect.

### XP Process model :-

1. Planning :- listening: customer দ্বাৰা কথা শুনত হবে।

- creating stories:-
- reshaping the stories:- object বানানো,
- project velocity :-

2. Design :- refactoring

3. Planning :-

3. Coding :- pair programming

4. Testing :- Continuous testing হব।

~~XP~~ → Industrial XP :-

### XP's debate:-

- (I) requirements volatility
- (II) conflicting customer's need.
- (III) Lack of formal design.
- (IV)

### Scrum process model :- मन्त्र

\* Backlog :- Pending work.

\* Sprint :-

\* Run :-