

MULTIMEDIA SYSTEM

BITM 1113

MODEL & PROCESS

Siti Nurul Mahfuzah Mohamad¹ , Norasiken Binti Bakar²

1mahfuzah@utem.edu.my 2norasiken@utem.edu.my

Objective

- To identify and understand the phased approach to development
- To look at the detail processes of Discovery and Design in Multimedia Development Process
- To understand the importance of the deliverables in every phases

Multimedia Development Model

- There are quite a numbers of Multimedia Development Model used in system instructional design, for example:
 - ADDIE Model
 - ASSURE Model
 - Hannafin & Peck Model
 - Dick & Carey Model
 - Robert Glasea Model
 - Waterfall Model
 - Rapid Prototyping Model
 - Jerold Kemp Model
- The process of developing a multimedia system can be based on only one model or a combination of more than one models.

Multimedia Development Model

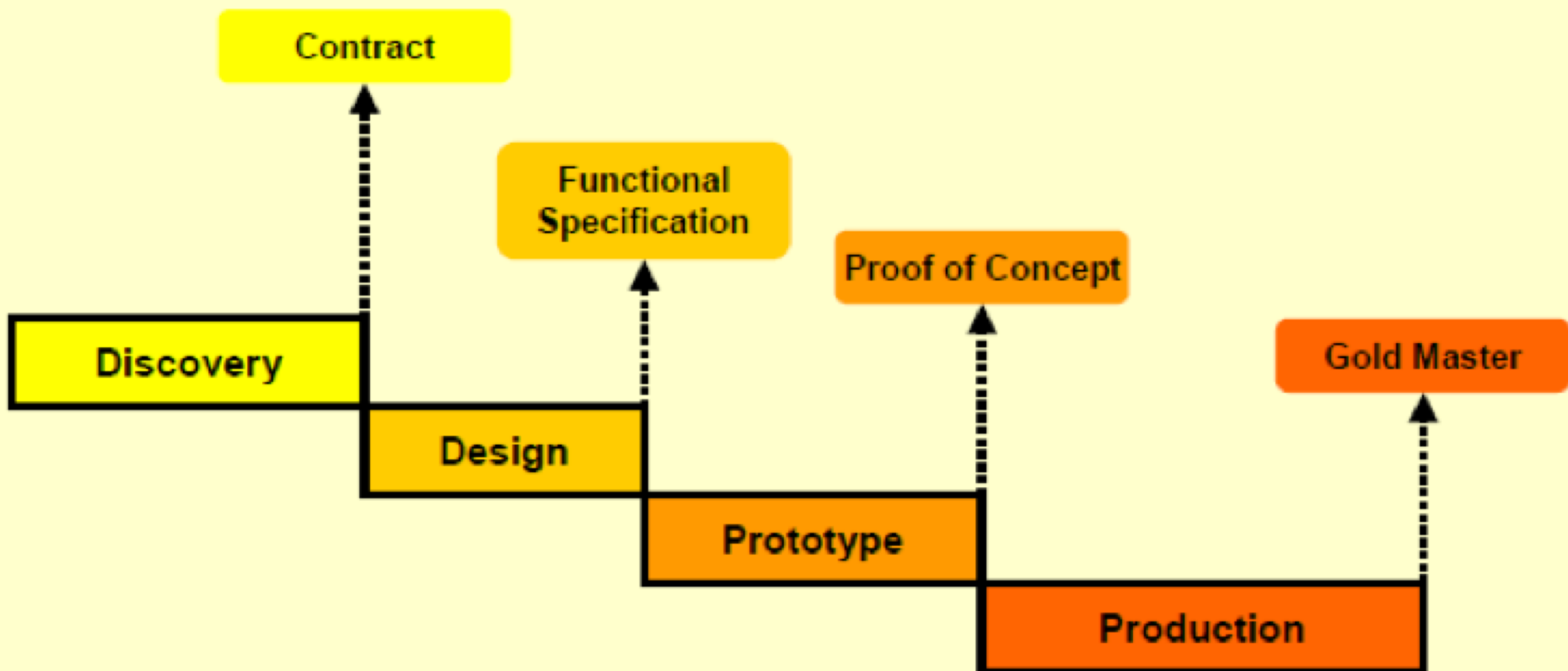
- Most of the Multimedia Development models share these elements of phases- **discovery, design, prototype, production**
- The successful completion of a phase signals the beginning of the next
- Each phase has a major goal / prize
- Deliverables require the successful completion of various tasks
- Tasks require labor contributions using certain equipment – resources

Multimedia Development



Phases in Product Development

- **Discovery phase-** developer establishes the need analysis. A relationship and understanding with the client and reaches an initial contractual agreement based on a top-level design and preliminary budget and schedule.
- **Design phase-** developer writes the functional specification and creates a final budget and development schedule based on the design
- **Prototype phase-** a small working version of the product is developed and tested for overall design
- **Production phase-** all audio/video assets and computer software engineering is completed leading to the “gold master”, the final CD-ROM/DVD-ROM which is sent to the manufacture

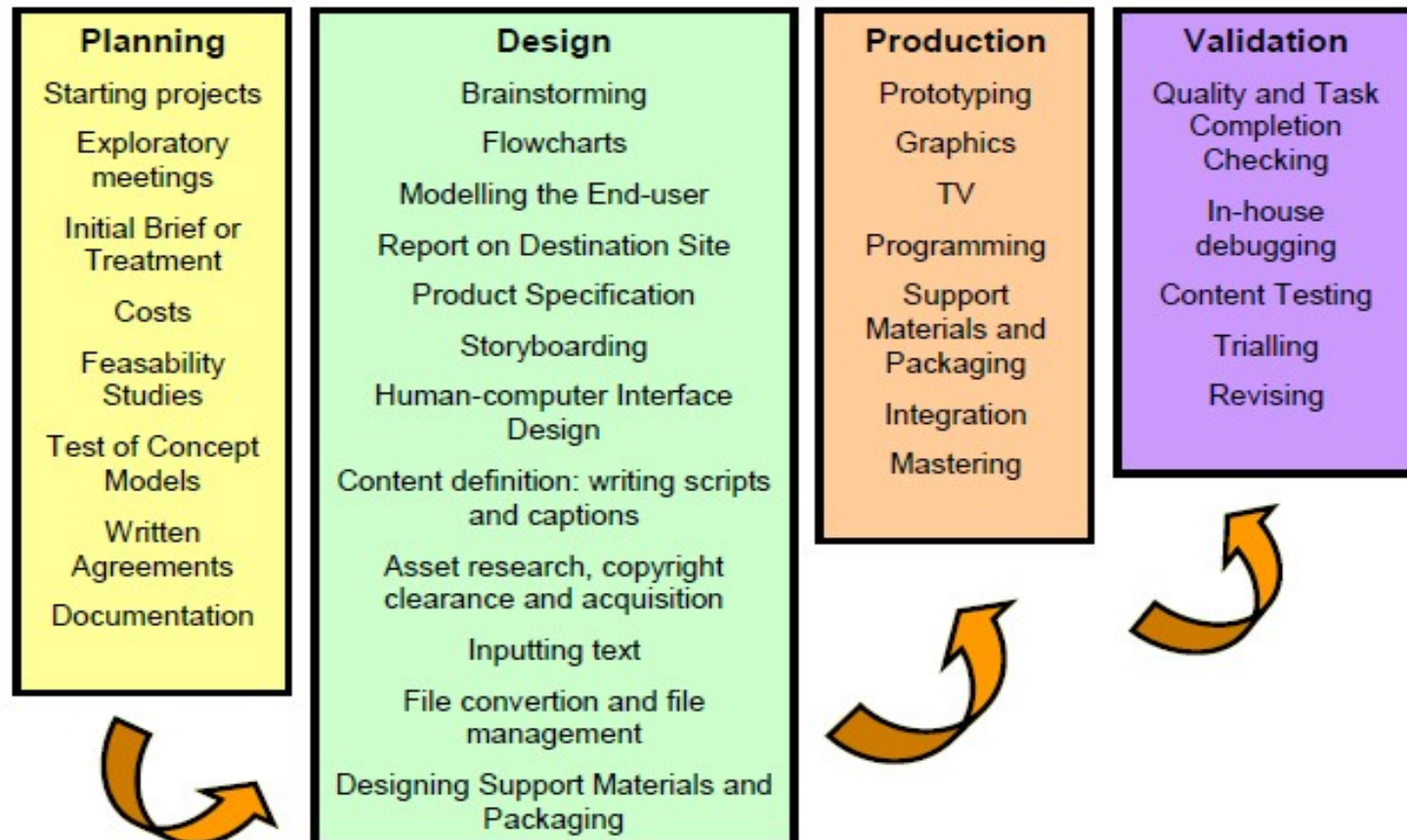


The phases has these characteristics:

- They are completed in a fixed amount of time
- They have clearly defined goals, deliverables and milestones
- They are completed sequentially
- Failure to develop a product in this manner usually results in one or more disaster. Among the typical problems is failure to meet client expectations
- A second common disaster is an overdesigned product

Multimedia Design Process

- Multimedia design process has been broken down into the following principal phases- planning/analysis, design, production/development and validation/deployment



Multimedia Development Process

ployment/validati

Planning

Define Objectives

- Base them on the need of the target audiences
- Base them on a skill list
 - What is the different that the learner have to do?
 - What is the issue of performance that the course have to address?
 - Breakdown the curriculum in to skill according to the needed jobs

Scope and Planning

- Identify what need to be e-learning or face-to-face
- How's the e-learning will integrate with the blended solution?
- Chunk material into 15 to 20 minutes 'learning object'
- Define an incremental learning path
- Categorise the content:
 - What is aimed at novices/intermediate/expert learner?
 - What MUST learner know & what can be the references material?
 - What needs to be refresher material/quick reference?

Design

Deliverables during design phase

- Complete Functional Specification
- Approval of voice talent/music
- Rights clearance for any copyrighted material
- Agreements with subcontractor
- Asset list
- Final development plan
- Final development budget

Functional Specification

- A node map of the entire product
- A node-by-node description of the product
- Screen layouts and designs
- Button and icon designs
- Font specifications
- Character designs
- Storyboards
- Dialogue and narration
- Game designs

During the design phase, the producer, director and writer work very closely together to coordinate their activities

Deliverables by Team

Deliverable	Responsible Party
Screen design and layout	Art Director
Icon and button design	Art Director
Functional Specification	Writer
Character designs	Character Designer
Cast talent	Director
Storyboards	Artists
Music and Sound Effect	Sound Designer
Tools and Engines	Lead Programmer

Develop a Graphical Theme

- Thinking a motivational theme to hold the course
- Get attention with the title target
- Build on our own corporate styles & cultures
- Do the design on budget & available time
- Use best quality of media appropriately

Build a Template Library

- Re-usable template decrease the development time, standardized e-learning & improve quality
- Make a Flash library of template and Content point of slide
- Develop template for every kind of courses:
 - New product launch
 - Safety bulletin
 - Training system
 - Equipment training
 - Policies and procedures training

Storyboard Content

- Show cause & effect
- Do comparison
- Use glossary, jargon buster, quick reference card
- Show real world example and interview
- Top 10 lists
- Questions & answer
- Tip & technique
- Sequential step
- Pie chart, bar chart, organizational chart, workflow diagram, line chart, line drawing, map

Engage & retain learners

- Challenging the learner
- Entertaining the learner
- Make the learner think about what they are doing
- Vary the activity
- Maintaining the pace
- Have regularly feedback
- Allow a lot of practice
- Rewards the learner

Learn How to Write

- Trainers would be too overbose
- 'If it is possible to cut a word, always cut it' (George Orwell)
- Remind that e-learners are not patient person
- Include one idea per paragraph, 3 sentences per paragraph
- Use the active voice
- Spell & grammar check before publish

Production

Prototype & Evaluate

- Pilot the courses with designer, SMEs and a several learner
- Collect suggestion to improving
- Make improvement according on engagement of the learner, the format & the content
- The prototype is produced to test the following:
 - The overall design, in terms of content, features, functional control, look and feel, structure
 - Development process

New or special purpose software or other

Technology

Purposes of the Prototype

- Development Purposes - formative evaluation to meet the expectations and desires of the end customers
- Instructional Purposes - effectiveness as a teaching agent
- Marketing Purposes - an ideal tool for the marketing department to make its case about the product to **Audience** (Publishers, Retailers, Product & Reviewers)

Deliverables for the prototype

- Background art
- Animation
- Narration
- Video
- Buttons, icons and text
- Software programming of the prototype
- Quality assurance testing
- Focus testing of the product
- Modifications to the design (formative evaluation)

Refine & Deliver

- Deliver less of high quality when time is short
- Gain the feedback to do improvement of the course
- e-Learning must evolve to meet the job need changes
- Discussing the additional training needed with learner
- Schedule course change & let manager keep update

Focus Test the Prototype

The following are necessary for a focus test:

- Working prototype
- Computer stations where focus testing can take place
- Focus group subjects
- Questions for the subjects
- Staff to ask the questions
- Video cameras to tape the sessions
- Date to conduct the tests
- Gifts or stipends for the subjects
- Methodology for evaluating the results

Production

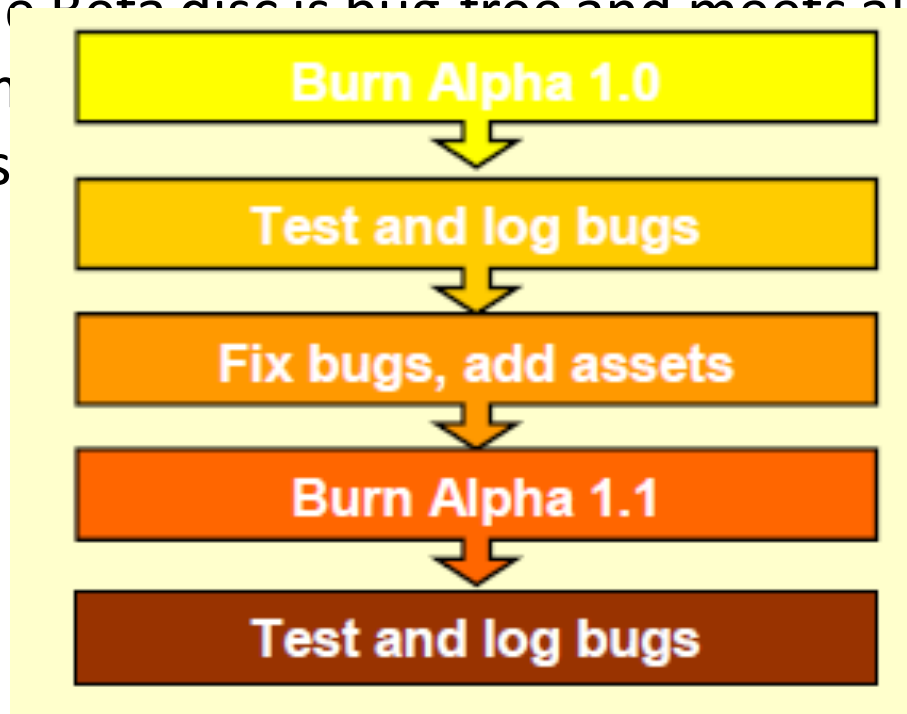
- After the prototype was tested, the results analyzed, modifications determined, functional specification and development plan adjusted, the production phase begins.
- The **gold master** is the final, fully tested and client-approved disc which is sent by the developer to the disc replication facility
- In order to make a gold master, the team must create a number of deliverables which fall into three categories:
 - Assets
 - Programming
 - Prerelease burns

Deliverables during Production

Deliverable	Responsible Party	Comments
Background Art	Artists	Artists work from paper designs completed during the design phase
Icons/Buttons	Artists	
Graphics	Artists	
Screen Text	Writer	Artist may create bitmap
Photographs	Photographers	Artists digitize photos
Video	Videographer	Artists may capture video
Voice over	Sound Designer	
Music	Sound Designer	
Database Engine	Programmers	May include researcher
Installation software	Programmers	
Alpha Beta burns	Programmers	
Readme files	Writer	May be responsibility of the publisher
Package Art	Artist	

Alpha and Beta Disc

- At some point during the production phase, about 80 percent of assets and programming are complete, the lead programmer creates a Alpha
- disc image and burns a CD-ROM
- When the Beta disc is bug free and meets all other requirements as Beta 2.0, the gold master is created



The Gold Master

- The producer then sends the official gold master to the client's disc manufacturing facility
- Readme Files - text files that the developer puts on the gold master disc
- Package Design- During the production phase, and before the gold master date, the marketing manager begins the process of package design
- Printed on the front of the box includes:
 - The logo of the publisher
 - The logo of the developer
 - The genre of the product
 - The intended target age of the user
 - The platform and operating system
 - Slogans and product blurbs
- Printed on the back of the package,
 - A table detailing the minimum specification
 - Contact information of the publisher
 - Copyright notices
 - Bar code with inventory control number

Validation

Evaluation

It is conventional to divide evaluation into two types:

- **Formative** - carry out during the system development. The information obtained is fed back to influence on-going development.
- **Summative** - conducted at the completion of the system that evaluates effectiveness (depends on whether it achieves its learning objectives) and usability (ease of learning and ease of use) of the system

Qualitative and Quantitative

- Evaluation methods yield two broad types of information – qualitative and quantitative
- Qualitative evaluation provides rich information that is especially useful for shaping design
- Quantitative information gives hard figures based on systematic sampling
- Methods of data gathering
 - Observation
 - Interview
 - Questionnaires

Observation

Advantages

- Provides direct evidence of system effectiveness and usability
- Easy to use informally
- Can be applied as a structured technique with sophisticated recording or behaviour

Disadvantages

- The information provided related to surface behaviour
- More sophisticated recording leads to high transcription and analysis overheads

Observation

- The designer checks whether the user performs on the system as expected
- Observation can be conducted in an informal or a highly structured way
- In structured observation, a set of tasks is set and the performance of the users is observed
- The form of recording should be selected that best suits the type and cost of the system being developed

Observation

Advantages

- Provides direct evidence of system effectiveness and usability
- Easy to use informally
- Can be applied as a structured technique with sophisticated recording or behaviour

Disadvantages

- The information provided related to surface behaviour
- More sophisticated recording leads to high transcription and analysis overheads

Interviews

- The most effective information is often obtained when observation is used in tandem with interviews
- By shortening the interview, the more subjects may be covered.
- A clear structure with the freedom to follow interesting points provides the best balance. E.g. ‘Why do you prefer...?’ ‘What if we changed...?’
- Follow-up questions can also be used to check the strength of the subject’s response

Interviews

- The most effective information is often obtained when observation is used in tandem with interviews
- By shortening the interview, the more subjects may be covered.
- A clear structure with the freedom to follow interesting points provides the best balance. E.g. ‘Why do you prefer...?’ ‘What if we changed...?’
- Follow-up questions can also be used to check the strength of the subject’s response

Interviews

The strengths of interviews are:

- Able to produce rich information on student reactions
- Easy to administer
- Very useful for formative evaluation
- Effective in conjunction with other methods

Questionnaires

- Questionnaires are useful in providing overview information in a quantitative form
- There are two broad types of questions – open (ask respondents to express replies in their own word) and closed (produce responses that can be directly quantified)
- If the questions are listed directly one under another, a profile can be created by joining the response points

How often did you use the Help System in the package?

a) never	☐
b) 1 – 3 times per week	☐
c) 4 – 6 times per week	☐
d) 7 – 9 times per week	☐
e) 10 or more times per week	☐

How interesting is the system to use?

Very Interesting					Very Boring
☐	☐	☐	☒	☐	☐

Questionnaires

Advantages are:

- Easy and economical to administer
- Support both open ended and closed questions
- Provide quantitative data
- Comparatively easy to analyse
- Valuable for summative evaluation

Questionnaires limitations:

- Provide surface level information only
- Not normally reveal the reasons for responses
- Summary results may obscure variations within data

End of lecture

