Development Methodology

Version 1.0

Revision History

Ver No	Ver date	Written/Revised By	Comment	Reviewed By	Approved By	Approved Date
1.0	January 2006	Carla Galdo Morales	Basic Content	Sumitra Seshan		

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1.0   Purpose of the document

This document is intended to explain and illustrate the different Development Methodologies followed by Fifth Generation Technologies India Ltd (5G).

2.0   Introduction

5G follows the Quality Systems and Procedures established by International standards for all project management and development activities. The quality management and philosophies of 5G are established to foster a continuous process improvement culture within the organization to establish a company-wide quality focus.

The Quality Systems follows a common process framework (as shown in fig. 1) by breaking down the processes to activities which are then defined as individual tasks, milestones and quality assurance activities. This framework is technology independent and can be applicable to all software projects, independent of project size and complexity.
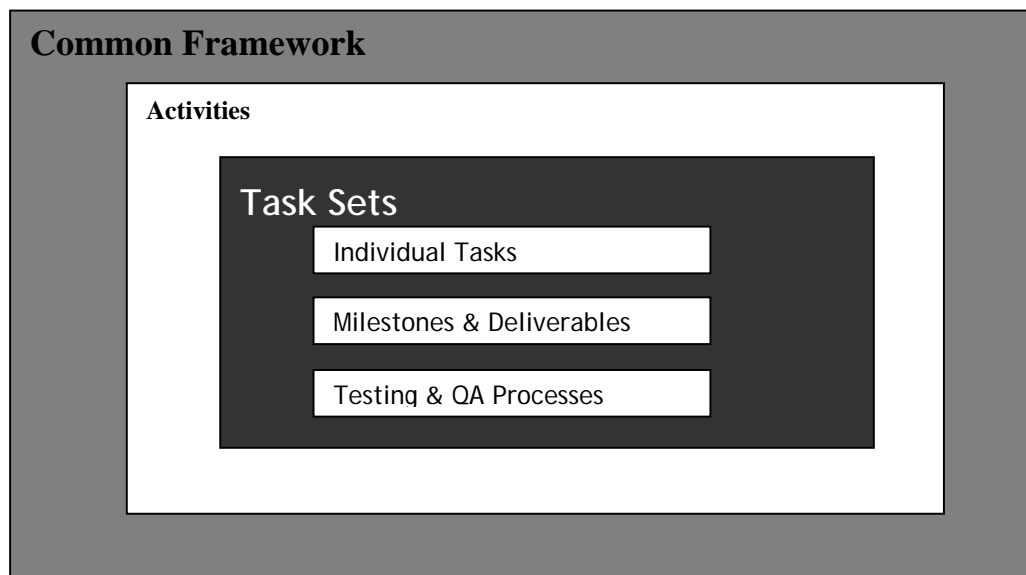
Common Framework

Activities

Task Sets

Individual Tasks

Milestones & Deliverables

Testing & QA Processes

Fig 1

This provides necessary flexibility in the development and allows for easier overall management of the project.

3.0 Lifecycle Planning

3.1 Define a Software Development

5G follow several steps to define and implement a software development process. These steps are to improve the definition or implementation of our process. By defining the right software development process to our organization will have a profound impact on controlling the schedules, costs, and quality of each project.

1. Identify the software model.
2. Identify the activities.
3. Identify the relationships among activities.
4. Document other useful information on each activity.
5. Document how to tailor the process.
6. Document how to improve the process.
7. Obtain buy-in of the process.
8. Continually use and improve the process.

To define a software development process is by deciding which software process model that best fits the needs of our organization. There are numerous models and variations of models from which to choose but an organization should strive to have as few software process models as possible. Today 5G utilize three different process models Waterfall model, Incremental model and Iterative model. It all depends over the software "product" that needs to be delivered to the costumer.

3.2 Process Models

3.2.1 Waterfall

As one stage is completed, the project's activities focus on the next stage, so there is a downward flow, as shown by the solid arrows from one activity to the next. The dotted arrows bellow shows feedback loops that are active when there is a need to revisit an earlier stage to redefine, redesign, recode etc.
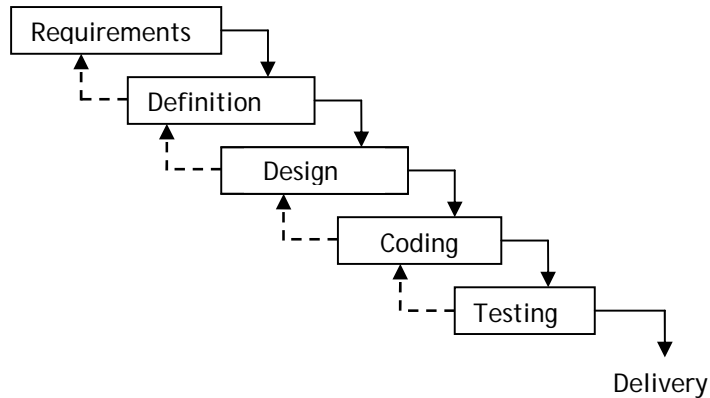
Fig 2

3.2.2 Incremental

This model is quite similar to the waterfall model, and here the product is developed incrementally in pieces. Requirements, definition, and high-level design are completed and documented. Then the product is developed further in pieces according to a master building plan. After each piece is low-level designed, coded, and tested, it enters into the system test where it is further integrated and tested.
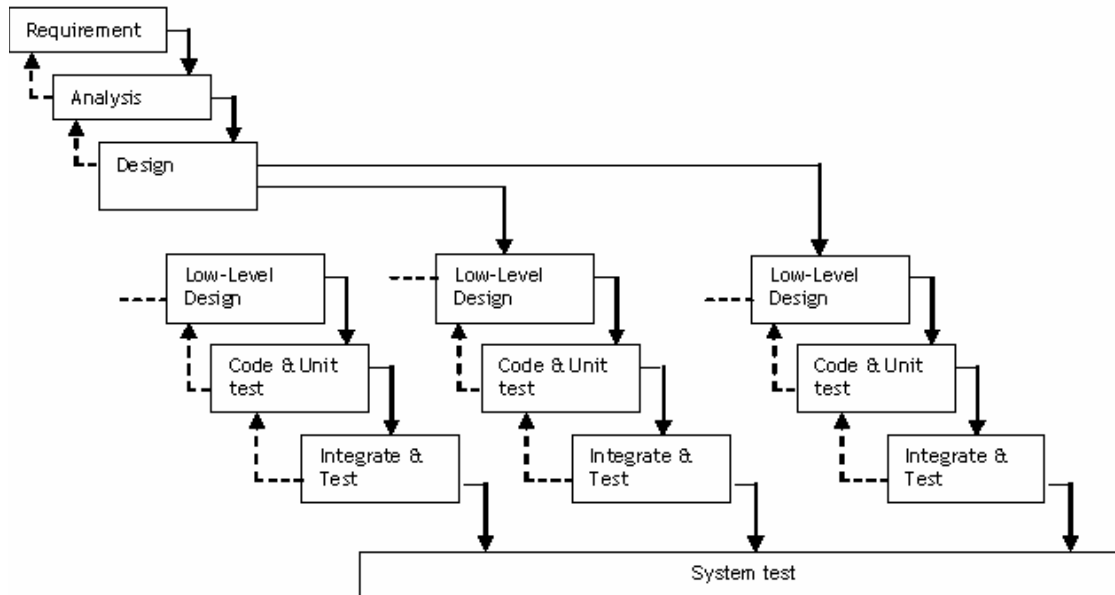
Fifth Generation
T e c h n o l o g i e s

Fig 3

3.2.3 Iterative

As the requirement becomes better understood and the product is further defined, then the next iteration of the product is developed. Each iteration forms the base for the next iteration. Although the picture bellow shows each iteration beginning with the requirements being revised, the iterations can begin with the definition or design stages.
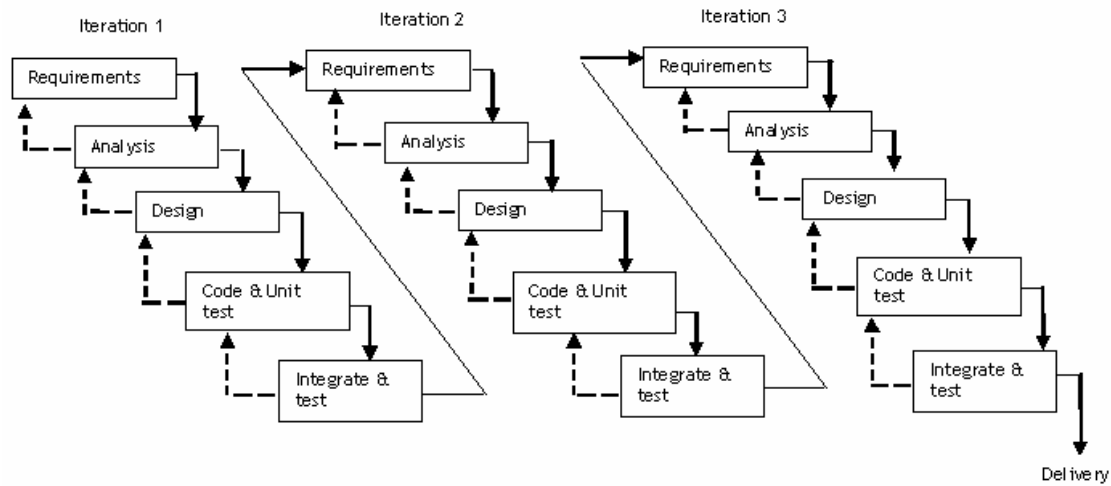
Fig 4

3.2.4 Product Evolution Prototyping

Evolution Prototyping is a lifecycle model in which 5G develop the system concept as moving through the project. Usually we begin by developing the most visible aspects of the system and demonstrate that part of the system to the client and then continue to develop the prototype based on the feedback we receive. When the prototype is "good enough" by both parts then we complete any remaining work on the system and release the prototype as the final product.
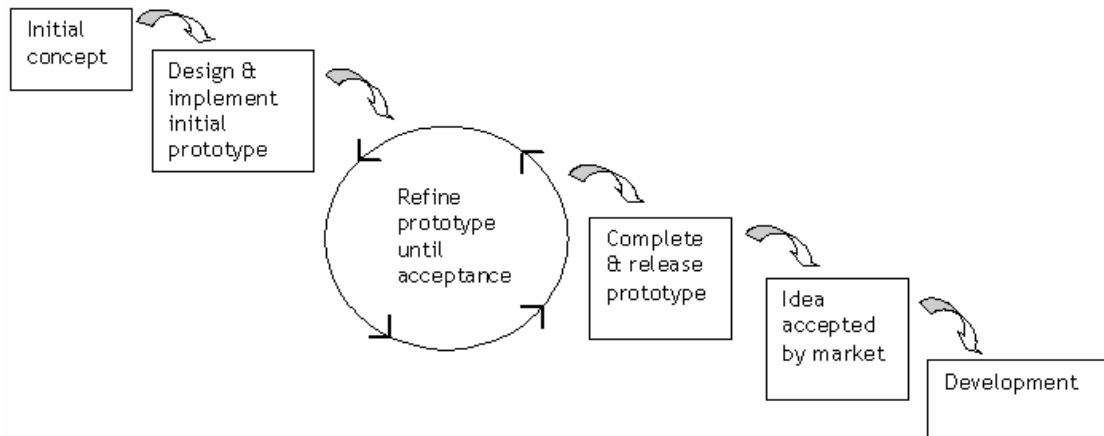
Fig 5

3.2.5 Evolution Delivery

5G develop a version of the product and let the client come back with feedback. 5G plan to accommodate all the requests so the evolutionary delivery will look a lot like the evolutionary prototyping. 5G also plan to accommodate few change requests for the evolutionary will look a lot like the stage delivery.
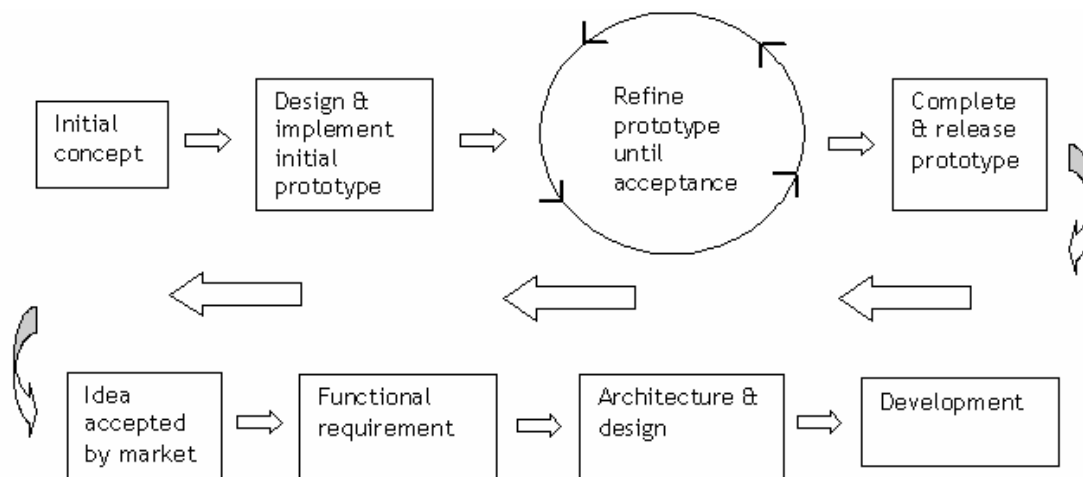

Fig 6

3.3 Choosing a Model

Waterfall
The waterfall model generally is suited for medium to large projects with well defined requirements. This model relies heavily on each stage being completed the first time through and operated best when the change activity does not result in major changes to the definition and design of the product.

Incremental
The Increment model can be used when there is a desire to develop, in increments, a product that has known requirements and definition.
5G tries to understand the problems and addresses them incrementally by

- dividing the project in phases/versions
- trying to deliver a finished by-product at the end of every phase
- each phase of development would follow the traditional stages of Analysis, Design, Implementation and Test Plan.
- The major processes that constitute the methodology are Requirement Gathering, Analysis, Design, Build, and Test.

This process will be repeated at every phase until the delivery of the desired solution to the customer.

Iterative Model
The iterative model is particular suited for use when the requirement and product definition are not well understood and there is need to begin development more quickly and create a very easy version that will demonstrate the look and feel of the product. The model also shares many of the advantages of the incremental model but has the distinct benefit of adapting to changing product requirements. It also introduces additional process complexity and potentially longer product cycles.

Product Evolution Prototyping
The Evolution Prototyping model is especially useful when requirements are changing rapidly, when our customer is reluctant to commit to a set of requirements, or when the application area is not well understood from the both sides.

3.4 Key Factors

The candidate is provided an access card to access the company premises.

There are few key factors 5G consider relevant when decide a model to utilize. The table below shows the critical key factors role to each software development process model.

	Waterfall	Incremental	Iterative	Evolution Prototype
Product complexity	High	Medium/High	Medium/High	Low
Product size	Medium/large	Medium/large	Medium/large	Small/Medium
Degree that product requirements are documented and understood	Well defined	Well defined	Medium/Low	Medium/Low
Need for early availability of product function	No / Less	Yes (low/medium frequency)	Yes (low/medium frequency)	Yes (high frequency – all the time)
Required quality level of product	Very High	High	High	Medium
Magnitude of anticipated changes during development	Very less	Less/Medium	Less/Medium	High

Table 1