

AVICENNE WBT: DESIGN & IMPLEMENTATION STRATEGIES – II

TOPIC OUTLINE

IDI 4 – Development Phases

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Questions

IDI4 – CONCEPT MAP

Objectives of Lesson

At the end of the lesson, students will be able to

- 1. Analyze phased approach for multimedia product development**
- 2. Analyze consequences of phases**
- 3. Produce end product of phases**
- 4. Make an agreement with any client**
- 5. Determine relations among each phase**
- 6. Re-organize development phases with respect to situations**
- 7. Make budget planning**

4.1. Phases of Multimedia Development

The phases of multimedia development are:

1. The Discovery phase
2. The Design phase
3. The Production phase

Phases must be processed in a proper order. While one phase is finishing, the next one should start. Each phase has its special goals and consequences. They are indicators of what has been done in the phases.

4.2. Who is Client?

There are two important stakeholders in multimedia product. One is developer and another is client. In multimedia development, client is main referent point of whole process. That is why relationship between client and developer is critical. Developers are ranged from a huge multimedia studio to a person. However, quality and amount of jobs absolutely differs based on developers' characteristics.

In all multimedia development processes, client is potential user of the product. They are going to use the product. They may request special application to their needs for special purpose. In this case, client is called internal client. On the other hand, some firms, such as game companies, develop the product without any predetermined requested and aim to sell the product as much as possible numbers to clients. They are called external clients.

In most cases, client of multimedia products are inexperienced with them so you need to qualify them about development process. Clients usually seek for cheapest way to meet their needs. This is main handicap of a multimedia product. Due to some special requirements, a product cannot be so complex but costs more money. They also neglect some processes for development. A developer should inform client based on the following notions:

- Client must have a budget for their expected product so developer can make a comment whether it is possible.
- Client must have a distribution plan. You should ask whether they have any distribution plan. For instance, for international companies, a developed training module is critical because you have large geographical areas.
- Client must be aware of this is a shopping so they can also check other developers. You should present you capacity to develop a product.
- Client must have reasonable idea for the product. You can help client to make their ideas reasonable.

4.3. Discovery Phase

This is initial phase of development. In this phase, developer establishes relationships and understanding with the client. At the end of this phase, there are contractual agreement, preliminary budget, and schedule. Need assessment is another explanation of this phase. Developer must analyze their needs and determine which one is important. The result of this phase should be good reflection of client's will.

For internal client, establishment of relations and common understanding is easier than external client. Hence, they come to you to develop a product in direction of their requests.

Therefore, you have a little predetermined needs. To gather data about external client, you should reach every sorts of information source beneficial. They can be other publishers, potential innovator clients, previous relations, and etc.

Extra Resources

1. Needs Assessment, The first step. Available at http://alumnus.caltech.edu/~rouda/T2_NA.html
2. An Assessment of Training Needs in the Use of Distance Education for Instruction. Available at <http://carbon.cudenver.edu/~lsherry/pubs/needs/index.html>
3. Analysis Tools. Available at http://www.ceismc.gatech.edu/MM_Tools/analysis.html

4.3.1 Letter of Intent & Contract

This phase starts when developer and client join together to discuss potential product. Developer and client produce a letter of intent or signed contract. This contract is not final. It is open to change in other phases. Letter of intent helps developer and client to move into second phase and make additional arrangements cooperatively in needed cases. A determined letter of intent is a fundamental for a contract. Therefore, it should the following topics:

- What the product is
- What the general cost of the product is
- When the product can be completed
- What the responsibilities and roles of developer and client have
- If exists, other terms and conditions, such as copyright, warrantees, ad etc.

This stage is ended with preparation of a proposal about development. This proposal should include top-level design, a preliminary budget, and a preliminary development plan. They are bundled together and presented to client. If client accept the proposal, you can move on agreement step. In fact, a proposal is a one of the good communication ways with client. You can shape proposal with letter of intent. Before presenting proposal, developer should be sure that they make all types of communication and negotiation processes.

4.3.2 Initial Contact & Kickoff Meeting

Initial contact with client is very important for discovery phases. This step is impression of client. After initial contact, clients decide to start or not. You should have an agenda for this meeting. The agenda includes the following topics:

- A discussion of schedule with expected time for development divided into probably/possible design and production phases. The preliminary schedule may also include dates for specific milestones. They can be presented to client for approval.
- A discussion of budget with how complex or extensive the product is required based on proposed budget and schedule. You can use some complex multimedia examples for expected outcome of the product.
- A discussion on intellectual property and its requirement.
- A discussion on what the assets client they can provide.
- A discussion of whether the product needs any complex technologies, such as voice recognition.
- A back-up plan for possible expected problems while development process.
- A discussion on roles and responsibilities of two parties.

- A pitch of creative approach to the product.
- Action steps

As usual, initial contact is established in kickoff meetings. You have chance to show their company and development studios if you have. In this meeting, all parties can discuss every point related to the product. Ensuing the kick-off meeting, developer must write a memo to the client outlining everything covered and agreed in the meeting. This is so critical.

Extra Resources

1. A well planned kickoff meeting sets the tone for a successful project. Available at http://techrepublic.com.com/5100-10878_11-1038879.html

4.3.3 What the Client Know about Multimedia Development (Educating Clients)

Developer should inform the client if this process is the first experience of them. Moreover, you may have clients who had bad experiences with multimedia development. They are also in your information process because misconception about a topic is harder to change than teach new concept. There areas needed to provide clients are the business issues, the creative possibilities, and the technology of multimedia.

4.3.3.1 The Business Issues

These points should be provided to the client:

1. Each phases and everything is going on in these phases you will utilize during multimedia development.
2. When and how to make modifications to the design of the product after development has begun.
3. When and how to make approvals of deliverables.
4. The importance of copyright and intellectual property issues. Moreover, range of copyright of a product should be presented.
5. Ownership issues after completing the product.

4.3.3.2 Creative Possibilities

The most common understanding is that multimedia is a new form of representation of old media. That is why CD-ROM and Internet materials the products that are adapted from old type information seem as just a technical problem. Multimedia also is understood as getting together pictures, text, sounds, and etc. However, putting them together does not produce a multimedia product. To overcome this most common understanding, your client should be educated in the following points:

1. Giving up control of experience to users: This part is the most difficult to explain multimedia for old-fashioned client. You should express the most important feature of multimedia where structure is more complex and branched than linear structure like books.
2. Allowing users to customize their experience: Learner control on the product should be explained. It is importance in multimedia should be emphasized. Customization also gives sense of belonging to the product.
3. Giving the product a mind of its own: It is another creative part of multimedia. For instance artificial intelligence can be used in the product. It seems very fictional at the

beginning to the client. Another example is agents that are used as feature. Agent is a character with some functions.

4. Giving the product a personality: This means that a multimedia product becomes a person with his/her special properties. It is the most extreme point of creativity. Nowadays, most of the products are known by their special belongings.

Extra Resources

1. Allow user control over animated content. Available at <http://www.skillsforaccess.org.uk/howto.php?id=112>

4.3.3.3 Technology Issue

Informing the client with technological issue is critical because the client must know that there are some limitations about technology. Technology is not a concept that makes unreal issues real. These issues should be part of client education regarding multimedia product:

1. Target platform of the product should be explained in detail. Where you would like to use the product must be expressed. If some platforms is chosen, you should inform client why you choose this platform. Pros and cons of the platform is good for this clarification.
2. Identification of system requirements is the moderate system where the product is going to be run. System requirement includes processor speed, operating system, memory, hard drive space, color display, CD-ROM drive, sound card, mouse and keyboard.
3. CD-ROM is not an endless data storage tool. All technological data storage tools have a capacity that must be considered. At the beginning storage devices seem infinite but in a while client understand that data size and available space for it is a really big problem.
4. Using video includes advantages and trade-offs: Using video may make your product more attractive but cause some other problems, such as using compressed video in old or slow systems.
5. Program development process has never been isolated from one thing that is bug. There are always some bugs in your product. That is why there are updates or patches for them.

4.3.4 Developer needs information from the client

Like the client, developer requires how much contribution the client can make to the product. The following six things should be grasped from the client:

1. The client's intellectual property
2. The client's market or customer base
3. The client's timeline and expected finish time of the product
4. The client's mid-development milestones, such as conventions, steering committees, progress presentations, focus tests, magazine reviews and etc.
5. The client's competition
6. What content and other material the client can provide

Extra Resources

1. About Intellectual Property. Available at <http://www.wipo.int/about-ip/en/>

4.4.4 Results of Discovery Phase

The main deliverables of discovery phase are top-level design, the preliminary budget, and the preliminary schedule. Three professional persons can shape this process. They are producer, director, and writer of the project. All of them prepare top-level design. The producer and director collaborate on the preliminary schedule, and just producer calculates preliminary budget. These cadres vary situation to situation. For instance, if you are a huge multimedia development company, you can support all of those persons. However, if you are teacher and want to develop a multimedia product, you can behave like all of them. Existence of those persons is not indispensable.

4.4.4.1 Top-Level Design

Top-Level design is a document that describes key components of multimedia product. This design also help designer to broaden the project's scope and design particulars. Content, features, structure, functional controls, and look and feel components are fully developed in this step on paper. It prepares a foundation for the preliminary budget and development plan.

Extra Resources

1. A sample for top level design. Available at <http://teach.lanecc.edu/logek/wid/examples/proposal-examples/Top-Level-Design.html>

4.4.4.2 Preliminary Development Plan

In this deliverable, designer should present required assets and software engineering efforts completely. It includes not only a list but also a plan how to create them. Later, they are going to be divided to tasks in a chronological order. Each task must include estimated completion time and effort for it. In addition to this information, dependency of tasks is determined. Moreover, there should be a demo date for showing progress of the product to the client. The following table is an example for the preliminary development plan.

Resource	Comments	Labor Hours
Management		
Producer/Director	Full time, 6 Months	1000
Creative		
Writer	Functional Specifications, 200 Pages	300
Graphic Designer	Design 12 backgrounds, button and new font	300
Interactive Designer	Design product, write design document	180
Assets and Engineering		
Backgrounds	16 pieces	100
Animation	10 minutes, no characters	500
3-D Animation	5 minutes, no characters	340
Other Graphics	150 pieces	400
Sound Recording	25 minutes, 3 narrators	500
Video	50 minutes, 10 narrators	1000
Photographs	30 pieces	100

Programming	12 nodes, new engine	600
Testing and Other		
Testers	20 testers for all prototypes	400
Research and Focus Tests	Intern, video crew	200

You can use also figures like the following:

ID Number	Task	26.06.2006	26.07.2006	26.08.2006	26.09.2006	26.10.2006	26.11.2006	26.12.2006	26.01.2007	26.02.2007	26.03.2007
1	Graphic Design	■									
2	Functional Specification		■								
3	Scripts			■							
4	Casting				■	■					
5	Animation					■	■				
6	Sound					■	■	■			
7	Video							■	■		
8	Programming									■	
9	Disc Burn										■

This is so sample development plan. You can show relation between tasks with this way. For instance, graphic design task is the first step and the other steps cannot be started before finishing it. However, casting, animation and sound are not interdependent steps so they can start at the same time.

Extra Resources

1. A sample preliminary development plan. Available at <http://www.clir.org/pubs/reports/trant04/tranttext.pdf>

4.4.4.3 Preliminary Budget Plan

This document includes hourly rates, overhead, administrative costs, and other propriety information the producer does not want to share with the client. In general, in order to cover unexpected expenses, budget plan should be prepared ten percent of contingency.

There three things required to determine a preliminary budget of the project:

1. The development plan: It includes working hours, assets, weeks of labor, and programming tasks that are main reason of expenses.
2. Accurate rates for in-house and subcontracted resources
3. Good estimates of unexpected expense.

Extra Resources

1. Preliminary Budget. Available at http://www.mcli.dist.maricopa.edu/authoring/studio/guidebook/budget_pre.html

4.4 Design Phase

This phase starts with the developer and the client sign the letter of intent or a development agreement. The design determines the exact specification for the product to be built, upon it is based on final development plan, the final budget, and definite contractual agreement between the parties. A well prepared design indicates successful completion of the product. The most important deliverable of this phase is functional specification.

4.4.1 Complete Functional Specification

A complete FS document contains a node map of the entire document, a node-by-node description of the product, screen layouts and designs, button and icon designs, font specifications, character designs, storyboards, dialogue and narration, and game designs.

Extra Resources

1. What and Why? Functional Specification. Available at <http://www.mojofat.com/tutorial/>
2. Functional Specification and Review. Available at <http://www.epri.com/eprisoftware/processguide/funcspec.html>

4.4.1.1 Screen Layout

Screen Layout is a graphical representation of the screen. It determines not only general placement of elements on the screen but also where the element directs user. Screen size is a reference point for screen layout. In general, most of the screen designs are made in 640 x 480 pixels. This is the smallest screen size provided by manufacturers. However, depending on your development situations, it can be ranged. This overall size helps you to define elements outing on the screen.

Screen layouts must be completed for every different node screen. It is a blueprint for graphical development. It also includes functional properties of each element. Ensuing screen layouts, screen design process is started. In this process, each screen becomes real and visible format.

Extra resource

1. Screen Layout. Available at <http://www.grc.nasa.gov/WWW/usability/layoutcss.html>
2. Screen Layout. Available at <http://user.cs.tu-berlin.de/~rik/en/navigation/screen.html>
3. Example Screen Layouts of Multimedia Product. Available at <http://teach.lanecc.edu/logek/imm/pdf/pp/layout.pdf>

4.4.1.2 Icon Design

Icons have two critical purposes practical and aesthetic. Practical purpose attempts to increase communication between the product and user. Within this purpose, icons are developed to use in every culture. Therefore, they become universal signs. For instance, sign of men's rest room. Aesthetic purpose is making an artistic statement related to icons. As usual, there can be too many possibilities creating icons depending on designer. This purpose is affected from general style of the product.

Extra Resources

1. Icon Design Factory. Available at <http://design.iconfactory.com/pages/winicon/winicon.html>
2. Exploring craft of icon design. Available at http://www.boxesandarrows.com/view/learning_to_love_the_pixel_exploring_the_craft_of_icon_design

4.4.1.3 Font Specification

Type of fonts has two special purposes. One is the practical purpose that is forming words and another one is aesthetic purpose that conveys mood and emotion through arctic representation. They are related to the nature of the product, the user, and the look and feel of the product.

Extra resources

1. PC Fonts. Available at <http://www.pcfonts.com/>
2. GNOME development visual design. Available at <http://developer.gnome.org/projects/gup/hig/1.0/layout.html>

4.4.1.4 Character Designs

In your product, you can design a character who gives information about the product while users are using. Characters are not for just kids anymore. They are being used frequently in multimedia products.

There are two types of characters two dimensional and three dimensional. Two dimensional characters are so common that Mickey Mouse or Donald Duck can be example for them. 3-D characters are stemmed from new movies, such as Toy Story or The Ice Age. To design or create a character, you should provide animator with the following things:

- Full body and turn-arounds
- Poses
- Expression
- Mouth positions
- Color Mark-Ups

If your character is speaking, narrations should be embedded to characters mouth movements simultaneously.

Extra resources

1. Character Design. Available at <http://www.storyboards-east.com/chardes.htm>
2. Character Design. Available at <http://www.animationarena.com/character-design.html>
3. Sample Character Designs. Available at http://www.pepfx.com/graphic_design/character_design.php

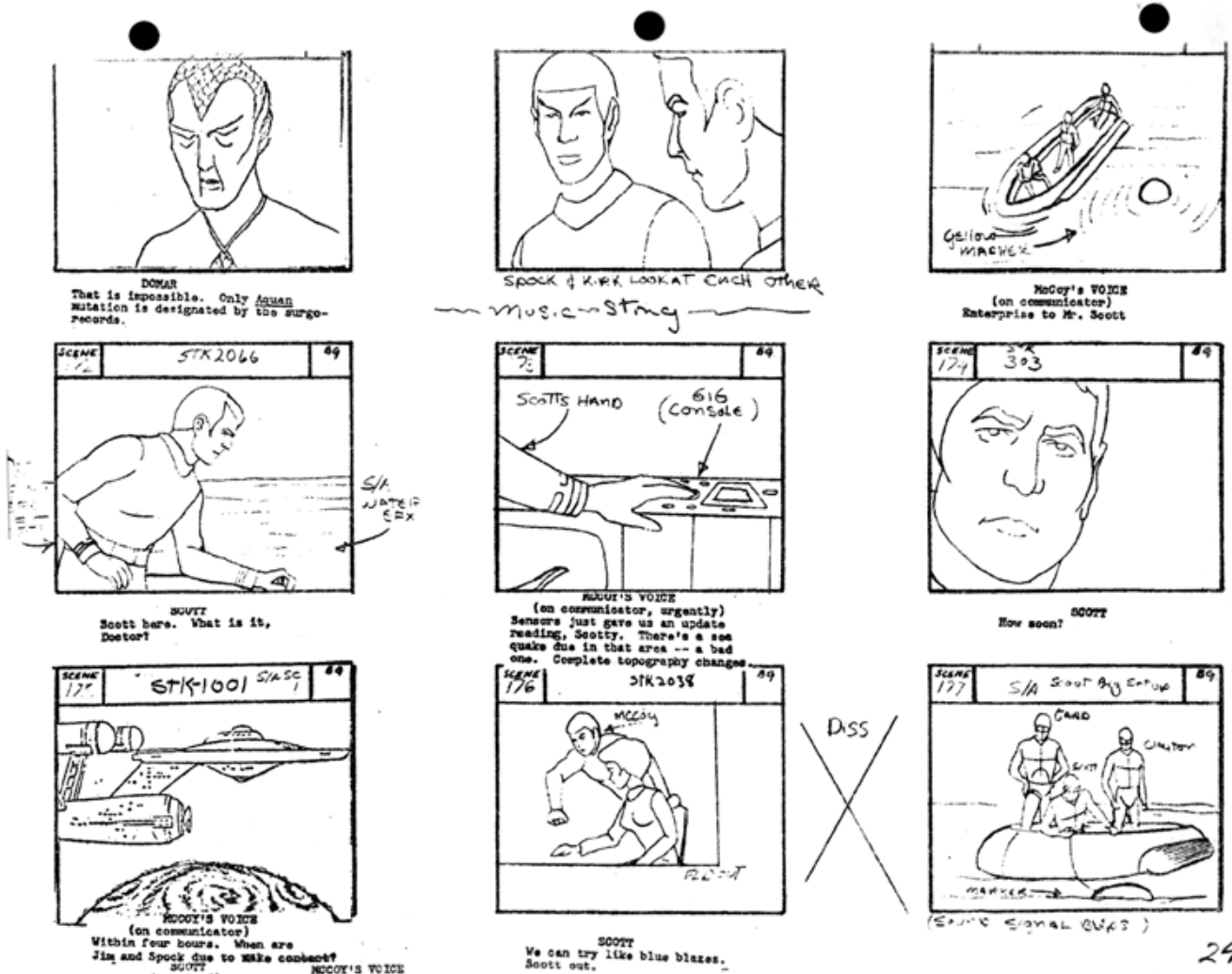
4.4.1.5 Storyboards

A storyboard is a still image that conveys actions, short composition, and transition between shots. They depict a scene of video or animation in a small number of drawings. Moreover, you can use storyboard for showing your each nodes' action in the product.

Extra Resources

1. Story Boarding.
http://ourworld.compuserve.com/homepages/adrian_mallon_multimedia/story.htm
2. Creating Storyboard. Available at <http://www.uncc.edu/webcourse/sb/storyboard.htm>
3. Examples of storyboard. Available at http://www.mcli.dist.maricopa.edu/authoring/studio/guidebook/storyboard_example.html
- 4.

Sample storyboard from Star Trek movie.



Taken from <http://www.danhausertrek.com/AnimatedSeries/Storyboard.gif>.

4.4.1.6 Sound Deliverables

If you decide to use sound in your product, you should consider the following points for selection. Casting voices, selecting music, and selecting sound effect are three actions you must progress.

- Casting voices: You should use some talented actors or persons for this action. Based on you product you should choose your actor.
- Selecting music: The most important thing is how the appropriate music is selected. Components of multimedia are very critical for this selection process. You should listen again and again sample music. Nowadays, with MP3 technologies accessing digital and different types of music is easy task.
- Selecting sound effect: You can use sound expert in order to add effect to your sounds. Moreover, most of the music or sound program includes these sorts of effects.

4.4.1.7 Technical Deliverables

Every component of your product must be programmed. You need some technical advice for this process. Hence, programming and other related things can takes too much time and budget.

You may too many ideas about the product. The main point is whether these ideas are possible to produce. Another consideration point is that your ideas are really worth to develop. If you invest too much time and money but you cannot get back this investment, it does not seem feasible.

Technical deliverables should explain which tools or engines are going to be used in the project. Developer should have as much as possible tools and engines. If it is not so, they should be obtained before starting project. The main point is getting required license of these tools.

While the project is carrying on, there should common technical parameters that express necessary information for every developed assets, sound, animation or program, and etc. This should be consistent and make every person's business easy in the project.

Moreover, every software or database must be documented in detail. After that deliverable, other parts of the project are going to start. Therefore, in other parts, personnel should know every detail about programming process and ideas of technical developers.

4.4.1.8 Subcontractors

Sometimes you need to hire a company or labor force in addition your standard personnel. To do it in multimedia development, you should arrange subcontractors. If you determine work packages, their scope, effort, and timeline, you can easily make an agreement with subcontractor. For instance, for voice recording or video production, instead of struggling all phases of these production, you can hire a voice or video studio.

4.4.1.9 Final Plan & Final Budget

In discovery phase, you have both preliminary budget and plan. Design phase makes these preliminary studies more sharpen, real, start and points, and their lengths. Every detail can be reconsidered again while in design phase. At the end of the design phase, each preliminary document becomes final.

4.5 Production Phase

Production phase is total development process. At this stage, Artists create graphics and animation, photographers shoot pictures and director shoots video, sound designer record audio, select and create sound effect and music, programmer write software or use existing engines or authoring tools and combine assets with software in a process called integration, quality assurance testers step in at appropriate times to uncover and log bugs. Project manager also control these procedures and track modifications. In this phase, you are going to see what the product looks like.

Main deliverable of production phase is “Gold Master”. Gold Master is the final, fully tested and client approved product and ready to replicate and deliver market. To reach Gold Master deliverable, it should reflect all properties of functional specification and bug-free. There must be no error any kind of programming, sound or art problems.

4.5.1 Asset Development

Assets, programming, prerelease burns are other and critical deliverables of this phase because they are only way to reach Gold Master. Too many assets are developed for the product, such as icons, sounds, video, graphics, and etc. In fact, the project has a library for assets used before in other projects or developed created.

4.5.2 Software Engineering

A working version of the product is developed by using engines, software development tools or authoring tools. When their certain percentage is completed, they are getting together and the disc image of the product is created. This image is transferred to a CD-ROM disc by burning that is common name of physical creation of a disc. Hence, this phrase is stemmed from that a laser burns tiny pits in the substrata of a recordable disc.

Extra Resources

1. Software Engineering for Internet Applications. Available at <http://philip.greenspun.com/seia/>
2. Readings of Software Engineering. Available at <http://www.cs.queensu.ca/Software-Engineering/reading.html>

4.5.3 Product Testing

Quality assurance testing is the last step. It is a critical process because it checks all possible bugs in the product. In every bugs reported, all of them are covered and another disc is burned. This process goes on until the product is a reflection of functional specification and bug free version.

You can use some common product testing procedure, such as user-testing, heuristic evaluation, and etc. In user testing method, you hire users from your target group. They use the product's prerelease versions and this process is recorded. Moreover, users express their feelings and thoughts about the product.

In contrast to user testing, heuristic evaluation is a kind of expert evaluation. You can hire multimedia experts and they assess your product from every critical point. They prepare a report about your product.

In every assessment process is named separately. The first testing document is called alpha disc. Alpha disc is a disc that there are not completed assets and programming in addition to existence of bugs. It undergoes series of testing procedures. With every assessment procedure, more assets and programming are added. 100 percent of assets and programming is completed name of disc is called Beta. Every upper version of Beta means that fewer bugs in the product. Alpha and Beta discs take our product to Gold Master.

Extra Resources

1. IBM User-Centered Design. http://www-306.ibm.com/ibm/easy/eou_ext.nsf/Publish/570
2. User-Centered Design. http://www.stcsig.org/usability/topics/articles/ucd_web_devel.html
3. User-Centered Design. Available at <http://www.webstyleguide.com/interface/user-centered.html>
4. Heuristic Evaluation. Available at <http://www.useit.com/papers/heuristic/>
5. Review Check List for Heuristics Evaluation. Available at <http://www.stcsig.org/usability/topics/articles/he-checklist.html>
6. Heuristics Evaluation. Available at <http://www.usabilitynet.org/tools/expertheuristic.htm>

4.5.4 Gold Master

The Gold Master is sent to the client's last approval and if it is accepted, the disc is going to be published.

The final product should include readme files and attractive package design. Readme files explain last-minute information about the product or about how to install. Package design is another consideration for the production phase. It is so important for first impression on the client. The package must include the following things:

- The logo of the publisher
- The logo of the developer
- The genre of the product
- The intended age of the user
- The platform and operating system the product runs on
- Slogans and product blurbs.

Most of time, publishers put screen shoots of the product on the back of the package to give users idea about look and feel of the product. Minimum system requirements, contact information, copyright notices, and barcode with inventory number can be placed on the package.

Questions

- 1. You want to develop a simple multimedia CD to introduce your small town for tourists who would like to come. As a client, what is your expectation form a multimedia company for this product? Please determine what can be done for all phases?**

IDI4 – CONCEPT MAP

