# Spiral Model: Applications in Web based Applications

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# Spiral Model: Applications in Web based Applications

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## ABSTRACT

*The web site designing is the process of placing information in forms of text, images, pictures, photos, animation etc. of relative organization or company or firm and displaying it on internet. The web hosting is the process of publishing web site on web server so that, it will available throughout in the world. Various methods are used for designing web sites. In present paper researcher found that If web site designed by following spiral model directions then it will be more suitable, easy to maintain, flexibility, agile, cost effective.*

**Keywords**: process, internet, web hosting, publication.

## 1. INTRODUCTION:

While designing web site basically there are different ways.  The site design process is divided up into following steps:

- Identifying problem: The first step is defining the problem and its definition. The site design and site planning process begins with the initial problem to be solved. This is started from client  contact
- Analysis: The next step involves programming the site as well as site and end user requirements which is focused on in-depth below. There are numerous site elements related to the analysis during this phase. This is part of the analysis phase in site planning.
- Design phase : After the analysis, a program is developed, which is part of the design phase. The third step deals with schematic design of a site as well as a preliminary cost estimate for the site.

Summarized steps for designing the web site are:

- ✓ Requirements analysis
- ✓ Data collection
- ✓ Designing model
- ✓ Cost estimation
- ✓ Risk identification and risk mitigation
- ✓ Human resource planning
- ✓ Coding
- ✓ Database design and connectivity to server
- ✓ Integration
- ✓ Testing
- ✓ User interface
- ✓ Hosting
- ✓ Maintenance
- ✓ Feedback and response

## 2. CONCEPTUAL SPIRAL MODEL FOR WEB SITE DESIGNING:

This is a recent model that has been proposed by Boehm. As the name suggests, the activities in this model can be organized like a spiral. The spiral has many cycles. The radial dimension represents the cumulative cost incurred in accomplishing the steps come so far and the angular dimension represents the progress made in completing each cycle of the spiral. The structure of the spiral model is shown in the figure given below. Each cycle in the spiral begins with the identification of objectives for that cycle and the different alternatives are possible for achieving the objectives and the imposed constraints.

The next step in the spiral life cycle model is to evaluate these different alternatives based on the objectives and constraints. This will also involve identifying uncertainties and risks involved. The next step is to develop strategies that resolve the uncertainties and risks. This step may involve activities such as benchmarking, simulation and prototyping. Next, the software is developed by keeping in mind the risks. Finally the next stage is planned.
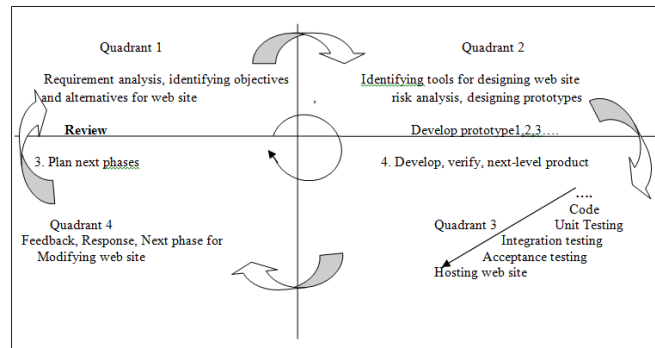
**Fig. 1.1:** Conceptual Spiral Model for web site designing

The next step is determined by remaining risks. For example, its performance or user-interface risks are considered more important than the program development risks. The next step may be evolutionary development that involves developing a more detailed prototype for resolving the risks. On the other hand, if the program development risks dominate and previous prototypes have resolved all the user interface and performance risks; the next step will follow the basic waterfall approach.

The risk driven nature of the spiral model allows it to accommodate any mixture of specification-oriented, prototype-oriented, simulation-oriented or some other approach. An important feature of the model is that each cycle of the spiral is completed by a review, which covers all the products developed during that cycle, including plans for the next cycle. The spiral model works for developed as well as enhancement projects.

## 3. SPIRAL MODEL DESCRIPTION

The development spiral consists of four quadrants as shown in the figure above
3.1 Quadrant 1: Requirement analysis, identifying objectives and alternatives for web site
3.2 Quadrant 2: Identifying tools for designing web site risk analysis, designing prototypes
3.3 Quadrant 3: Coding, testing-unit, integration, acceptance and hosting web site
3.4 Quadrant 4: Feedback, Response, Next phase for modifying web site

Description of each quadrants are as follows:

### 3.1 Quadrant 1: Requirement analysis, identifying objectives and alternatives for web site
Activities performed in this quadrant include:
1.  Establish an understanding of the web site objectives—namely performance, functionality, and ability to accommodate change.
2.  Investigate implementation alternatives—namely design, reuse, procure, and modify
3.  Investigate constraints imposed on the alternatives—namely technology, cost, schedule, support, and risk. Once the web sites objectives, alternatives, and constraints are understood.

### 3.2 Quadrant 2: Identifying tools for designing web site risk analysis, designing prototypes
Engineering activities performed in this quadrant select an alternative approach that best satisfies technical, technology, cost, schedule, support, and risk constraints. The focus here is on risk mitigation. Each alternative is investigated and prototyped to reduce the risk associated with the development decisions. Boehm describes these activities as follows:
This may involve prototyping, simulation, benchmarking, reference checking, administering user questionnaires, analytic modeling, or combinations of these and other risk resolution techniques. The outcome of the evaluation determines the next course of action. If critical operational and/or technical issues (COIs/CTIs) such as performance and interoperability (i.e., external and internal) risks remain, more detailed prototyping may need to be added before progressing to the next quadrant. The option of writing specifications would be addressed but not exercised." This brings us to Quadrant 3.

### 3.3 Quadrant 3: Coding, testing-unit, integration, acceptance and hosting web site
If a determination is made that the previous prototyping efforts have resolved the activities to develop, verify, next-level product are performed. As a result, the basic "waterfall" approach may be employed—meaning concept of operations,

design, development, integration, and test of the next system or product iteration. If appropriate, incremental development approaches may also be applicable.

### 3.4 Quadrant 4: Feedback, Response, Next phase for modifying web site
The spiral development model has one characteristic that is common to all models—the need for advanced technical planning and multidisciplinary reviews at critical staging or control points. Each cycle of the model culminates with a technical review that assesses the status, progress, maturity, merits, risk, of development efforts to date

### 3.5 Model features:
- Iterative development(prototyping) – with systematic controlled waterfall model
- Incremental model- covers risk management
- Helps for documentation preparation
- Easily identify risks occurred while designing web site
- Changes takes place by studying feedback, suggestions or opinion from end users

### 3.6 Tasks in Spiral model
- ✓ Determine the objectives, alternatives, and constraints on the new iteration
- ✓ Evaluate alternatives and identify to resolve risk issues
- ✓ Develop and verify the product for each iteration
- ✓ Plan the next iteration

## 4. ADVANTAGES
1. It is incremental model
2. It covers risk and helps for risk analysis

## 5. DISADVANTAGES
1. Restricts to certain projects
2. It is complex model
3. It requires skilled and knowledgeable experts.

## 6. FEATURES OF SPIRAL MODEL FOR WEB APPLICATIONS:
- Interaction with end user
- Accepting end users response and reply
- Updation at application side for changing application e.g. color, font, font, picture etc.
- Identification of end user (via user name, password etc.) for avoiding risk and keeping security
- Flexibility in web site by updating content, layout, color, font, images frequently
- Achieves delight satisfaction because of applying spiral/repetitive process.

## 7. SUMMARY
Even spiral model is traditional but if it applied with modern technologies then it will more beneficial in terms of cost saving, improving efficiency, flexibility and agile in web site designing. After some modifications it is more suitable easy to understand and operate. Presently scope for web site designing is growing dramatically. Therefore by applying spiral model techniques it becomes very easy to design, host, change and maintenance of the web site.

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