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Web Portal for Kashmir Tourism Industry:Design Guidelines

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Abstract

Tourism is a dynamic and competitive industry that requires the ability to constantly adapt to customers' changing needs and desires, as the customer satisfaction, safety and enjoyment are particularly the focus of tourism business. Developments in search engines, carrying capacity and speed of networks have influenced travelers around the globe to use technologies for planning and experiencing their travels. Tourism uses Internet marketing and Web portals by utilizing Information and Communication Technology (ICT) and ICT enabled services in order to gather and/or disseminate information and ease online booking and reservations. In this article an attempt has been made to identify the requirements of efficient Web portal for Kashmir Tourism Industry. This article provides a complete series of design guidelines vis-à-vis Web Portal strategy, structure, design, architecture, level of facilitation and features, Technologies and tools and process model for its successful implementation.

Keywords: Tourism, Eco tourism, Web portal, Web portal structure, Web portal architecture.

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Reference: Banday M.T., Shafiya Afzal (2008). "Web Portal for Kashmir Tourism Industry:Design Guidelines," . *Sprouts: Working Papers on Information Systems*, 8(48). <http://sprouts.aisnet.org/8-48>

Web Portal for Kashmir Tourism Industry: Design Guidelines

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Abstract

Tourism is a dynamic and competitive industry that requires the ability to constantly adapt to customers' changing needs and desires, as the customer satisfaction, safety and enjoyment are particularly the focus of tourism business. Developments in search engines, carrying capacity and speed of networks have influenced travelers around the globe to use technologies for planning and experiencing their travels. Tourism uses Internet marketing and Web portals by utilizing Information and Communication Technology (ICT) and ICT enabled services in order to gather and/or disseminate information and ease online booking and reservations. In this article an attempt has been made to identify the requirements of efficient Web portal for Kashmir Tourism Industry. This article provides a complete series of design guidelines vis-à-vis Web Portal strategy, structure, design, architecture, level of facilitation and features, Technologies and tools and process model for its successful implementation.

Keywords

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1. Introduction

The introduction of Internet in world business has revolutionized the whole system of business and new ways of business promotion have come onto the surface. In the field of tourism, Web portal has become fundamental for promoting the tourist destinations [3]. There is growing reliance on the Internet and Web portals for promotion of tourism [24]. Currently many potential travelers obtain information and change their destination by a single click of mouse, demonstrating the underlying need for top-quality Web portal to promote such destinations. This promotional efficiency can be further strengthened if the portal besides presenting information about tourist destinations also provides information about services and facilities available at these destinations [5].

Tourism in India and especially in Kashmir valley is making tremendous growth [19]. According to Indian Tourism Industry Forecast (2007-2011) by RNCOS [16] Tourism influx to India is booming. The report further bares the information that India is likely to witness an influx of 10 Million international visitors by the year 2010, compared to just 5.42 Million tourists in the year 2007. The World Travel and Tourism Council (WTTC) [10] has also reported that Indian tourism industry will remain one of the fastest growing through the next 10-15 years and expects Indian tourism to generate \$89.9 Billion revenue by the year 2014.

Tourism has been recognized as an industry in the state of Jammu & Kashmir which being a “Jewel in Crown” attracts thousands of foreign tourists from almost all countries in the world throughout the year. Right from the very beginning the state has been a place of religious activities and shrines in the state have their own religious values, which attract thousands of devotees every year. With the arrival of winter, the state opens its doors for winter sports activities. Gulmargh the “Queen of Hills” is turned into a big winter sports stadium and increasing number of winter sports tourists are coming to participate in national and international sports events [20]. ICT and ICT enabled services thus present a great opportunity for the tourism industry of Kashmir to take its advantages to flourish tourism related business in the valley [17] and developing an efficient Web portal is a major step into this development.

In this paper we review various Web portal development issues and present detailed guidelines for design and development of Web portal for Kashmir tourism industry.

2. Web Portal Development Issues

In this section we review issues pertaining to Web portal development. These include strategy, design, architecture, structure, levels of facilitation and facility, technologies and tools and Process model.

I. Web Portal Strategy

Careful strategy and a clear purpose are the keys to success in building Web portals, particularly while working as part of a development team [11]. If the site is successful it will have to be genuinely useful to target audience, meeting their needs and expectations without being too hard to use [13].

Strategy of a Web portal is a two-part process: first gather the development partners, analyze needs and goals, and work through the development process outlined to refine the plans [7]. The second part is creating a site specification document that details what is intended to do and why, what technology and content are needed, how long the process will take, what will be spent to do it, and how to assess the results of efforts. The site specification document is crucial to creating a successful site, as it is both the blueprint for the process and the touchstone used to keep the project focused on agreed goals and deliverables [12].

In the first step of Web portals strategy, there is a need to identify the target audience [23]. This is achieved in the major ways including, market research and focus group and understanding Internet audience. The design

and content of a site normally attracts certain types of visitors. It is better to target a particular section of visitors to the Web portal to achieve the goal. Preparing precise content for the Web portal is necessary to attract the exact audience. The content of the Web portal must be very well categorized [4]. One should develop the site's content to satisfy the specific needs of target. The next important step in the strategy is to collaborate with online partners and communities. This helps to increase the visibility for the Web portal. It is essential to find and participate in the virtual communities on the Internet that pertain to the topic or subject matter of the site. These communities help to attract many visitors from around the world. Then there must be well developed intra company support network to make the Web portal credible. It must be on top in the strategy that someone in the company or department will have to take the responsibility for answering e-mail inquiries generated by the Web portal and also periodically visit the Internet to look for new sites and/or virtual communities that might be of interest to the organization or department. Somebody will also have to assume responsibility for maintaining the Web portal (adding new content, fixing broken links and updating its features). Next step is to refine the collateral marketing and promotion material. It is necessary to promote the Web portal from all means. The Web portal address must be mentioned in all newspaper ads, radio and TV announcements, brochures, letter heads, visiting cards and other print and digital material including CD's, DVD's, video clips and so on. Finally, it is of great use to gather the appropriate feedback from the audience or the visitors of the Web portal. Feedback is the life force of any successful Web portal. Probably the best way to obtain feedback is via an online feedback form. Feedback will often offer clues as to how visitors rate the site against other similar sites. This can be very helpful in making decisions about what to delete, add or modify [21].

II. Web Portal Design

The design of the site determines its organizational framework [26]. The Web portal design includes making the tactical design decisions about what the audience wants, what you wish to say, and how to arrange the content to best meet the audience's needs [6]. Although people will notice the graphic design of the Web pages right away, the overall organization of the site will have the greatest impact on their experience [15]. While design undoubtedly affects a Web portal's success, two ideologically opposite schools of thoughts have developed different ideologies as to what is meant by good design [25]. Supporters of the aesthetic school argue that the graphical/multimedia features of the Web should be used to enhance the visitor experience. Functionalists, on the other hand, argue for less emphasis on visual design and more focus on content. Web content has been identified as one of the main factors contributing to repeat visits. As content on the web includes text, pictures, graphics, layout, sound, motion and, someday even smell, making the right web content decisions are critical to effective Web design [26]. The basic steps in organizing the information are to divide

the content into logical units, establish a hierarchy of importance among the units, use the hierarchy to structure relations among units, build a site that closely follows the information structure and analyze the functional and aesthetic success of the system.

III. Web Portal Architecture

Architecture design is the overall hypermedia structure of the Web portal and application of design patterns and constructive templates to populate the structure and archive reuse [18]. A site Architecture is essentially a diagram that shows how the pages of the Web portal link each other. While site architecture gives an overall view of entire site's content, page schematics show what elements of the content live on each page [11]. Typical results or contract deliverables at the end of Web portal architecture could include, detailed site design specification, detailed description of site content, site maps, thumbnails, outlines, table of contents, detailed technical support specification, supported browser technology, supported connection speed, web server and server resources, proposals to create programming or technology to support specific features of the site, schedule for implementing the site design and construction, one or more site prototypes of multiple pages, multiple graphic design and interface design sketches or roughs [15].

IV. Web Portal Structure

Web portals are built around basic structural themes. These fundamental architectures govern the navigational interface of the Web portal and mold the user's mental models of how the information is organized. Three essential structures can be used to build a Web portal: sequences, hierarchies, and webs [14]. Information hierarchies' structure is the best way to organize most complex bodies of information. Because Web portals are usually organized around a single home page, hierarchical schemes are particularly suited to Web portal organization. Hierarchical diagrams are very familiar in corporate and institutional life, so most users find this structure easy to understand [22]. A hierarchical organization also imposes a useful discipline on our own analytical approach to our content, because hierarchies are practical only with well-organized material [14]. Site diagrams are also useful when the project moves from planning to actual Web page production. As the new site is built up in a directory on the Web server, the site diagram is often the first place programmers look to gain an understanding of how the site files should be subdivided into directories also called folders on the server. The pattern of directories and subdirectories of the site files should mirror the major content divisions and structures [14].

V. Facilitation and Features of the Web Portal

This step is designed to assist with the decision as to which features to implement on the Web portal [8, 9]. Recommendations are based upon the entries made in the Web portal strategy, and include whether a

organization or department should have an interactive product catalogue, product support, online sales, external links and so forth. These recommendations are based on the analysis carried out in the strategies chosen in the Web portal strategy stage [11]. The Web portal would contain a number of more features other than the very basic requirements which any web portal has to fulfill which may include having dynamic pages to adapt the changes that may be required, low band width requirements, provisions for visitors for visitor registration and login for performing authorized operations, information about nearest emergency spots like hospitals, police stations, etc.

VI. Web Portal Development Technology & Tools

Various technologies and tools are used for development and implementation of Web portals which fall under two major headings vis-à-vis Server Side technologies and the Client Side technologies. Server-Side Technology includes the use of languages like ASP, ASP.NET, PHP, RUBY, JAVA, PYTHON and CGI PERL, Operating Systems like Linux Apache, MS Windows, Mac-OS and databases that usually include MySQL, SQL Server and Oracle. Client-Side Technologies that are frequently used are JavaScript, VBScript, XML, CSS and HTML and its variants. For designing of various multimedia elements there exist numerous tools that include Adobe Flash, Adobe Photoshop and CorelDraw. The preferred Frameworks and Content Management System (CMS) in use are .NET, Java Spring, JQuery, MooTools, Wordpress, Drupal and Joomla.

VII. Process Model

Process model or software engineering paradigm is the strategy for development of web portal that encompasses the process, methods, tools, layers and the generic phases of software/web development life cycle. The various process models used for web development project including Linear Sequential Model also know as Classic Life Cycle or Waterfall Model, Prototype Model, Incremental Model, Spiral Model, RAD (Rapid Application Development) Model, WIN WIN Spiral Model, Concurrent Development Model, The Formal Methods Model and Component Based Development Model.

3. Web Portal for Kashmir Tourism

The Vale of Kashmir is famous for its natural beauty and is known as the paradise on earth. Domestic and international tourists visit the valley in all seasons. Tourism sector remains the biggest contributor to the state's economy after agriculture and horticulture sectors. Kashmir offers different types of tourisms that include eco-tourism, health resorts, adventure tourism, pilgrim tourism, games etc. Special interest and efforts are being paid towards upgradation and expansion of this industry and as such new places are being developed and promoted as tourist places. A well build Web portal will not only play an important role in the promotion of tourism industry but will also make it manageable and more profitable [2].

Keeping into consideration the tourism industry of Kashmir, the Kashmir Tourism Web portal is proposed to follow the strategy as mentioned in Figure 1. Similar strategy is being followed globally and has been implemented in various successful portals.

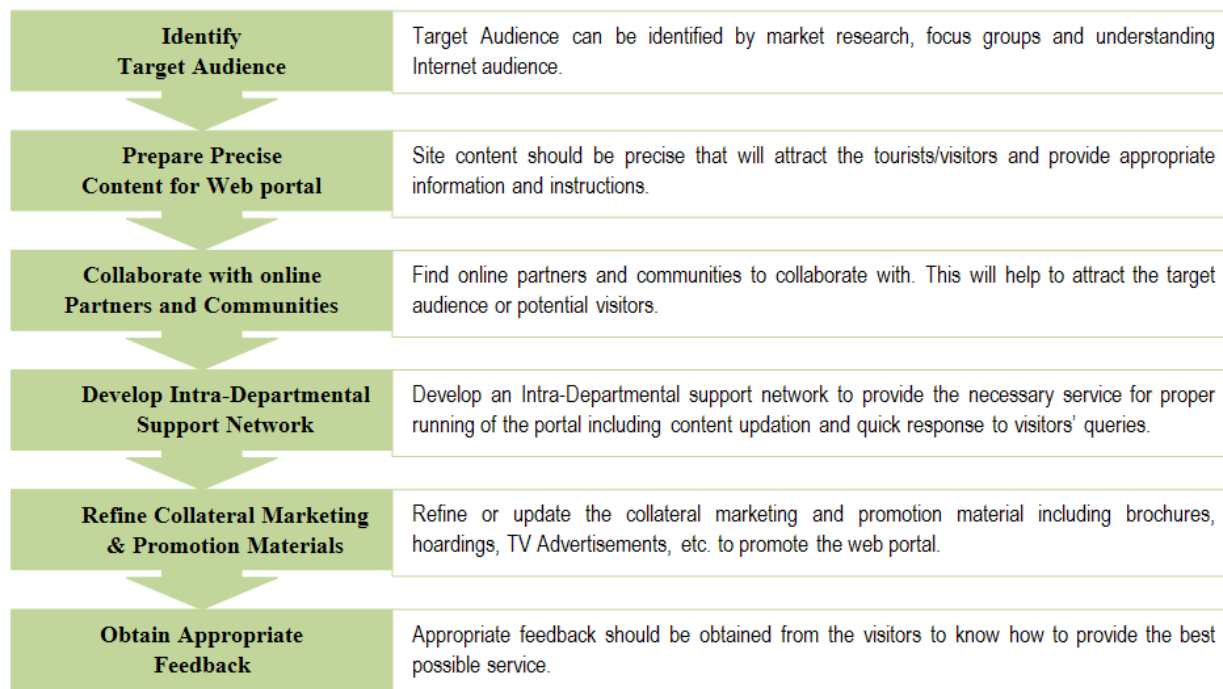


Figure 1: Web Portal Strategy

The site should follow the strategy as per Figure 1 by properly identifying the target audience, then preparing the precise content for the Web portal, collaborating with online partners and communities, developing an intra-department support network, refining collateral marketing and promotion materials and obtaining the appropriate feedback time to time from visitors.

Alongside the content design, the aesthetic design has to be very attractive and logical. Proper icons for links, pictures, thumbnails etc. must be used and color combination has to be kept consistent. At the same time, the file size of the pictures must be minimized for faster loading of the web pages.

Kashmir tourism involves various types on information heads and the information as such needs to be organized well in a manner that it is easily explored, easily managed and easily updatable. Various types of tourism like adventure, pilgrim, eco-tourism etc., facilities available in these places, the rules and regulations, the environmental conditions at these places, etc. are the main information heads under which the whole information can be categorized. Thus there is a need to put the whole information in a well designed hierarchal manner so as to reduce the chances of various information types leading to confusion. Information hierarchies' structure is the best way to organize this complex information. The information of Kashmir tourism industry falls under some major categories and each category has various sub-categories. As an example various types

of tourism are adventure, pilgrim, eco, etc. under each of these falls various sub-categories. The pilgrim tourism category contains the tourist places of various religions and under each religion fall various religious places of visit. In a similar manner each place has different information headings like photos, web pages, videos, downloads, and so on. Thus the information needs to be arranged in a hierarchical structure as shown in figure 2.

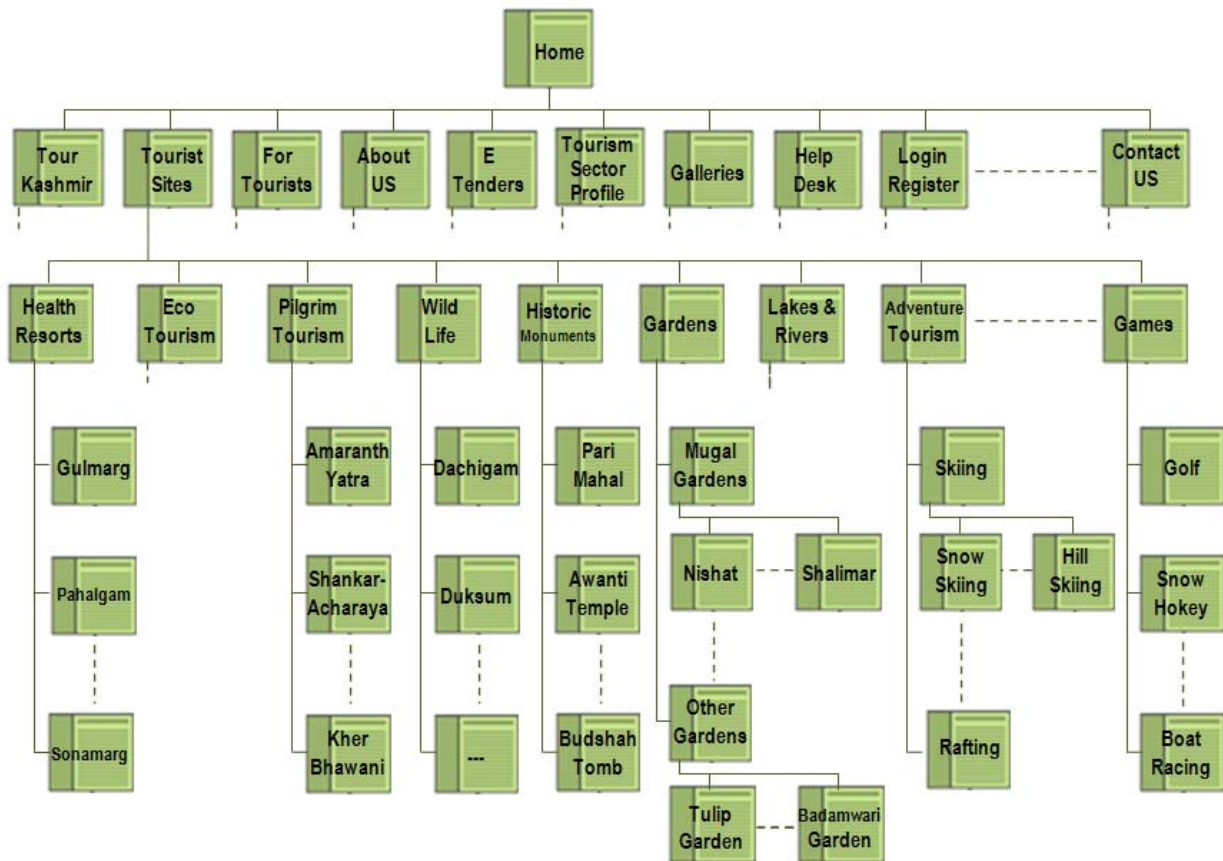


Figure 2: Web Portal Structure

A proper and well organized folder structure, file organization and the database structure is essential to make a strong backend for the portal that can sustain huge storage demands and greater performance as well as will permit easy operations on the content therein. Binary data that is associated with the application’s data model can be stored in one of two places: on the Web server’s file system with a reference to the file stored in the database or directly within the database itself. Each approach has its own set of pros and cons. The main advantages of storing the binary data on the file system are ease of implementation, wider access to the binary data and performance. In case, the binary data is stored on the file system, the demand and network congestion between the database server and web server will be less than in case of storing the binary data directly within

the database. The main disadvantage of storing binary data on the file system is that it decouples the data from the database. Furthermore, when backing up the database, backups of the associated binary data on the file system must also be backed up. Moving the database to another site or server poses similar challenges. The main advantage of storing binary data directly in the database is the tight coupling between the binary data and the database record. This greatly simplifies database administration tasks, like backups or moving the database to a different site or server. Also, deleting a record automatically deletes the corresponding binary data. Since the data pertaining to Kashmir Tourism Web portal comprises of both binary and non-binary data, therefore the use of both file system and database is necessary for storage. Non-binary and selected binary data must be stored in properly designed tables of database maintaining normalization standards while other binary data must reside in proper folder hierarchy on the server file system. A guideline for such a folder structure is shown in figure 3.

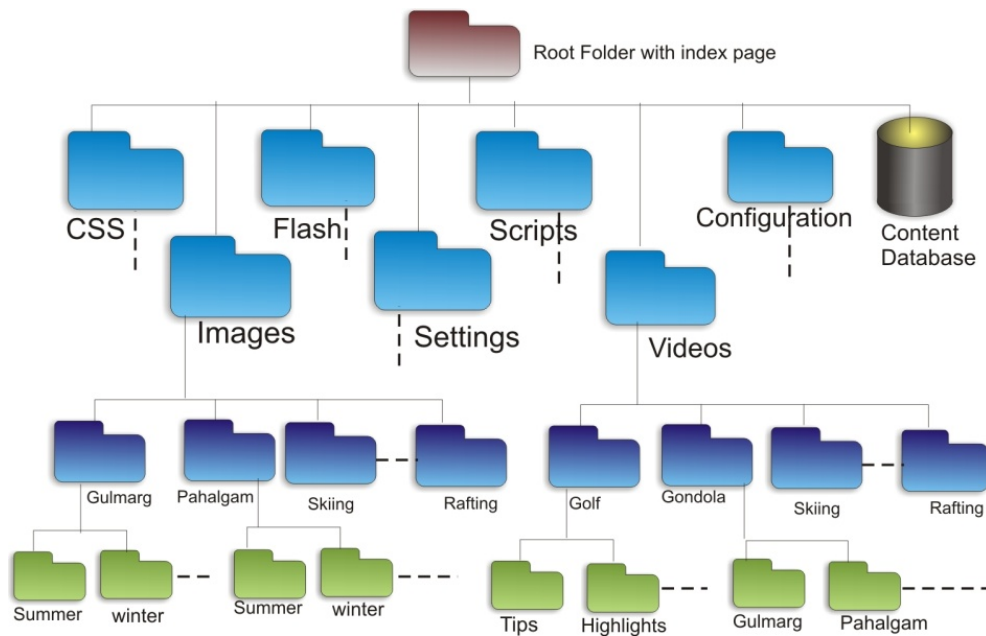


Figure 3: Web Portal Folder Structure

It is proposed that the basic levels of facilitation and features in the Web portal other than the basic ones should include those mentioned in the table 1.

Facility/Feature	Description
Tourism Sector Profile	Vision and mission, Action to implement, Tourism statistics, Tourism projects Govt. policies and development plans for tourism sector etc.
About the Web Portal	Usage of Web portal, FAQ-Frequently Asked Questions
Grievance Redressal System	Collecting of grievances of visitors and their remedy
Departmental Email System	Unlimited E-mail Accounts for the department on their domain name

Facility/Feature	Description
Contact Us	An online contact form for contacting facility for the site visitors
Location Map	A satellite picture, and map of the various places of visit
Home Page	An attractive dash board to provide consolidated information links to various services in a single page with a light weight flash animation
Tour Kashmir	This section would provide a brief overview and information about the state of Kashmir. This section would also provide a brief history about the Valley and link to the places of visit.
Tourist Spots	A hierarchy of information pages about the various health resorts, eco tourism places, pilgrim tourist places, historical monuments, gardens, lakes and rivers, wild life sanctuaries, adventure tourism and games etc. with a video clip of the place, climatic conditions, instructions, health tips, route information, route type(metallic, kachha roads, pony tracks etc) temperature, altitude, its importance, historical background, facilities (police stations, hospitals, nursing homes, first aid), other facilities(cable car facility, helicopters) accommodation(huts, hotels, etc), market places, holiday homes, distance form main city, entertainment, etc. for each resort.
For Tourists	The various rules and regulations, membership policies, bookings, fee and other charges for games etc., the permissions formalities and other necessary information along with the important addresses and contact for such processes.
Galleries	Dynamic photo and video galleries.
Downloads	Downloadable material like E-Tenders, newsletter, brochures, wallpapers, screensavers, e-post cards, e-telephone directory of important and emergency numbers, trekking maps, site maps, pamphlets etc.
Site Search	Site Search for different places, forum and other information.
Events Calendar	A detailed calendar displaying the events about all places.
Help Desk	Tourist help desk for facilitation of potential tourists.
Online Chat & Discussion Board	Provision for online chat between tourists and the authorities and a place for holding discussions among visitors.
Registration and Membership	Registration form and login system for various features.
Dynamic Pages	Dynamic pages to adapt to the changes that may be required as and when needed and other associated advantages.
Low Bandwidth Compatibility	Low bandwidth pages for those who have slow Internet connectivity.
Multistage Administration	A Multistage Web portal administration for effective administration.
Emergency Information pages	Information about nearest emergency spots like hospitals, police stations, etc.
Online Registration & Booking	Provision for financial transactions and online reservation and booking.
Multimedia Elements	Incorporation with multimedia elements like sound, music, audio, video, graphics, animation etc. at lowest possible bandwidth.
Comments & Remarks	Provision for tourists to upload comments and remarks.
Multi-browser Support	Multi-browser support for flexibility across operating systems.
Inter-Departmental Communication	Inter-departmental emergency communication.
Revenue Generation	Possibility of revenue generation through advertisements.
Other Features	Features like online statistics, contact forms, scrolling area, add to favorites, printable pages, password protection, favorite icon, send to friend and so on should be incorporated.

Table 1: Web Portal Features and Facilitations

The diagram shown in figure 4, describes the overall Web portal structure for Kashmir Tourism industry. This structure is based on the features and facilitations that must be incorporated in the Web portal that have been identified through careful analysis of existing tourism system of Kashmir. The diagram indicates various important page groups and individual pages which are shown linked to the main page and storage. Figure 4 may be used as an outline for successful implementation of the Web portal.

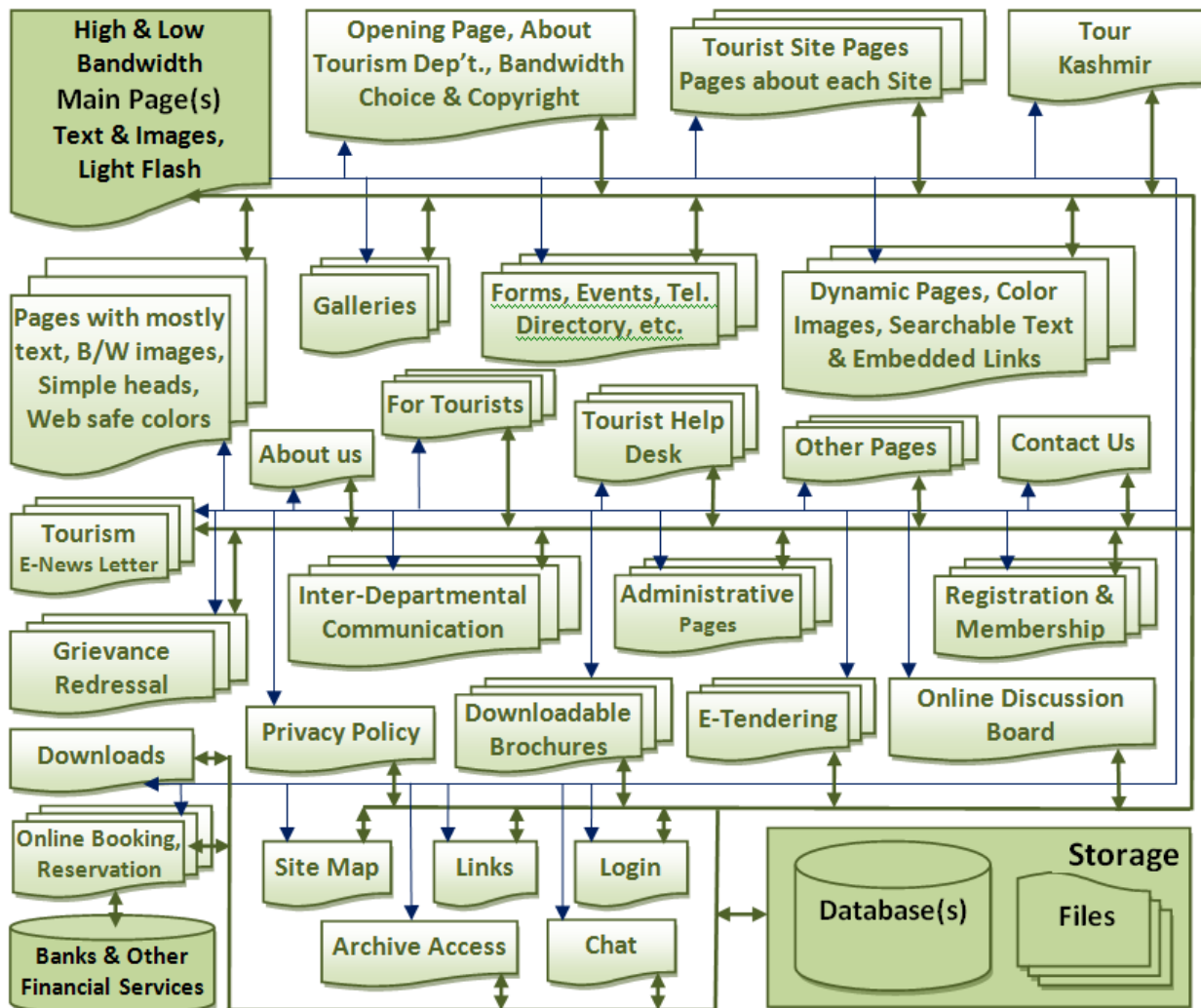


Figure 4: Overall Web Portal Structure

For the development and design of the tourism Web portal, it is necessary to make a proper selection of technologies and tools to use. As a Server side technology it is recommended to make use of Open Source Technology namely PHP as the development language and MySQL as the backend database. In contrast to other Server side Technologies like .NET, etc. which may help in rapid application development, the use of Open Source Technologies like PHP and MySQL will cut down the development costs. Further, these

technologies are platform independent and offer a choice in Server Operating System. Also these technologies have a very vast support available from the developer companies and from other discussion forums. XML, HTML, CSS and JavaScript are recommended as Client side Technologies owing to the reason that these are supported by most of the Web browsers. For the graphic design, it is recommended to use software packages from Adobe like Flash for animation and Photoshop for picture editing. Corel software can help in creating illustrations, etc. On the contrary, it is also possible to use .NET platform and technology for Server side and compatible technologies at the Client Side. The choice of Web Server Operating System in this case is currently limited to Windows only. In this case the while added security features of .NET can be used to protect the database and the application [1]. In either case the advantages of community supported AJAX toolkit can be taken to build an impressive front end. In general, for the implementation of the Web portal the selection of Server and Client side technologies depend upon various factors that include budget, available time for completion, expertise available, required nature of dynamism in the portal, server support and many other factors.

The Incremental Process Model shown in figure 5, which allows developing the web portal in phased manner and where the modules of the website can be developed one by one and added to the system and then tested and delivered, is best suited for the development of web portal for Kashmir Tourism Industry. The features/modules can be added to the website while the website is deployed and running. In the first delivery of the incremental model, the web portal can be launched with the basic modules and in the subsequent increments features like the online bookings, payment gateway, chat, etc. can be added.

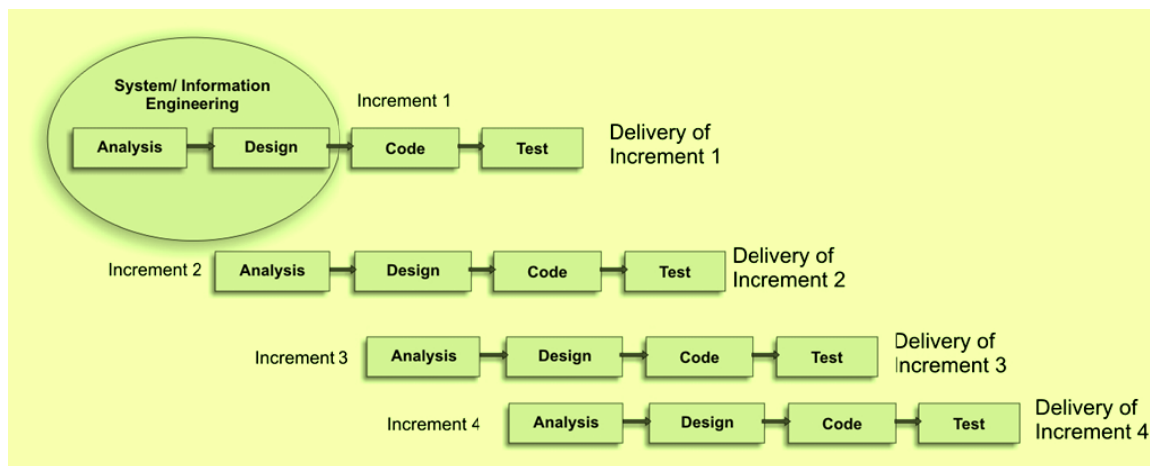


Figure 5: Incremental Process Model

4. Conclusion

In this paper we have explored the Web portal development issues in terms of its strategy, design, structure, architecture, facilities and implementation technologies in order to provide all necessary guidelines to make the tourism website successful. The necessary Web engineering has been analyzed and accordingly the guidelines have been put forward. Most of the times Web portals fail to deliver expected results due to the lack of proper plan or strategy, deficient of proper goal, short of usability, well planned structure and design, negligence in timely updates and incomplete or unusable information. This paper brings to front all of these issues and provides necessary recommendations to avoid failures on their part. The paper provides a blue print for design, development, implementation and deployment of the Kashmir tourism Web portal.

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