T3: 6Qs on Web Eng & SPM

1.What are metrics? Give a reason why you understand metrics to be important.

2. Describe the primary goals for using metrics in the context of web engineering.

3. What are the four P's in Software Engineering? Briefly describe each.

4. What is the W^5HH principle?

5. What is Stress Testing for a WebApp project? Highlight the goal(s) of the stress testing in a WebApp project.

6. What is the focus of the Compatibility Testing in WebApp, and why it is important for WebApps?

T3-Q1ans

T3-Q1: what are metrics? Why important ?

What are? Metrics are numerical measures that quantify the degree to which software or a process possesses a given attributes.

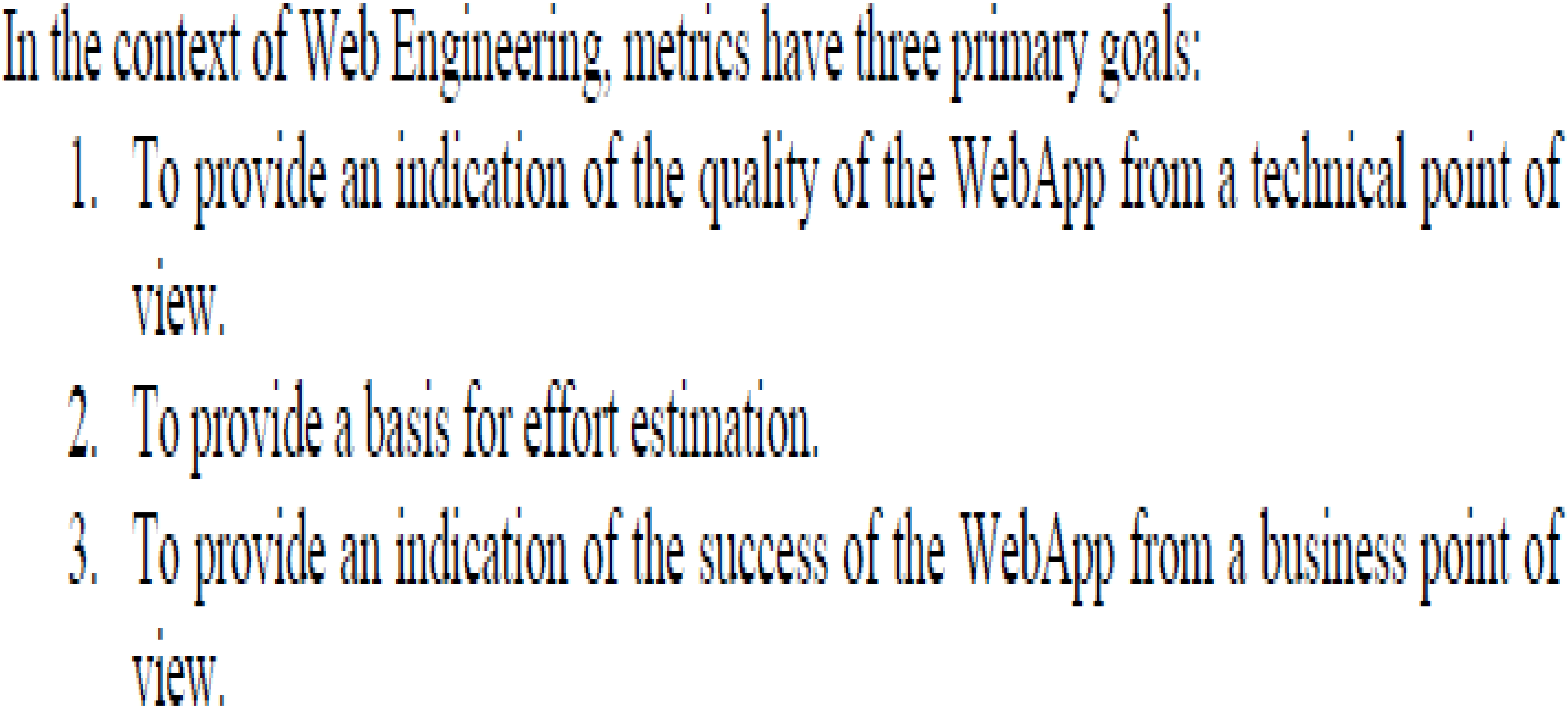
Examples: defects per KLOC; average software module size;

Why important? The goal is not open to interpretation and is measurable.

- If not expressed specifically enough, goals (such as software quality and project cost) may be subject to differing interpretations. The differences can cause confusion and conflict.
- Without quantifiable, objective measures to provide visibility into a project, it is difficult to measure a project’s progress in terms of weather it is on schedule, whether it is meeting its quality goals, ready to ship to customers.
- cannot improve what you cannot measure.
- Cannot setting quantitative improvement goals for future projects

Example: “WebApp should crash very seldom” => “WebApp should crash no more than 3 times per year”.

T3_Q2_ans:



In the context of Web Engineering, metrics have three primary goals:

1. To provide an indication of the quality of the WebApp from a technical point of view.
2. To provide a basis for effort estimation.
3. To provide an indication of the success of the WebApp from a business point of view.

T3-Q3: 4Ps in SE

T3-Q3ans

The 4Ps in SE: People, Product, Project and Process.

- Successful software projects must adequately plan for and address all of the 4Ps.
- Sometimes the needs of each of the P's conflict with each other, and a proper balance must be achieved for a project to be successful.

People: business management; project management; development team; customers; end users.

Product: the products of a software development effort consists of much more than the source and object code. They include: document, test plans and results, customer documents (e.g installation guide), and productivity measures => all those are often called *artifacts*.

Project: define the activities and associated results needed to produce a software product. E.g OOP as the development paradigm – process of producing software.

Process: a framework for carrying out the activities of a project in an organised and disciplined manner.

an organizing **principle** that **scales down** to provide **simple plans**

W^5HH Principle

Suggested by Dr. **Barry Boehm** in one of his papers.

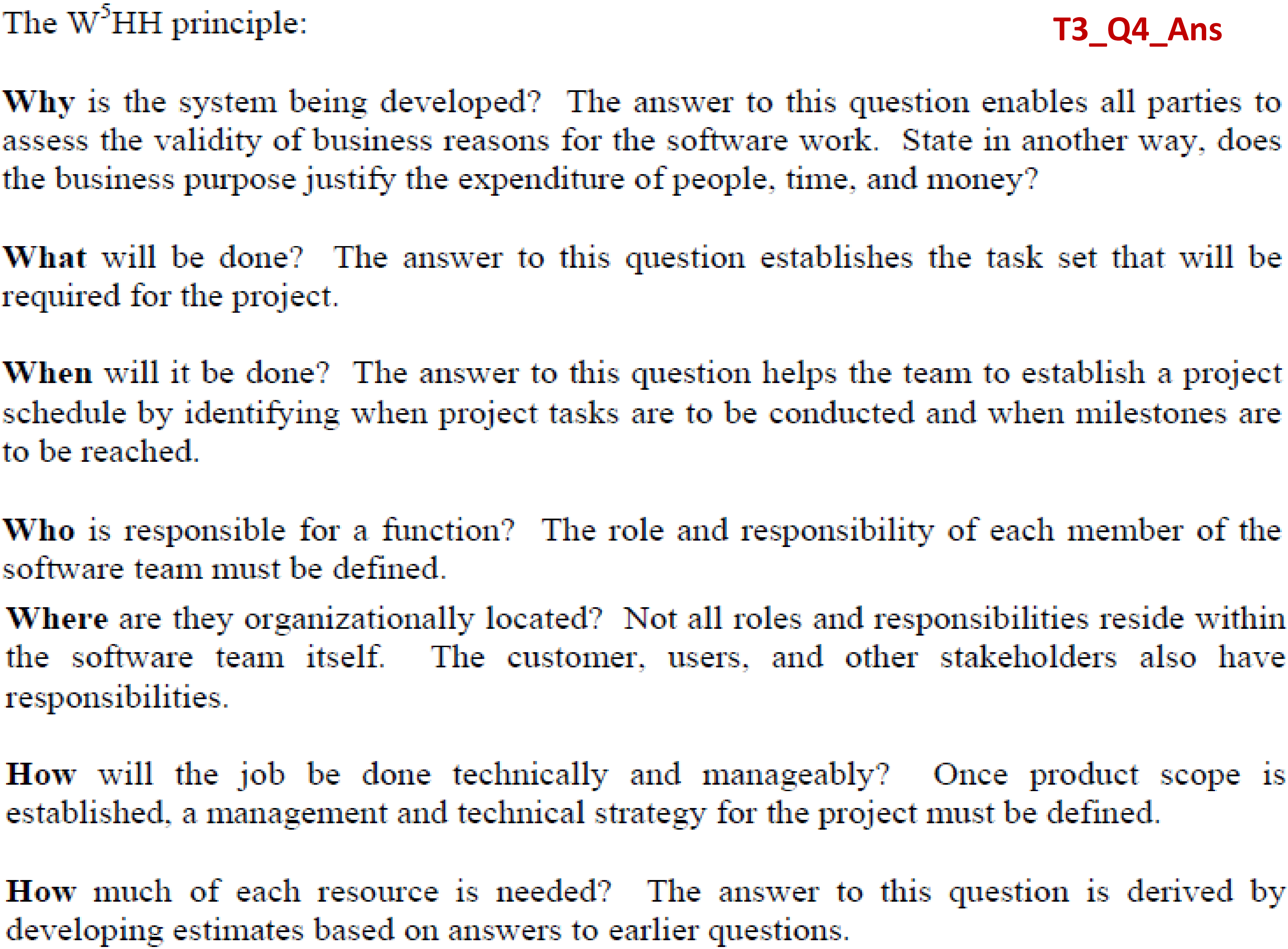
Excellent **planning outline** for project managers and software team.

Applicable to all sizes of software projects

It is an approach to address

project objectives -- why, what
Milestones & schedule - when
Responsibilities - who, where
Management & technical approaches - how
Required resources - how

T3_Q4_Ans



The W^5HH principle:

Why is the system being developed? The answer to this question enables all parties to assess the validity of business reasons for the software work. State in another way, does the business purpose justify the expenditure of people, time, and money?

What will be done? The answer to this question establishes the task set that will be required for the project.

When will it be done? The answer to this question helps the team to establish a project schedule by identifying when project tasks are to be conducted and when milestones are to be reached.

Who is responsible for a function? The role and responsibility of each member of the software team must be defined.

Where are they organizationally located? Not all roles and responsibilities reside within the software team itself. The customer, users, and other stakeholders also have responsibilities.

How will the job be done technically and manageably? Once product scope is established, a management and technical strategy for the project must be defined.

How much of each resource is needed? The answer to this question is derived by developing estimates based on answers to earlier questions.

T3_Q5: Stress Testing : what is ? Goal(s) of it?

T3_Q5_ans

Stress testing is one of performance testing, focused on determining an application's **robustness, availability,** and **reliability** under extreme conditions.

These conditions can include **heavy loads, high concurrency,** or **limited computational resources**

The goal of stress testing in a WebApp:
To **identify** application **issues** that arise or become apparent only under extreme conditions:

- Degrade gently
- Message to inform end-users/supporting staff
- Provide an overflow area
- Avoid : transaction lost; data integrity;
- Find what values of *N, T, D* cost WebApp to fail
- How long to come back;
- Any solution to cope with more concurrent users: shut down backend Ps.

T3_Q6: **Compatibility** Testing : Focus & Importance

T3_Q6_ans

Compatibility Test focuses on whether the WebApp is compatible with the many variants encountered within the **client side** environment.

Uncover any **errors/problems** that can be traced to **configuration** differences

Why it is important ?
Most of WebApps have many different types of clients with various computing + OS configurations.

In the analysis/design modeling, those commonly encountered configurations must to be identified and a series of compatibility validation tests should be derived for testing.