# SYAD Week 3 Tutorial (Chapter 2)

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**Answer the following short questions:**

1. How does strategic planning influence day-to-day business operations? Why is it important for systems analysts to understand a company’s strategic plan?

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| **Strategic Planning and Business Operations:**  **Influence on Day-to-Day Operations**  Strategic planning significantly influences day-to-day business operations by providing a structured framework that guides all organizational activities. When a company establishes its strategic plan, it identifies long-term goals, strategies, and required resources that shape how daily tasks are prioritized and executed. This planning process begins with a mission statement that reflects the organization's vision, purpose, and values, which then cascades down to operational levels.  Day-to-day operations benefit from strategic planning in several ways:   * Activities align with broader organizational objectives rather than functioning in isolation * Resources are allocated more effectively based on strategic priorities * Critical success factors receive appropriate attention and monitoring * Decision-making at all levels becomes more consistent and purposeful * Operational problems can be evaluated within the context of strategic goals   **Importance for Systems Analysts**  It is crucial for systems analysts to understand a company's strategic plan because their work must directly support the organization's strategic direction. When developing information systems, analysts need to ensure that the solutions they create will:   * Support overall business strategy and operational needs * Align with well-defined project scope that reflects organizational priorities * Establish realistic goals tied to specific business requirements, assumptions, and constraints   Without this understanding, analysts risk developing systems that, while technically sound, fail to advance the organization toward its strategic objectives. This alignment ensures that IT investments contribute meaningfully to the company's competitive position and long-term success. |

1. What is a SWOT analysis? Prepare a SWOT analysis of your school or your employer.

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| **SWOT Analysis:**   * **Definition and Purpose**   A SWOT analysis is a strategic planning tool that examines a firm's Strengths, Weaknesses, Opportunities, and Threats. This structured evaluation method helps organizations assess their internal capabilities and limitations alongside external factors that might impact their success. The analysis examines an organization's technical, human, and financial resources to provide a comprehensive view of its strategic position.  The four components of SWOT analysis are:   * **Strengths**: Internal attributes and resources that support successful outcomes * **Weaknesses**: Internal attributes and limitations that hinder achievement of objectives * **Opportunities**: External factors that the organization might leverage for its benefit * **Threats**: External elements that could cause problems for the organization * **Sample SWOT Analysis for a Higher Education Institution**   **Strengths:**   * Strong faculty with diverse research expertise and industry connections * Modern campus facilities with state-of-the-art technology infrastructure * Established reputation in specific academic disciplines * Strong alumni network providing mentorship and career opportunities * Diverse student body creating a rich learning environment   **Weaknesses:**   * Limited financial resources compared to larger institutions * Outdated administrative systems requiring significant manual processing * Inconsistent quality across departments and programs * High student-to-faculty ratio in certain popular courses * Limited physical space for expansion on the main campus   **Opportunities:**   * Growing demand for online and hybrid learning programs * Industry partnerships for research funding and student internships * International student market expansion * Emerging technologies enabling innovative teaching methods * Growing alumni base for fundraising campaigns   **Threats:**   * Increasing competition from other educational institutions * Government funding cuts and changing education policies * Rapid technological changes requiring constant infrastructure updates * Demographic shifts affecting enrollment numbers * Economic downturns impacting student ability to pay tuition   This SWOT analysis would help the educational institution identify areas for strategic focus, allocate resources appropriately, and develop plans to address weaknesses while capitalizing on strengths and opportunities. |

1. What are four types of feasibility? Discuss them briefly.

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| **Types of Feasibility:**  When evaluating potential systems projects, four primary types of feasibility must be assessed to determine whether the project should proceed:  **Operational Feasibility**  Operational feasibility evaluates whether the proposed system will be used effectively after development. This assessment considers organizational culture, user acceptance, and willingness to adapt to new processes. Unlike other feasibility types, operational feasibility cannot be precisely measured but requires careful study of organizational dynamics and stakeholder perspectives.  Key questions that help predict operational feasibility include:   * Is the project supported by both management and end users? * Will the new system result in workforce reduction or significant role changes? * Are there legal or ethical issues that need consideration? * Will the system integrate well with existing operational workflows?   **Technical Feasibility**  Technical feasibility assesses whether the organization has or can acquire the necessary technical resources to implement and maintain the proposed system. This evaluation examines hardware, software, network infrastructure, and technical expertise requirements.  Technical feasibility analysis should address:   * Whether the company has necessary hardware, software, and network resources * If the organization possesses required technical expertise or needs to acquire it * Whether the proposed platform has sufficient capacity for future needs * If prototype development will be necessary to test technical viability   **Economic Feasibility**  Economic feasibility determines whether the projected benefits of the proposed system outweigh its total cost of ownership (TCO). This analysis requires comprehensive cost evaluation of:   * Personnel costs (IT staff and users) * Hardware and equipment * Software licenses and development * Formal and informal training * Licenses and fees * Consulting expenses * Facility costs   Economic analysis distinguishes between tangible costs (measurable in dollars) and intangible costs that affect organizational performance. Similarly, benefits may be tangible (decreased expenses or increased revenues) or intangible (improved customer satisfaction, better information quality).  **Schedule Feasibility**  Schedule feasibility evaluates whether a project can be implemented within an acceptable timeframe. This assessment considers various factors that might affect project timing:   * The interaction between time constraints and costs * Whether the company or IT team can control factors affecting the schedule * If management has established firm completion deadlines * What conditions must be satisfied during system development * Whether an accelerated schedule poses implementation risks   Each feasibility type contributes essential perspectives to the overall project evaluation, helping organizations make informed decisions about which systems initiatives to pursue. |

1. Describe the six steps in a typical preliminary investigation. Why should an analyst be careful when using the word “*problem”*?

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| **Preliminary Investigation Process:**  **Six Steps in a Preliminary Investigation**  The preliminary investigation serves as the initial phase of systems analysis, designed to thoroughly evaluate systems requests before committing significant resources. The process consists of six main steps:   1. **Understand the problem or opportunity**: This step involves developing a business profile describing current processes and functions, understanding how modifications will affect business operations and other systems, identifying departments and users involved, and potentially using tools like fishbone diagrams to analyze issues. 2. **Define the project scope and constraints**: The analyst must define specific boundaries of the project and identify constraints that will impact development. Project scope can be clarified by creating categorized lists of requirements (must do, should do, could do, won't do) to prevent scope creep - the gradual, unauthorized expansion of project boundaries. 3. **Perform fact-finding**: This critical step involves gathering data about project usability, costs, benefits, and schedules through multiple methods. Analysts typically analyze organization charts, conduct interviews, review documentation, observe operations, and conduct user surveys. The collected data can then be analyzed using tools like Pareto charts and XY charts to identify patterns and correlations. 4. **Analyze project usability, cost, benefit, and schedule data**: Analysts must consider various factors including what information must be obtained and how it will be gathered and analyzed, who will conduct interviews and how many people will be interviewed, whether surveys will be conducted and how results will be tabulated, and the costs of analyzing information and preparing recommendations. 5. **Evaluate feasibility**: Using the gathered information, the analyst evaluates the operational, technical, economic, and schedule feasibility of the proposed system. 6. **Present results and recommendations to management**: Finally, the analyst prepares a comprehensive report including an evaluation of the systems request, cost and benefit estimates, a case for action, and recommendations for next steps.   **Caution with the Word "Problem"**  Analysts should be careful when using the word "problem" because it can create a negative tone and potentially make stakeholders defensive about current processes or systems they may have developed or maintained. The preliminary investigation guidelines specifically advise analysts to "focus on improvements and enhancements, not problems" when interacting with managers and users.  Framing discussions in terms of opportunities for improvement rather than problems creates a more collaborative atmosphere where stakeholders feel valued rather than criticized. This approach helps gain support for the project and encourages more open sharing of information, which is vital for a successful systems development effort. |

1. What is project scope? What are constraints? Provide an example of a mandatory, external, future constraint. Also provide an example of a discretionary, internal, present constraint.

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| **Project Scope and Constraints:**  **Project Scope Definition**  Project scope defines the specific boundaries or extent of a project. It establishes clear parameters for what will and will not be included in the system development effort. A well-defined scope helps prevent project creep - the gradual expansion of project boundaries without formal authorization, which can lead to schedule delays, cost overruns, and resource problems.  An effective approach to defining project scope is creating categorized lists that specify:   * Must do: Essential requirements that the system absolutely must fulfill * Should do: Important features that should be included if possible * Could do: Desirable features that could be included if time and resources permit * Won't do: Features explicitly excluded from the current project   **Constraints Definition and Examples**  Constraints are requirements or conditions that the system must satisfy or outcomes that the system must achieve. They represent limitations that will impact the development process and final system. Constraints can be categorized by:   * Timing: Present, future * Type: Internal, external * Urgency: Mandatory, discretionary   **Example of a mandatory, external, future constraint**: A new government regulatory requirement taking effect next year mandates that all healthcare systems implement enhanced patient data privacy controls following specific technical standards. This constraint is:   * Mandatory because compliance is legally required * External because it originates from government regulation outside the organization * Future because the requirement will take effect at a specified future date   **Example of a discretionary, internal, present constraint**: The organization's current policy limits IT project team sizes to no more than five full-time staff members to ensure adequate resources for other concurrent initiatives. This constraint is:   * Discretionary because management could potentially modify this limitation * Internal because it stems from organizational policy rather than external factors * Present because it applies to current projects immediately   Understanding and documenting these constraints early in the project helps establish realistic expectations and guides decision-making throughout the development process. |

1. Identify and briefly describe five common fact-finding methods.

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| **Fact-Finding Methods:**  Fact-finding is a critical component of systems analysis that allows analysts to gather the information necessary to understand current systems, identify requirements, and evaluate potential solutions. Five common fact-finding methods include:  **Analyzing Organization Charts**  Organization charts provide valuable insights into the formal structure of the business, reporting relationships, departmental boundaries, and areas of responsibility. Analyzing these charts helps analysts understand:   * The communication pathways within the organization * Which departments and individuals will be affected by the proposed system * Who has decision-making authority for different aspects of the project * How information flows through the organizational hierarchy   **Reviewing Documentation**  Documentation review involves examining existing system documentation, user manuals, reports, forms, and other written materials. This method helps the analyst understand:   * Current business processes and data flows * Existing system functionality and limitations * Information requirements already identified * Historical context for why systems evolved as they did * Standards and procedures currently in place   **Conducting Interviews**  Interviews involve direct conversations with key stakeholders, including managers, users, and IT staff. This method provides in-depth information about:   * How current systems are used in practice * Pain points and improvement opportunities * Requirements and expectations for new systems * Potential resistance to change * Ideas and suggestions based on user experience   **Observing Operations**  Direct observation involves watching users perform their tasks in their normal work environment. This method reveals:   * How processes actually function (which may differ from documented procedures) * Inefficiencies and bottlenecks in current workflows * User interactions with existing systems * Environmental factors that might affect system implementation * Undocumented workarounds users have developed   **Conducting User Surveys**  Surveys allow analysts to collect structured information from a larger group of users through questionnaires or online forms. This method provides:   * Quantifiable data about user experiences and preferences * Broader representation of stakeholder perspectives * Validation of information gathered through other methods * Statistical evidence to support recommendations * Documentation of user requirements and priorities   Each fact-finding method offers distinct advantages, and analysts typically use a combination of approaches to develop a comprehensive understanding of the current situation and requirements for the new system. |

1. What is a fishbone diagram, and why would you use one? Think of a problem you have experienced at school or work and draw a sample fishbone diagram with at least two levels.

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| **Fishbone Diagrams:**  **Definition and Purpose**  A fishbone diagram (also known as an Ishikawa diagram or cause-and-effect diagram) is a visual tool that displays the potential causes of a specific problem or effect. The diagram resembles a fish skeleton, with the problem statement positioned at the "head" and potential causes extending as "bones" from the central "spine."  Fishbone diagrams are used to:   * Identify possible causes of problems rather than just symptoms * Organize causes into logical categories * Encourage thorough analysis by allowing multiple levels of detail * Provide a structured approach to problem-solving * Facilitate group discussions about problem causes   The fishbone structure helps analysts dig deeper to identify root causes that might otherwise be overlooked, enabling more effective and sustainable solutions.  **Sample Fishbone Diagram from an project office-**  Missed Project Deadlines  ||  -----------------------------------------------------------------------------------------------  | | | | | |  People Process Tools Environment Management Time  | | | | | |  - Lack of - Poor task - Outdated - Noisy work - Unrealistic - Poor time  training tracking software environment deadlines estimates  - Low system - No access - Remote team - Poor planning - Frequent  motivation - No clear to tools disconnect & scheduling meetings  workflow - Slow PCs |