Lesson 15-Planning and Costing

Multimedia: Making It Work
Overview

- The process of making multimedia.
- Scheduling.
- Estimating.
- RFPs and bid proposals.
The Process of Making Multimedia

- Idea analysis.
- Pre-testing.
- Task planning.
- Development.
- Delivery.
Before beginning a multimedia project, it is necessary to determine its scope and content.

Balance is the key principle in idea analysis.

The aim is to generate a plan of action that will become the road map for production.
Idea Analysis

- It is necessary to continually weigh the purpose or goal against the feasibility and the cost of production and delivery.
- This can be done dynamically by adding elements to or subtracting elements from a project.
Additive process involves starting with minimal capabilities and gradually adding elements.

Subtractive process involves discarding unnecessary elements from a fully developed project.
Idea analysis involves finding answers to questions like:

- Who is the intended audience? What are their needs?
- What multimedia elements will best deliver the message?
- What hardware, software, and storage capacity would be required?
- How much time, effort, and money would be needed?
- How will the final product be distributed?
Project management software includes:

- Microsoft Project.
- Designer's Edge.
- Screenplay System's Screenwriter and StoryView.
- Outlining programs.
- Spreadsheets.
- CPM - Project management software typically provides Critical Path Method (CPM) scheduling functions to calculate the total duration of a project based upon each identified task, showing prerequisites.
- PERT - Program Evaluation Review Technique (PERT) charts provide graphic representations of task relationships.
- Gantt charts - depict all the tasks along a timeline.
Figure 6-2. PERT chart.
PERT Chart

Start

Test plan 2

Requirement 3

Test data 2

Design 4

Document 2

Test driver 6

Product test 4

Code 4

Finish

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Fig. 1: PERT Chart

* Numbered rectangles are nodes and represent events or milestones.
* Directional arrows represent dependent tasks that must be completed sequentially.
* Diverging arrow directions (e.g., 1-2 & 1-3) indicate possibly concurrent tasks.
* Dotted lines indicate dependent tasks that do not require resources.
PERT/CPM - Web Site Design Process

<table>
<thead>
<tr>
<th>January</th>
<th>February</th>
<th>March</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robert</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Write HTML</td>
<td>2</td>
<td>Test Software</td>
</tr>
<tr>
<td>1/21/02</td>
<td>2/25/02</td>
<td>2/25/02</td>
</tr>
<tr>
<td>2 weeks</td>
<td></td>
<td>1 week</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td>0 days</td>
</tr>
<tr>
<td></td>
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<tr>
<td>George</td>
<td></td>
<td>Contact Service Provider</td>
</tr>
<tr>
<td>Design Web Site</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>1/7/02</td>
<td>1/19/02</td>
<td>1/21/02</td>
</tr>
<tr>
<td>2 weeks</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linda</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Create Artwork</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>1/21/02</td>
<td>2/13/02</td>
<td></td>
</tr>
</tbody>
</table>
Work Breakdown Structure

Level 1:
- Aircraft System

Level 2:
- Air Vehicle (AV)
- Program Management
- System Test and Evaluation
- Training
- Data

Level 3:
- Airframe
- Propulsion
- AV Applications Software
- Communications/Identification
- Navigation/Guidance
- Central Computer
- Fire Control
- Survivability
- Reconnaissance
- Automatic Flight Control
- Antisubmarine Warfare
- Armament
- Weapons Delivery
- Development Test and Evaluation
- Operational Test and Evaluation
- Mock-ups
- Test and Evaluation Support
- Test Facilities
- Equipment
- Services
- Facilities
Gantt Chart

A—Do preliminary market analysis
B—Develop preliminary product designs
C—Do preliminary manufacturing study
D—Evaluate & select best product design
E—Develop detailed marketing plans
F—Design manufacturing process
G—Develop detailed product design
H—Build and test prototype
I—Finalize product design
J—Order components
K—Order production equipment
L—Install production equipment

Time in Months

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Pre-Testing

- Involves defining project goals in fine detail and spelling out what it will take in terms of skills, content, and money to meet these goals.

- Work up a prototype of the project on paper to help you relate your ideas to the real world.
Task planning involves:

- Designing the instructional framework.
- Holding creative idea sessions.
- Determining the delivery platform and authoring platform.
- Assembling the team.
- Building a prototype, producing audio and video, testing the functionality, and delivering the final product.
Prototype development:

- Also known as a proof-of-concept or feasibility study.
- Involves testing of the initial implementation of ideas, building mock-up interfaces, and exercising the hardware platform.
- Trial calculations are possible after prototyping.
- A written report and an analysis of budgets allow the client some flexibility and also provide a reality check for developers.
- **Alpha** development – At this stage, the investment of effort increases and becomes more focused. More people get involved.

- **Beta** development – At this stage, most of the features of a project are functional. Testing is done by a wider arena of testers.
In the delivery stage, the project is said to be "going gold."

The concerns shift towards the scalability of the project in the marketplace.
Milestones are decided at this stage.

The time required for each deliverable, that is the work products delivered to the client, is estimated and allocated.

Scheduling is difficult for multimedia projects because multimedia creation is basically artistic trial and error.

Scheduling is also difficult because computer hardware and software technology are in constant flux.
Commercial or ‘real world’ considerations

At this stage, clients need to approve or sign off on the work created. (At various stages throughout project.)

Any revisions of previously approved material would require a change order. (Very important!)
A change order stipulates that the additional cost of revising previously approved material should be borne by the client.

When negotiating with a client, limit the number of revisions allowed.
Cost estimation is done by analyzing the tasks involved in a project and the people who build it.

The hidden costs of administration and management are also included in the cost estimates.

A contingency rate of 10 to 15 percent of the total cost should be added to the estimated costs.

Profit is added to the total of these figures (more next week)
- **Time**, **money**, and **people** are the three elements that can vary in project estimates.

- The time at which payments are to be made is pre-determined, payments are usually made in three stages.

- Progressive payments may have establishment costs included in first payment.

- Client owns completed work that they have paid for.

- Ownership definition is determined by contract/agreement.
The billing rate should be equal to the total cost plus a reasonable profit margin.

Typical billing rates for multimedia projects range from $60 to $150 an hour.

Lower rates do not necessarily imply poor quality of work; they could rather mean lower overheads.

The demand-supply mechanisms determine the prices.
Estimating

The categories of expenses incurred for producing multimedia are:

- Project development costs.
- Production costs.
- Testing costs.
- Distribution costs.
These include:

- Salaries.
- Client meetings.
- Acquisition of content.
- Communication.
These include (continued):

- Travel.
- Research.
- Proposal and contract prep.
- Overheads.
Production costs can further be classified as:

- Management costs.
- Content acquisition costs.
- Content creation costs.
- Graphics production costs.
- Audio production costs.
- Video production costs.
- Authoring costs.
Testing Costs

These include:

- Salaries.
- Facility rental.
- Printing costs.
- Food and incentives.
- Coop fees (payment for participation).
- Editing.
- Beta program.
Distribution Costs

These include:

- Salaries
- Documentation
- Packaging
- Manufacturing
- Marketing
- Advertising
- Shipping
Hardware:

- Hardware is the most common limiting factor for realizing a multimedia idea.
- List the hardware capabilities of the end-user's platform.
- Examine the cost of enhancing the delivery platform.
- The most common delivery platforms require a monitor resolution of 800X600 pixels and at least 16-bit color depth.
Request for Proposals (RFPs):

- These are formal and detailed documents from large corporations who are "outsourcing" their multimedia development work.

- They provide information about the scope of work and the bidding process.

- They are generally not very detailed and specific.
Bid proposals: (in response to RFP)

- Should contain an **executive summary** or an overview.

- The backbone of the proposal is the **estimate** and **project plan**, which describes the **scope** of the work.

- The cost estimates for each phase or deliverable **milestone** and the **payment schedules** should also be included.
Bid proposals (continued):

- Should contain the graphic and interactive goals of the project.
- Prepare a brief synopsis if a project is complicated.
- Lists the terms and conditions of the contract.
Bid proposals (continued):

- The terms of a contract should include a description of the billing rates, invoicing policy, third-party licensing fees, and a disclaimer for liability and damages.

- Design the proposal according to a client's expectations.

- A proposal should appear plain and simple, yet businesslike.
Bid proposals (continued):

- A **table of contents** or an index is a straightforward way to present the elements of a proposal in condensed overview.

- **Need** (purpose) analysis and description describes the reasons the project is being put forward.

- It is necessary to describe the **target audience** and the **target platform**.
Bid proposals (continued):

- Creative strategy – This section describes the **look and feel** of a project. This is useful if the reviewing executives were not present for the preliminary discussions.

- Project implementation – This section contains a detailed **calendar, PERT and Gantt charts**, and lists of **specific tasks** with associated completion **dates, deliverables**, and **work hours**.
Before beginning a project, determine its **scope and content**.

The process of making multimedia involves idea analysis, pre-testing, task planning, development, and delivery.

Costs related to multimedia creation are categorized as project **development costs**, **production costs**, **testing costs**, and **distribution costs**.
Materi Bonus

- Materi Bonus “Planning & Costing project”
- Membuat planning dengan Gantt Chart
- Membuat Project Quote
## Format of Project Timeline

### Preliminary Development Plan

<table>
<thead>
<tr>
<th>Stage</th>
<th>Task</th>
<th>Time</th>
</tr>
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<tbody>
<tr>
<td>Stage 1 Planning and Costing</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15 days</td>
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<td>35 days</td>
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<tr>
<td>Stage 2 Design</td>
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<td>Stage 3 Testing</td>
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<td>Stage 4 Delivery</td>
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<tr>
<td></td>
<td>5 days</td>
<td></td>
</tr>
</tbody>
</table>

**Project Timeline using the Gantt Chart format**

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A Gantt chart is a horizontal bar chart developed as a production control tool in 1917 by Henry L. Gantt, an American engineer and social scientist.

A Gantt chart provides a graphical illustration of a schedule that helps to plan, coordinate, and track specific tasks in a project.

Gantt charts may be simple versions created on graph paper or more complex automated versions created using project management applications such as Microsoft Project or Excel.
Gantt Chart allows

- 'at a glimpse' recognition of
  - tasks,
  - their timing, and
  - duration

- easily understood and effective representation of tasks that are repeated during the development process.

Time is displayed both in terms of

- the project development cycle, and
- real time.

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Developing the Gantt Chart

- Tasks are listed for each stage
- Task-specific time estimates and task-sequences are determined
- Information is entered into the chart by shading in the relevant cells of the table
- Tasks allocated to various teams and/or team members can be indicated (using colour and/or shading).

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Structure of the Gantt Chart

- **Horizontal axis** represents the total time span of the project
  - Project time span is broken down into equal increments
  - End of project development indicated by vertical line
- **Vertical axis** representing the tasks that make up the project
- **Horizontal bars** of varying lengths represent the sequences, timing, and time span for each task
  - Bar spans may overlap
  - One task may have more than one bar
  - Secondary bars, arrowheads, or darkened bars may be added to indicate completed or partially completed tasks.

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Gantt charts give a clear illustration of project status, but one problem with them is that they don't indicate task dependencies. When one task cannot be done until after the completion of another task(s) there is said to be a dependency between these tasks.

The PERT chart incorporates information about critical paths in the development process in order to illustrate these issues.

Be aware of this limitation in your planning.
Steps to Creating a Gantt Chart

- List all activities required to complete the planned project
- Estimate the time required for each task
- Head up graph paper (or excel spreadsheet or similar) with the days or weeks through to task completion
- Plot the tasks onto the graph paper (or excel spreadsheet or similar)
- Schedule Activities
- Prepare a final version of the Gantt Chart
There are two components that must be considered when preparing a quote for the development of a multimedia project.

- Indirect Costs
- Direct Costs
Indirect Costs

- Also known as **overheads**
- Costs that are incurred in equipping and maintaining the business

These include the cost of:

- hardware and software
- maintaining digital libraries
  - Video, Images, Audio, Font etc
- setting up and maintaining a workplace
  - administration tasks and
  - building costs
# Example of Indirect Costs

**Indirect Costs:**

<table>
<thead>
<tr>
<th>Overhead (Fixed Expense) Particulars</th>
<th>Cost/ Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td>$30,000</td>
</tr>
<tr>
<td>Development Software</td>
<td></td>
</tr>
<tr>
<td>Macromedia Director</td>
<td>$1,700</td>
</tr>
<tr>
<td>Macromedia Suite</td>
<td>$1,300</td>
</tr>
<tr>
<td>Development Hardware</td>
<td></td>
</tr>
<tr>
<td>PC1</td>
<td>$3,300</td>
</tr>
<tr>
<td>PC2</td>
<td>$3,300</td>
</tr>
<tr>
<td>Rent and utilities</td>
<td>$3,000</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>$1,000</td>
</tr>
<tr>
<td><strong>Total Indirect Costs for year</strong></td>
<td><strong>$43,600</strong></td>
</tr>
<tr>
<td><strong>Overhead costs per year/direct labour hour in year</strong></td>
<td><strong>$22.06</strong></td>
</tr>
</tbody>
</table>

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Direct Costs

- Those costs directly associated with the project.
- Cost of labour used in producing project.
- Cost of acquiring media specifically for the project.
- An accurate project timeline must be developed to calculate labour costs.

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## Example of Direct Costs

<table>
<thead>
<tr>
<th>Role</th>
<th>Staff</th>
<th>Hours</th>
<th>Rate/Hour</th>
<th>Total for Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Manager</td>
<td>1</td>
<td>Budgeted 10</td>
<td>$25</td>
<td>$250</td>
</tr>
<tr>
<td>Interface Designer</td>
<td>1</td>
<td>Actual 30</td>
<td>$20</td>
<td>$600</td>
</tr>
<tr>
<td>Graphic Artist</td>
<td>1</td>
<td>Actual 10</td>
<td>$20</td>
<td>$200</td>
</tr>
<tr>
<td>Programmer/Coder</td>
<td>1</td>
<td>Actual 30</td>
<td>$20</td>
<td>$600</td>
</tr>
<tr>
<td>Content experts</td>
<td>3</td>
<td>Actual 10</td>
<td>$20</td>
<td>$200</td>
</tr>
<tr>
<td>Testing support</td>
<td>5</td>
<td>Actual 5</td>
<td>$15</td>
<td>$75</td>
</tr>
</tbody>
</table>

**Total Direct Costs**: 95 hours at $20 per hour = $1,925
The Project Quote

1. Work out the Indirect costs associated with the business.

2. Work out the Direct costs associated with the project.

3. Work out the Quoted Price for the Multimedia Project.
Calculating Indirect Project Costs.

- Work out all the indirect costs associated with the business for an entire year.
- Add above costs together. [AKA Total Cost]
- Indirect Cost = Total Cost divided by the number of ordinary working hours in a year (approximately 1960 hours \([38*52]\) ).
- The *indirect cost* (or overhead) is the price of staying in business calculated as a dollar value for *every hour* of the business year.
- Indirect Cost *must be included in the quoted price* for any projects.
- NOTE: Time spent on Administration and other tasks must be included in this costing even if no one is employed to do them.

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Calculating the Direct costs

a. Analyzing the project requirements.
b. Listing the tasks that will need to be completed.
c. Deciding who should do each task and inputting the correct charge rate for each team member.
d. Determining how many hours will be needed to complete each task.
e. Using the above figures to calculate the total Direct cost, total hours and the average Direct cost per hour for the project.
The **Quoted Price** is the SUM of the estimated figures for:
- Indirect Project cost (Indirect Cost per hour X Number of hours estimated for the project)
- Direct project cost
- Projected Project Profit

Profit is usually calculated as a percentage of the combined Direct and Indirect Project costs eg 25% in the following example.
### Project Quote:

<table>
<thead>
<tr>
<th>Item</th>
<th>Budget</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct materials - CDs</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Direct labour</td>
<td></td>
<td>$1,925</td>
</tr>
<tr>
<td>Indirect costs (as per direct labour hours)</td>
<td></td>
<td>$2,096</td>
</tr>
<tr>
<td>Sub-total (Sum of above costs)</td>
<td></td>
<td>$4,021</td>
</tr>
<tr>
<td>Profit (Sub-total * 0.25 [25 percent profit])</td>
<td></td>
<td>$1,005</td>
</tr>
<tr>
<td>Total (Sum of Sub-total and Profit)</td>
<td></td>
<td>$5,026</td>
</tr>
</tbody>
</table>

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