



# **SNS COLLEGE OF TECHNOLOGY**

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**An Autonomous Institution**



**COURSE NAME : 16IT301 COMPUTER NETWORKS**

**III YEAR/ V SEMESTER**

**UNIT – I Introduction to Software Engineering**

**Topic: Process Model- RAD Model, Evolutionary, Spiral Model**

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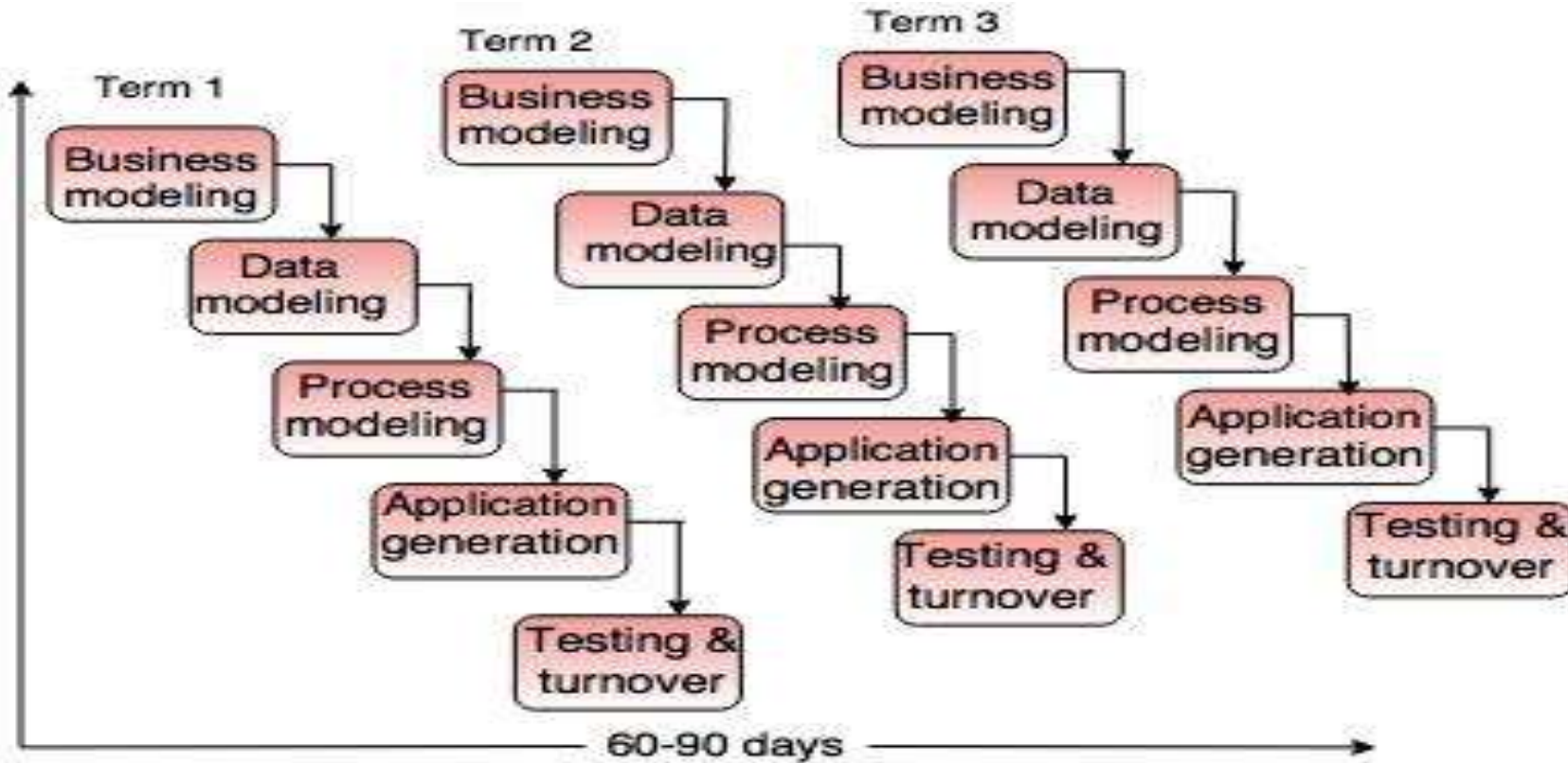


# RAD Model

- RAD is a Rapid Application Development model.
- Using the RAD model, software product is developed in a short period of time.
- The initial activity starts with the communication between customer and developer.
- Planning depends upon the initial requirements and then the requirements are divided into groups.
- Planning is more important to work together on different modules.



# Process Model



**Fig. - RAD Model**



# Modeling Process



## Business Modeling:

- Business modeling consist of the flow of information between various functions in the project.
- For example what type of information is produced by every function and which are the functions to handle that information.
- A complete business analysis should be performed to get the essential business information.

## Data modeling

- The information in the business modeling phase is refined into the set of objects and it is essential for the business.
- The attributes of each object are identified and define the relationship between objects.



# Modeling Process

## Process modeling

- The data objects defined in the data modeling phase are changed to fulfil the information flow to implement the business model.
- The process description is created for adding, modifying, deleting or retrieving a data object.

## Application generation

- In the application generation phase, the actual system is built.
- To construct the software the automated tools are used.

## Testing and turnover

- The prototypes are independently tested after each iteration so that the overall testing time is reduced.
- The data flow and the interfaces between all the components are fully tested. Hence, most of the programming components are already tested.



# Evolutionary Process Model

Evolutionary models are iterative. They are characterized in a manner that enables you to develop increasingly more complete versions of the software with each iteration. There are two common evolutionary process models.

- **Prototyping**
- **The Spiral Model**

## **Prototyping:**

- Prototype is defined as first or preliminary form using which other forms are copied or derived.
- Prototype model is a set of general objectives for software.
- It does not identify the requirements like detailed input, output.
- It is software working model of limited functionality.
- In this model, working programs are quickly produced.



# Evolutionary Process Model

## Communication

In this phase, developer and customer meet and discuss the overall objectives of the software.

## Quick design:

- Quick design is implemented when requirements are known.
- It includes only the important aspects like input and output format of the software.
- It focuses on those aspects which are visible to the user rather than the detailed plan.
- It helps to construct a prototype.

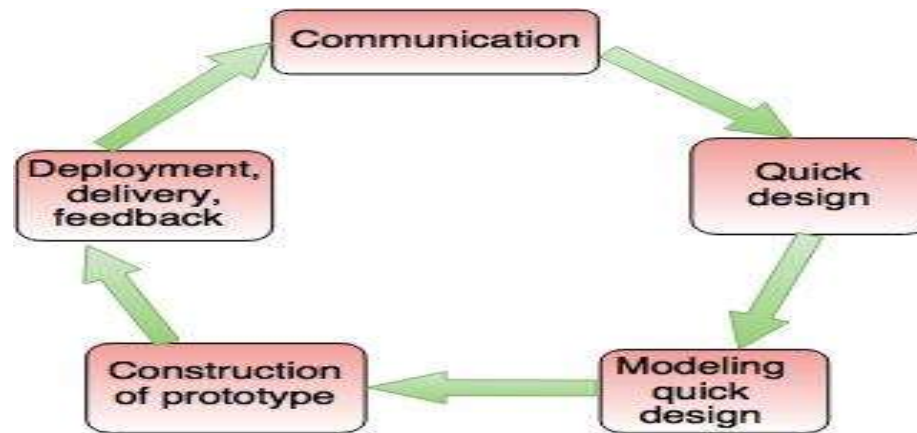


Fig. - The Prototyping Model



# Evolutionary Process Model



## Modeling quick design

- This phase gives the clear idea about the development of software because the software is now built.
- It allows the developer to better understand the exact requirements.

**Construction of prototype:** The prototype is evaluated by the customer itself.

## Deployment, delivery, feedback:

- If the user is not satisfied with current prototype then it refines according to the requirements of the user.
- The process of refining the prototype is repeated until all the requirements of users are met.
- When the users are satisfied with the developed prototype then the system is developed on the basis of final prototype.





# Evolutionary Process Model-Advantage



- Prototype model need not know the detailed input, output, processes, adaptability of operating system and full machine interaction.
- In the development process of this model users are actively involved.
- The development process is the best platform to understand the system by the user.
- Errors are detected much earlier.
- Gives quick user feedback for better solutions.
- It identifies the missing functionality easily. It also identifies the confusing or difficult functions



# Evolutionary Process Model-Disadvantage

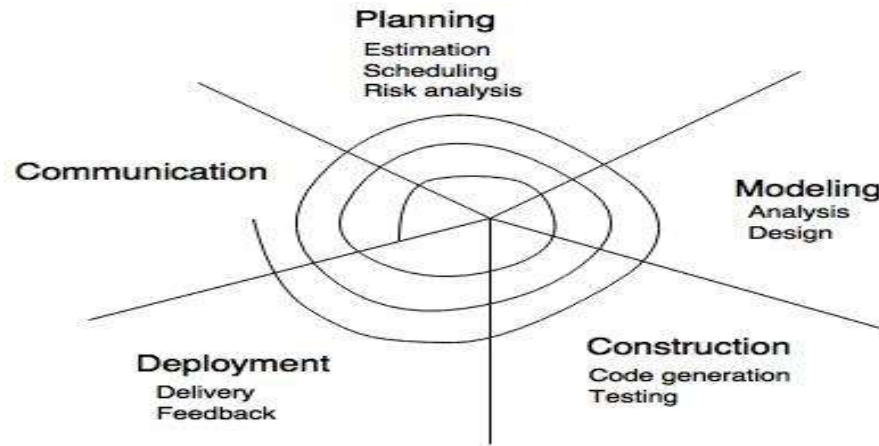


- The client involvement is more and it is not always considered by the developer.
- It is a slow process because it takes more time for development.
- Many changes can disturb the rhythm of the development team.
- It is a thrown away prototype when the users are confused with it.



# Spiral Model

- Spiral model is a risk driven process model.
- It is used for generating the software projects.
- In spiral model, an alternate solution is provided if the risk is found in the risk analysis, then alternate solutions are suggested and implemented.
- It is a combination of prototype and sequential model or waterfall model.
- In one iteration all activities are done, for large project's the output is small.



**Fig. - The Spiral Model**



# Spiral Model-Advantage & Disadvantage



## Advantages of Spiral Model

- It reduces high amount of risk.
- It is good for large and critical projects.
- It gives strong approval and documentation control.
- In spiral model, the software is produced early in the life cycle process.

## Disadvantages of Spiral Model

- It can be costly to develop a software model.
- It is not used for small projects.



# References

- Lisa Crispin, Janet Gregory, “Agile Testing; A Practical Guide for Testers and Agile Teams”, Addison Wesley, 3rd Edition, 2015.

