***ASSIGNMENT #1***

***ENTERPRISE SYSTEM ENGINEERING (SWE-304)***

***Question#1:***

Three different types of enterprise systems are available today:

* **Customer Relationship Management**

Customer relationship management systems were developed to address the need to raise a sales department’s productivity and provide an effective way to increase sales. With CRM functions, such as sales opportunity management, a company learns more about its customers’ needs and buying behavior and combines this information with market information to enhance the quality of the company’s marketing plans and sales forecasts.

Other attributes of the CRM system include integration with other systems and accessibility via mobile devices, allowing employees to update and compare data and to access information from any client site or other location. Equally importantly, CRM supports mass e-mail communications and automates the sales process workflow to improve employee productivity.

* **Supply Chain Management**

A supply chain is the collection of people, tasks, equipment, data and other resources required to produce and move products from a vendor to a customer. Supply chain management refers to the management of supply chain activities in an effective and efficient way to provide a company with a strategic advantage.

These activities may include product development, material sourcing, production and logistics as well as the information systems that coordinate these activities. Information flows allow supply chain partners to coordinate their strategic and operational plans as well as the day-to-day flow of goods and materials through the supply chain. The physical flows include the manufacture, transport and storage of goods or materials.

* **Enterprise Resource Planning**

The enterprise resource planning system integrates software applications, such as purchasing, finance, human resources and inventory management. Within an ERP system, the integrated software modules, such as sales, quality management and accounts receivable, communicate and share data. Each of these modules consists of multiple applications that execute end-to-end business processes. For example, the sales module includes the applications necessary to create and manage sales contracts, sales orders, sales invoices and sales order pricing. ERP applications support not only various operational and administrative tasks, such as the creation of an account payable or a time sheet, they may also be customized to support a number of different industries, including oil and gas, retail and banking.

***Question #2:***

An enterprise is a business-oriented organization formed specifically so founders can pursue entrepreneurial endeavours for a profit. While enterprises have social elements, they are different from clubs or other non-commercial organizations because of their entrepreneurial purposes. You start an enterprise for the purpose of attracting customers, selling goods and services and earning profit. The formal structure in a business establishes reporting relationships between managers and employees and across company departments.

***Question #3:***

A **virtual enterprise** (VE) is a temporary alliance of businesses that come together to share skills or core competencies and resources in order to better respond to business opportunities, and whose cooperation is supported by computer networks. Virtual enterprises have become increasingly common in the area of research and development, with often far-flung organizations forming alliances that amount to a "Virtual Research Laboratory.

Virtual enterprises have little or no physical presence or infrastructure, rely heavily on telecommunications and networks such as internet, and usually disband when their purpose is fulfilled or the opportunity passes. Agile, flexible, and fluid, they are extremely focused and goal driven, and succeed on the basis of little investment requirements, low start up and overhead costs, and fast response time. Geographically dispersed members of a virtual enterprise collaborate on the basis of their core strengths from wherever they are and whenever they are able to do so, and may become competitors in pursuit of another opportunity. Also called virtual company or virtual corporation.

***Question #4:***

**1. Define the problem**

Diagnose the situation so that your focus is on the problem, not just its symptoms. Helpful problem-solving techniques include using [flowcharts](https://asq.org/quality-resources/flowchart) to identify the expected steps of a process and [cause-and-effect diagrams](https://asq.org/quality-resources/fishbone) to define and analyse [root causes](https://asq.org/quality-resources/root-cause-analysis).

The sections below help explain key problem-solving steps. These steps support the involvement of interested parties, the use of factual information, comparison of expectations to reality, and a focus on root causes of a problem. You should begin by:

* Reviewing and documenting how processes currently work (i.e., who does what, with what information, using what tools, communicating with what organizations and individuals, in what time frame, using what format).
* Evaluating the possible impact of new tools and revised policies in the development of your "what should be" model.

**2. Generate alternative solutions**

Postpone the selection of one solution until several problem-solving alternatives have been proposed. Considering multiple alternatives can significantly enhance the value of your ideal solution. Once you have decided on the "what should be" model, this target standard becomes the basis for developing a road map for investigating alternatives. [Brainstorming](https://asq.org/quality-resources/brainstorming) and team problem-solving techniques are both useful tools in this stage of problem solving.

Many alternative solutions to the problem should be generated before final evaluation. A common mistake in problem solving is that alternatives are evaluated as they are proposed, so the first acceptable solution is chosen, even if it’s not the best fit. If we focus on trying to get the results we want, we miss the potential for learning something new that will allow for real improvement in the problem-solving process.

**3. Evaluate and select an alternative**

Skilled problem solvers use a series of considerations when selecting the best alternative. They consider the extent to which:

* A particular alternative will solve the problem without causing other unanticipated problems.
* All the individuals involved will accept the alternative.
* Implementation of the alternative is likely.
* The alternative fits within the organizational constraints.

**4. Implement and follow up on the solution**

Leaders may be called upon to direct others to implement the solution, "sell" the solution, or facilitate the implementation with the help of others. Involving others in the implementation is an effective way to gain buy-in and support and minimize resistance to subsequent changes.

Regardless of how the solution is rolled out, feedback channels should be built into the implementation. This allows for continuous monitoring and testing of actual events against expectations. Problem solving, and the techniques used to gain clarity, are most effective if the solution remains in place and is updated to respond to future changes.

***Question#5:***

It gives us the answers to all the fundamental questions, whilst normally staying at a level of abstraction from actual technology implementations. A high-level design provides an overview of a system, product, service or process. Such an overview helps supporting components be compatible to others. The highest-level design should briefly describe all platforms, systems, products, services and processes that it depends on and include any important changes that need to be made to them.

In addition, there should be brief consideration of all significant commercial, legal, environmental, security, safety and technical risks, issues and assumptions.

The idea is to mention every work area briefly, clearly delegating the ownership of more detailed design activity whilst also encouraging effective collaboration between the various project teams.

Today, most high-level designs require contributions from a number of experts, representing many distinct professional disciplines.

Finally, every type of end-user should be identified in the high-level design and each contributing design should give due consideration to customer experience.

***Question # 6:***

Design occurs in this complex environment, and needs to fit into it. Stakeholder analysis is the designer’s tool for synthesizing these disparate worldviews, to insure that her recommendations also fit the business requirements and thus will actually be implemented.

It is worth considering the history and lineage of the term “stakeholder analysis.” The term was introduced in a seminal book by R. Edward Freeman called Strategic Management (1984). The word stakeholder was used to stand in contrast to the neoclassical view of the firm as catering to stockholders. Freeman used the term stakeholder analysis to remind management that it was in the long-term interests of the company to pay attention to the interests of those who have an impact on or are impacted by the activities of the company. The present article uses the “stakeholder analysis” concept to extend the focus of user experience practitioners beyond the end user, to the organizational context of the project.

Stakeholders as users  
User experience professionals can benefit from the ideas about stakeholder analysis that have been developed in the field of Requirements Engineering. Requirements Engineering for software systems starts with the basic assumption that there will be multiple stakeholders with differing requirements, and that some requirements will be in conflict with other requirements (Nuseibeh and Easterbrook, 2000). This is because different stakeholders have different goals (in the previous example, the goal of the CFO was to track the assets of the company as accurately and efficiently as possible; the goal of the factory manager was to maximize factory output). Systematically exploring this problem space (of differing requirements) can lead to the discovery of design solutions that meet the goals of the stakeholders while removing (some) requirements conflicts. The goal is to reduce requirements conflicts while maintaining as high a level of stakeholder satisfaction with the design as possible.

***Question #7:***

Business process re-engineering is the radical redesign of business processes to achieve dramatic improvements in critical aspects like quality, output, cost, service, and speed. Business process reengineering (BPR) aims at cutting down enterprise costs and process redundancies on a very huge scale.

Proper execution of Business Process Reengineering can be a game-changer to any business. If properly handled, business process reengineering can perform miracles on a failing or stagnating company, increasing the profits and driving growth.

Business process reengineering, however, is not the easiest concept to grasp.

It involves enforcing change in an organization – tearing down something people are used to and creating something new.

***Question #8:***

Enterprise Architect - responsible for strategic thinking, roadmaps, principles, and governance of the entire enterprise. Usually has a close relationship with the business, vendors, and senior IT management.

Systems Architect - responsible for designing a high level solution to a specific set of business requirements, within the framework laid down by the enterprise architecture team. This solution may span multiple applications.

***Question#9:***

***Enterprise systems engineering (ESE)*** is the discipline that applies systems engineering to the design of an enterprise. As a discipline, it includes a body of knowledge, principles, and processes tailored to the design of enterprise systems. An enterprise is a complex, socio-technical system that comprises interdependent resources of people, information, and technology that must interact to fulfil a common mission.

***Systems engineering*** is an interdisciplinary field of engineering and engineering management that focuses on how to design, integrate, and manage complex systems over their life cycles. At its core, systems engineering utilizes systems thinking principles to organize this body of knowledge. The individual outcome of such efforts, an **engineered system**, can be defined as a combination of components that work in synergy to collectively perform a useful function.

***Question #10:***

You need different approaches to deal effectively with the cultural, political, and legal environments the project is operating within the organization. Enterprise Environment Factors (EEFs) include all policies, practices, procedures, and legislation that exist both inside and outside of the organization that will impact the way you manage a project.