

B. TECH. IT 5TH SEM SOS(E & T), GGU, BILASPUR C G

Elective-I Software Engineering(IT05TPE11)
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BOOKS (WRITERS)

- ◉ Pressman
- ◉ Pankaj Jalote
- ◉ Rajib Mall
- ◉ Schaums Series

UNIT1 CONTENTS

- ◉ What is software?
- ◉ Characteristics and Application of Software
- ◉ SDLC
- ◉ Software Process Models-
- ◉ LSM
- ◉ PM
- ◉ RAD Model
- ◉ IEM
- ◉ CBM
- ◉ Spiral Model
- ◉ Fourth Generation Techniques

WHAT IS SOFTWARE????

- ◉ Instruction.....
- ◉ Data Structure.....
- ◉ Documents.....
- ◉ Logical.....

CHARACTERISTICS OF SOFTWARE

- ◉ Developed or engineered not Manufactured.....
- ◉ Does not wear out but deteriorate.....
- ◉ Custom Built.....

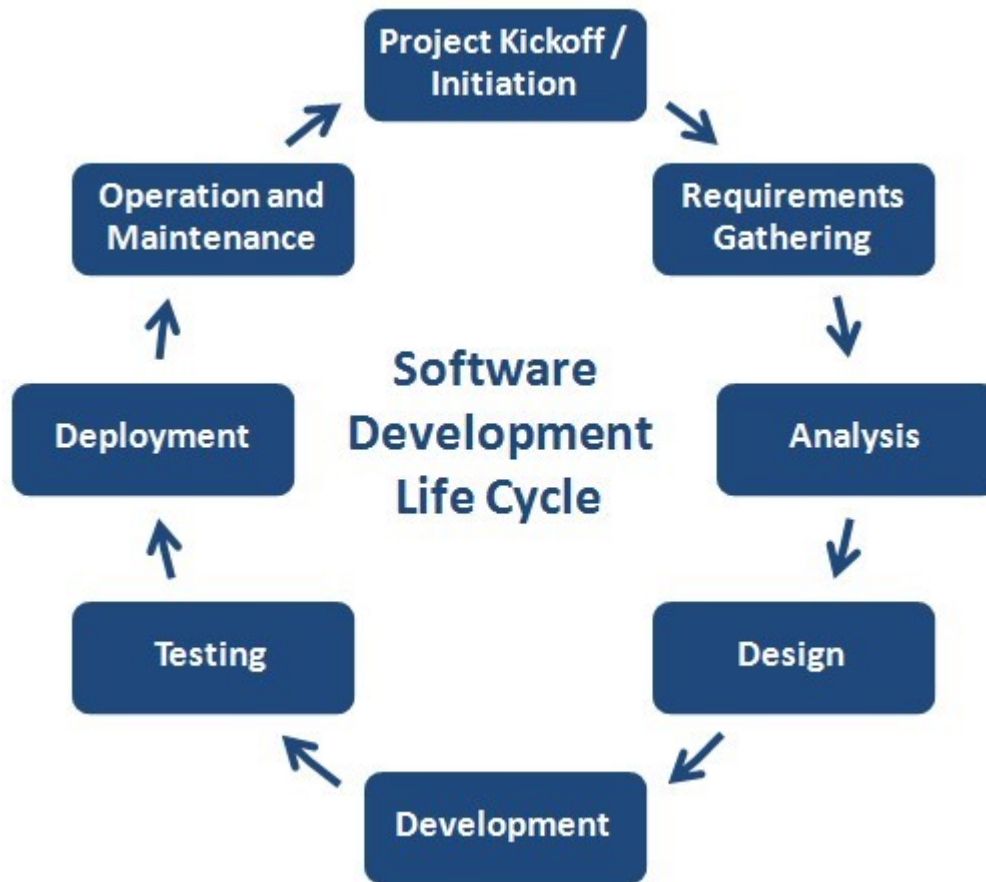
APPLICATIONS OF SOFTWARE

- ◉ Transportations
- ◉ Medical
- ◉ Telecommunication
- ◉ Military
- ◉ Industries
- ◉ Entertainment
- ◉ Office Machine
- ◉ Actually this list is endless.....

SDLC & ITS PURPOSE

- ◉ To facilitate the development of large software products.....
- ◉ To understand entire process....
- ◉ Structured approach....
- ◉ Planning of resources....
- ◉ Controlling....
- ◉ Management....

PHASES OF SDLC



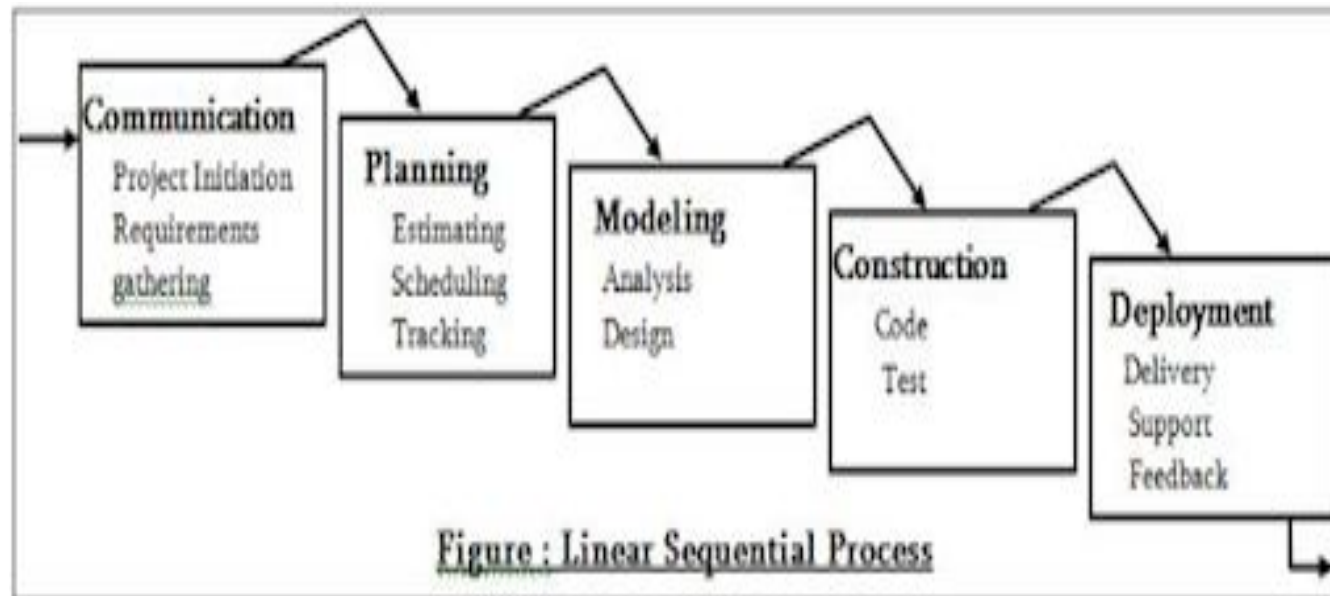
5 TO 8 PHASES OF SDLC

- ◉ Project initiation & planning/ Recognition of need
- ◉ Project Identification/ Feasibility Study
- ◉ Project Analysis
- ◉ System design
- ◉ Coding
- ◉ Testing
- ◉ Implementation
- ◉ Maintenance

SOFTWARE PROCESS MODELS

- ◉ Linear Sequential Model
- ◉ Prototype Model
- ◉ RAD Model
- ◉ Incremental Model
- ◉ Component Based Model

LINEAR SEQUENTIAL MODEL(LSM)



LSM BASICS.....

- ◉ Waterfall Model/Classic Life Cycle Model
- ◉ Systematic Sequential.....
- ◉ Cascade phases....
- ◉ Blocking stages.....

LSM PHASES

- ◉ Feasibility Studies
- ◉ Requirement Analysis
- ◉ Design & Specification
- ◉ Coding & Module Testing
- ◉ Integration & System Testing
- ◉ Delivery & Maintenance

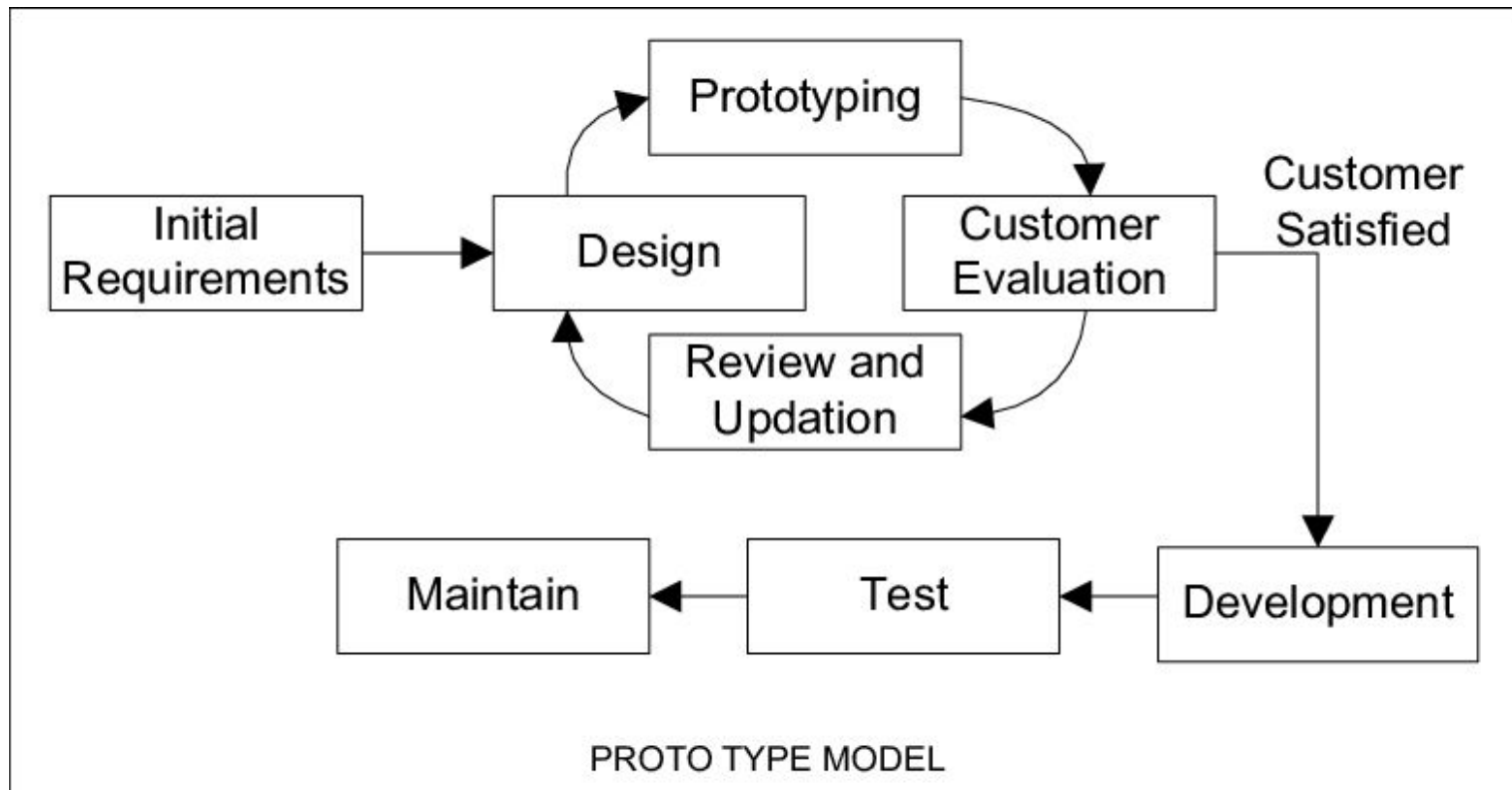
LSM ADVANTAGES

- ◉ Linear Model
- ◉ Segmental Model
- ◉ Systematic & Sequential
- ◉ Simple
- ◉ Proper Documentation

LSM DISADVANTAGES

- ◉ Difficult to define requirement at beginning
- ◉ Not for accommodating change
- ◉ Working version
- ◉ Not for large projects...
- ◉ Heavy documentation...
- ◉ Can't go in backward direction...
- ◉ No risk Analysis
- ◉ No sample Model
- ◉ Time consuming..
- ◉ Iteration not possible.

PROTOTYPE MODEL(PM)



PM (REASONS)

- ◉ Input data, formates, messeges, reports.....
- ◉ GUI part...
- ◉ Technical solution unclear....
- ◉ Major design decision depends on issues like
.....

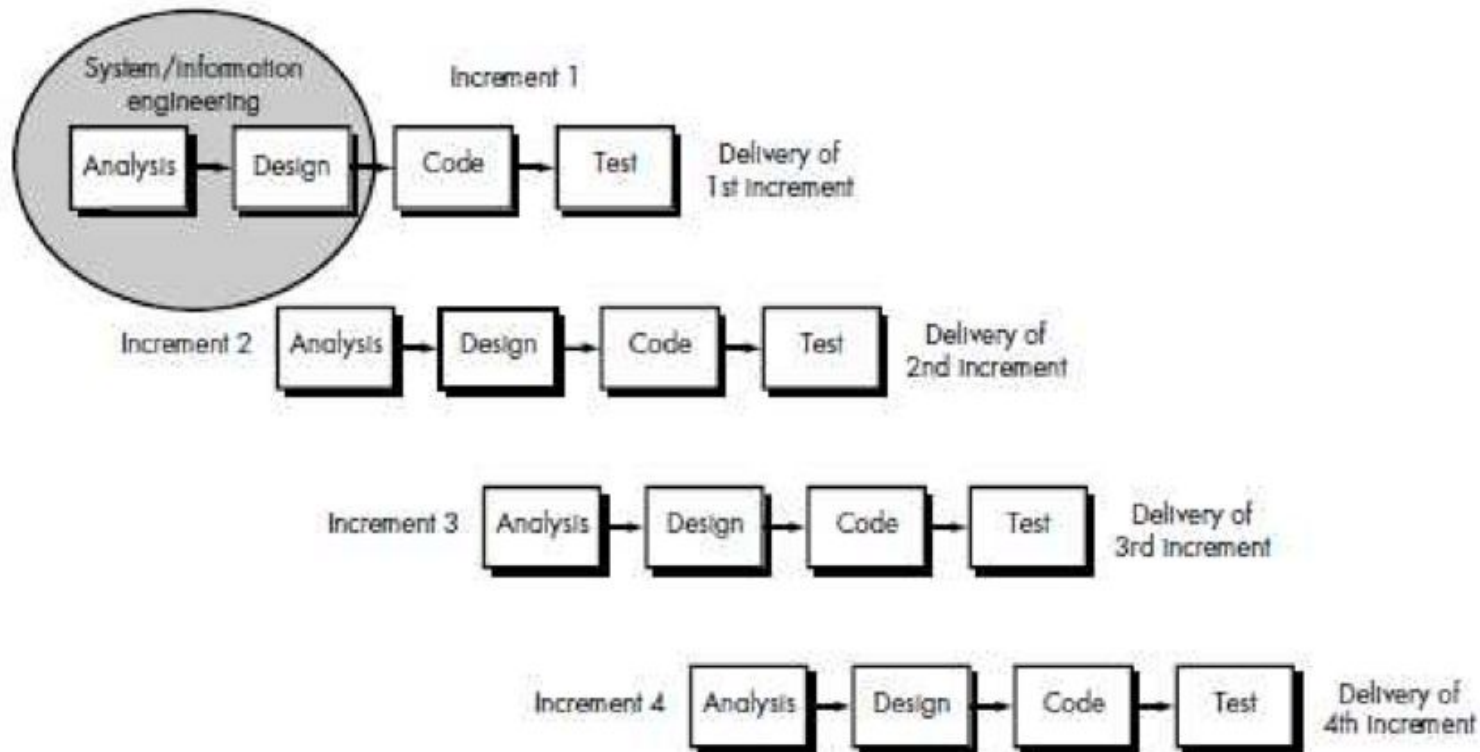
PM ADVANTAGES

- ◉ Suitable for large system....
- ◉ User training....
- ◉ User services determination...
- ◉ System training...
- ◉ Requirement not freeze

PM LIMITATIONS

- ⦿ Difficult to find all requirements.....
- ⦿ Difficult to predict....
- ⦿ Quality not achieved.....
- ⦿ Compromise with techniques.....

ITERATIVE ENHANCEMENT MODEL(IEM)



ITEM BASICS

- ◉ Sequential + Iterative
- ◉ Broken down into several modules.....
- ◉ Core products then increasing levels of capabilities....
- ◉ Example---word processing software.....

ITEM ADVANTAGES

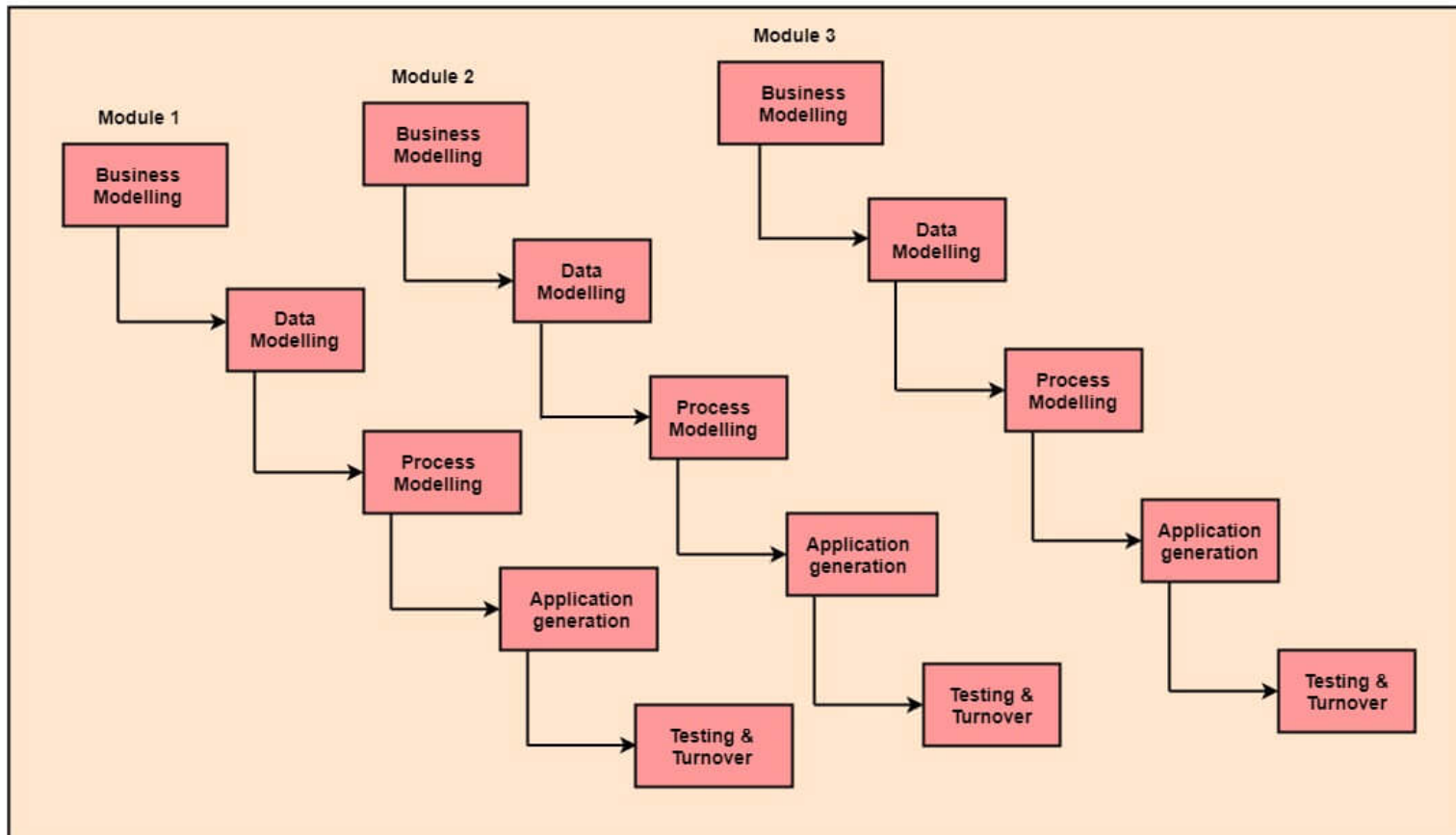
- ◉ Improved later stages...
- ◉ Changes in requirement reduced....
- ◉ Users get benefit earlier...
- ◉ Improved cash flow....
- ◉ Urgent work crop up....
- ◉ Smaller sub project
- ◉ Job satisfaction....

ISM DISADVANTAGES

- ◉ Software breakage.....
- ◉ More productive.....
- ◉ Difficult to divide....

RAPID APPLICATION DEVELOPMENT(RAD) MODEL

Fig: RAD Model



RAD BASICS

- ⦿ Requirements & solutions can be modularized.....based on functional, technology etc
- ⦿ Smaller components ...then integration....
- ⦿ Short development time..

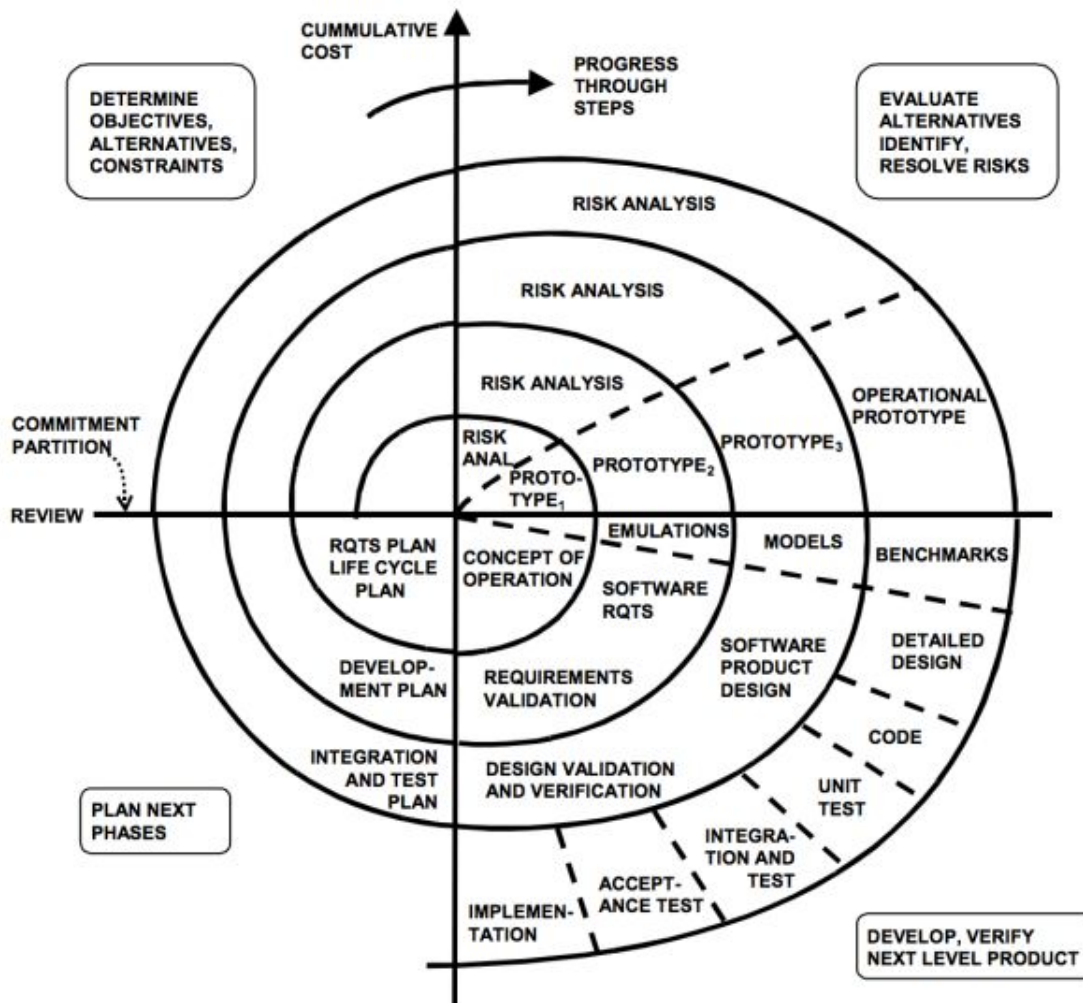
RAD STEPS/PHASES

- ⦿ Business modeling
- ⦿ Data modeling
- ⦿ Process modeling
- ⦿ Application generation
- ⦿ Testing & Turnover

RAD DRAWBACK

- ⦿ High HR
- ⦿ Commitment
- ⦿ Properly Modularization
- ⦿ No Risk Analysis

SPIRAL MODEL(SM)



SM BASICS

- ◉ By Boehm
- ◉ Evolutionary model.....
- ◉ Meta model.....
- ◉ Risk & Risk Management....
- ◉ 4 Sectors/Quadrants....

SM CHARACTERISTICS

- ◉ Cyclic...
- ◉ 4 stages...
- ◉ Radius of Spiral....
Limitation----
- ◉ No strict standard....
- ◉ No particular beginning or end.....

SM ADVANTAGE & DISADVANTAGE

- ◉ Risk driven model
- ◉ Flexible
- ◉ Less documentation
- ◉ Uses prototyping.

Disadvantages----

Lack of explicitly process guidance.....

COMPONENT BASED DEVELOPMENT MODEL(CBDM)

- ◉ Comercial off-the-shelf(CoTS) software component.....
- ◉ Many characteristics of spiral model.....
- ◉ Evolutionary nature.....
- ◉ Prepackaged software component.....
- ◉ Modelling & Construction --- identification of candidate component.

CBDM STEPS

- ◉ research & evaluated....
- ◉ Integration issue.....
- ◉ Software architecture.....
- ◉ Integration....
- ◉ Testing.....

CBDM ADVANTAGES

- ⦿ Reusability
- ⦿ 70% reduction.....
- ⦿ 84% reduction.....
- ⦿ Productivity index.....

4TH GENERATION TECHNIQUES(4GT)

- ⊙ Packages of software tools.....
- ⊙ User requirements in graphics notation.....

4GT INCLUDES

- ◉ Data Definitions
- ◉ Data Manipulation
- ◉ Non-procedural language for query
- ◉ Report generation
- ◉ Code generation
- ◉ Spread sheet capability

STEPS/PHASES IN 4GT

- ⦿ Requirement gathering
- ⦿ Design strategy
- ⦿ Implementation
- ⦿ Transformation into product

4GT

ADVANTAGES/DISADVANTES

- ⊙ Reduction in development time....
- ⊙ Improved productivity.....
- ⊙ Help by CASE tools.....
- ⊙ Disadv----

ANY QUERY????

ATTENDANCE LINK

- ◉ https://docs.google.com/forms/d/e/1FAIpQLScVRkXBV2Z099k67o5N5N60vccH_alTJz4uMrVbFh8sREJaWQ/viewform?usp=sf_link