Software Cost Estimation  
&  
Quality Assurance

Slide: 5

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1. What are the main components of software cost?(**Other Keywords related to this question:** Parameter to compute total cost of software development)

Ans:

* **Hardware & Software Costs** – Includes tools, licenses, maintenance.
* **Travel & Training Costs** – Developer training, business travel.
* **Effort Costs (Main Cost)**:
* Salaries of engineers
* Social/insurance costs
* Overheads (building, electricity, communication, shared facilities)

1. What are the main factors that affect software pricing?(**Keyword Related to this question:** Add short description if question marks is more then)

Ans:

| **Factor** | **Description** |
| --- | --- |
| **Market Opportunity** | Price may be lower to grab a market chance or new customer. |
| **Cost Estimate Uncertainty** | If cost is unsure, extra money is added as a safety. |
| **Contractual Terms** | Fixed deadlines or conditions can raise the price. |
| **Requirements Volatility** | Changing needs increase time, effort, and cost. |
| **Financial Health of Customer** | Weak budget may lead to offering lower price. |

1. What is software cost estimation?(**Keyword Related to this question:** Estimation Techniques)

Ans:

It is predicting how much money, effort, time, and resources are needed to develop a software project. It's based on:

* Past experience
* Available documents
* Assumptions
* Identified risks

1. What is algorithmic cost modeling?(**Keyword:** Process of algorithm cost modelling)

Ans:

Algorithm cost modelling is a mathematical method to estimate project cost.

* Uses mathematical equations to estimate software cost.
* Depends on software size and other cost factors.
* Cost increases faster than size because of team coordination, complexity, etc.
* Common in models like **COCOMO**.
* An algorithmic cost estimate for software cost can be expressed as:

**Effort = A ∗Size^B ∗ M**

1. What are the problems with algorithmic models?(**Keyword:** Problems,why not,disadvantages etc etc.)

Ans:

* Size is hard to estimate early in the project.
* Function-point or object-point estimates are better but still not exact.
* Inputs like B and M (in formulas) are subjective—they vary by person.
* Estimation depends on experience and guesswork, so results differ.

1. What is COCOMO model & Maths of COCOMO.

Ans:

**Definition:** COCOMO is a model used to estimate the time and effort needed to build software.

**N.B.**  math which are given in slide & also math with basic cocomo model

1. Types of COCOMO models?(**Keyword:** Where COCOMO model applied)

Ans:

* **Organic mode:** Small teams, Simple project, Experienced People.
* **Semi-detached mode:** Mix of skilled and new team members.
* **Embedded mode:** Complex hardware + software; strict rules.

1. Why COCOMO 2 sub-model introduced?(**Keyword:** COCOMO 2 sub-model designed,introduced or modified etc)

Ans:

* **Application Composition Model** – Based on reusable components.
* **Early Design Model** – Before design starts.
* **Reuse Model** – For effort needed to reuse software.
* **Post-architecture Model** – After design is available.

1. What is Software Quality Assurance (SQA)?(**Keyword:** Quality assurance,steps of QA,meaning of QA etc etc.)

Ans:

* **Makes Sure Software is Good:**

SQA is a process that checks if the software meets quality rules and works properly.

* **Focuses on the Right Way of Working:**

It ensures the team follows correct steps and methods while building the software.

* **Stops Problems Early:**

SQA helps find and fix mistakes early, so they don’t cause bigger issues later.

* **Uses Checks and Reviews:**

It includes doing code reviews, testing, and audits to keep everything on track.

* **Works in All Project Steps:**

SQA is used from the beginning of the project to the end, to keep quality high at every stage.

1. What is Six Sigma in QA?(**Keyword:** Six Sigma)

Ans:

* **Define customer needs:**

Understand what the customer wants from the software.

* **Measure current performance:**

Check how the software or process is working right now.

* **Analyze defects:**

Find out what problems are happening and why they are happening.

* **Improve by removing root causes:**

Fix the main reasons behind the problems to make the software better.

* **Control to avoid future issues:**

Keep checking the process to make sure the same problems don’t happen again.

1. Core steps of improve or developed the six sigma.(**Keyword:** improve six sigma or developed steps of six sigma)

Ans:

* Design defect-free process
* Verify process meets needs

1. What is ISO 9000?

Ans:

A set of international quality management standards to ensure consistent product quality.

Not limited to software – can be used in any industry.

1. Principles of ISO 9000.(**Keyword:** Steps of principles of quality management ISO 9000)

Ans:

* Customer focus
* Leadership
* Engagement of people
* Process approach
* Improvement
* Evidence-based decision making
* Relationship management

1. What is SEI CMM model?Explain the maturity level of CMM model.(**Keyword:** Maturity level of CMM model with diagram or without diagram)

Ans:

**Definition:** A method to measure the maturity of a software company’s processes (1 to 5 scale).

* Level 1 - **Initial** - Work is performed informally
* Level 2 - **Repeatable** - Work is planned & tracked
* Level 3 - **Defined** - Work is well-defined
* Level 4 - **Managed** - Work is quantitatively controlled
* Level 5 - **Optimizing** - Work is based upon continuous improvement

**N.B.** if want the diagram,then draw the diagram as the slide

1. Difference between ISO 9000 & CMM.

Ans:

| **ISO 9000** | **CMM** |
| --- | --- |
| Industry-independent | Software industry focused |
| Focuses on quality system | Focuses on process maturity |
| External certification | Internal improvement |

**THANK YOU**