NEEDS ASSESSMENT

SWOT – An analysis of strengths, weaknesses, opportunities, and threats for understanding high-level views concerning a business need. SWOT analysis may be used for understanding organizational strengths and weaknesses (focused inwardly or internally) and opportunities and threats (focused outwardly or externally). A SWOT analysis can help with mitigating problems.

Decision Analysis – A group of techniques providing a basis for structured, analytical decision making. Examples are Decision Trees and Decision Tables which depict a series of decisions and their outcomes. Decision trees work best with binary choices such as yes or no, while decision tables can be used when more choices exist and analysis becomes complex.

GAP Analysis – Compares the current assessment of organizational capability against a future desired state, resulting in the "to be" solution state.

Benchmarking – Provides insight into how other organizations are responding to the same challenges experienced by the organization performing the analysis. This is a way for identifying best practices, generating improvement ideas and providing a basis for measuring performance.

Value Stream Mapping – Shows the worth, importance or usefulness of the activities required for delivering a product or service.

MANAGEMENT PLANNING

Stakeholder Register – Identifies and analyzes the stakeholders who will have a role in the requirements process. Mind Mapping™ is a related technique which can assist with characterizing and analyzing stakeholders.

RACI - Also known as ACRI and RASCI, this is way for ensuring clear roles, responsibilities and accountabilities while designating a single primary contact for each task. Implementing a RACI matrix is a technique for grouping stakeholders.

R denotes **Responsible**, indicating the person performing the work.

A denotes **Accountable**, indicating the person approving the work.

S, which is sometimes used, denotes **Supportive** and is the person who is assigned to support another role.

C denotes **Consulted**, indicating those to be consulted for input who are often Subject Matter Experts or SMEs.

I denotes **Informed** and is the person or group to be apprised of the progress.

Project Artifacts – Matter describing the project's requirements, such as the project scope statement, project charter and project objectives. The artifacts are progressively elaborated.

MANAGEMENT PLANNING CONT'D

Organizational Standards – Established organizational standards, templates, process documents, operating procedures and tools. For example, an organization may subscribe to a certain type of Agile process. Investigating whether organizational standards exist can save considerable time by foregoing the development of tools and templates that already exist, and avoiding re-work.

Requirements Management Plan - Describes how requirements activities will be planned and managed. The plan can include how requirements are to be developed, tracked, managed, validated and reported, and the requirements communication and authorization process. Once the plan is complete, the plan should be reviewed with key stakeholders and presented to the sponsor for approval. Approval may be formal or informal depending on the agreed-upon process. Once approved, the plan may be updated throughout the requirements process.

ELICITATION

Brainstorming – A group technique used to generate multiple ideas related to a particular subject. Similar techniques include the nominal group technique, mind-mapping, affinity diagrams and multi-criteria decision analysis.

Document Analysis – The inspection of a wide range of materials such as strategic business plans, regulations, and process flows to gain an understanding for a good starting point for eliciting relevant product details. Current, accurate documentation is helpful for safeguarding against erroneous information.

Facilitated Workshops – Interactive workshops held for identifying requirements, often where resolving conflict and reaching consensus is needed.

Focus Groups - A way of gaining qualitative feedback whereby prequalified participants such as subject matter experts (SMEs) are assembled in a group setting for sharing their attitudes and expectations about a particular product or service.

Interface Analysis – This method is useful for identifying additional stakeholders who may be affected by system interface changes or interoperability issues. Interface analysis is used to define requirements by examining system interactions between users, processes and other system components.

ELICITATION CONT'D

Interviews – A methodical approach used to elicit stakeholder information by asking relevant questions and documenting responses. Questions are posed to participants for identifying functions and capabilities that should exist in the end product, service or result. Interviews may be structured, or unstructured and may include open-ended or closed-ended questions. User stories and use cases may be elicited via interviews.

Observation – Also known as "job shadowing," observation provides a direct way of viewing people in their environment to analyze how they perform their jobs and execute processes within their environment. Observation is often used for eliciting tacit requirements that may be difficult or impossible to verbalize.

Prototypes – Prototyping is a way for obtaining early requirements feedback by providing a working model of the expected product prior to actual development. The model is then used to progressively refine requirements as stakeholders test, experiment and provide feedback. A wireframe is a type of prototyping whereby "mock-up" visual computer screen displays are asserted and progressively elaborated.

Questionnaires/Surveys - These are used for quickly soliciting and obtaining information from a large number of users. These are most effective when quick responses are needed and stakeholders are geographically dispersed. Closed-ended questionnaires provide the respondent with a predefined list of responses from which to choose while open-ended questions allow the respondent to answer questions in their own words.

ANALYSIS

Backlog Management – In Agile, user stories populate a backlog and are used as a basis for prioritizing development. As user stories get closer to the top of the backlog, they are elaborated and refined using relevant modeling techniques for generating enough detail for development. This process is known as "grooming the backlog."

Modeling – Models are used for determining what is important and valuable so the right requirements are created. Model categories, defined by the information conveyed, include **Function**, **Interface**, **Process**, **Rule**, and **Scope** models. **Scope** models include **Context Diagrams**, **Ecosystem Maps**, **Use Case Diagrams**, **Feature Models** and **Goal Models**. **Scope** models are used for identifying boundaries and express the features, functions, capabilities and boundaries of the domain being analyzed. **Function** models reveal what is required to be done, as opposed to **Process** models which describe a process. **Function** models, which include **Functional Decomposition Models**, and **Feature Tree Models** can be used for assessing cost, performance, roles and risk dimensions which aid in the selection of specific functions for improvement.

ANALYSIS CONT'D

Modeling Cont'd - Use Cases and **User Stories** are examples of **Process** models. **Use Cases** describe a system's behavior from the user's perspective and provide a high-level view of intended functionality. **User Stories** can be used to manage, prioritize, trace and allocate functionality and are statements in everyday language from the user's viewpoint. **Rule** models document policies, rules and decisions that are required to be adhered to by the solution. A **Business Rule Catalog** is a repository of business rules and related attributes which define the guidelines and standards influencing solution behavior. Business rules are generally documented in a type of computation, fact or constraint and should be defined during elicitation and analysis because they could lead to functional requirements that exist for supporting business rules. **Decision Trees** and **Decision Tables** document a series of decisions and their associated outcomes, and are used for representing complex business rules including possible conditions and actions. **Interface** models document the relationships and interactions among systems and/or users within a solution. **Report Tables**, **System Interface Tables**, **User Interface Flow**, **Display-Action-Response (DAR)** and **N2 Diagrams** are common interface models. An **N2 Diagram**, used for identifying and tracing requirements affecting more than one part of a system, is represented in tabular format and used to identify and represent interfaces among system elements.

ANALYSIS CONT'D

Modeling Cont'd - Data models describe the system's specific information needs and the transition of this information throughout its lifecycle. Showing the relationships between data and processes provides additional details needed to extract requirements and related business rules. An **Entity Relationship Diagram**, also known as a **Business Data Diagram**, shows the data objects involved and the relationships between the objects including cardinality. A **Data Dictionary** provides a description of the fields, attributes and properties defining relevant data objects. A **Data Flow Diagram** portrays the movement of data through a system and how the data is manipulated, to include showing where information is stored. **RML**, **Requirements Modeling Language**, **UML**, **Unified Modeling Language**, **BPMN**, **Business Processing Modeling Notation** and **SysML**, **System Modeling Language** are additional modeling techniques.

MoSCoW – Establishes requirement priorities by categorizing requirements by must have, should have, won't have and could have.

Timeboxing – Assessing and establishing with participants the period of time required for a defined activity or deliverable.

MONITORING & CONTROLLING

Change Control Boards - Often referred to as CCB, or sometimes RCB (Release Control Board), this is a formally chartered group of stakeholders responsible for reviewing, evaluating, approving, delaying, or rejecting project changes in addition to recording and communicating these decisions. Some projects forego using a CCB.

Dependency Analysis – Requirements sometimes relate to other requirements and therefore sometimes satisfying a requirement depends on another requirement being present. Dependency Analysis discovers dependent relationships, and are often illustrated using traceability trees.

Impact Analysis – Impact analysis assesses proposed requirements changes including identifying risks associated with a change, work required for the change, schedule and cost implications. Additionally, the effect the requirement change has on value is an important consideration.

Traceability Matrix – A grid linking requirements from their origin to the deliverables satisfying the requirements. The matrix provides a structure for managing changes while supporting the goal that each requirement adds value by linking it to the business and project objectives and helping ensure approved requirements are delivered.

SOLUTION EVALUATION

Examination – **Testing** and **Demonstration** are two techniques used with examination. **Testing** includes either Exploratory or User Acceptance Testing for validating that the solution meets the defined acceptance criteria. With **Demonstration**, stakeholders examine the solution, generally by operating, to show whether the solution meets is intended function(s).

Checklists – Stakeholder input is solicited by providing a list of features and functions for stakeholders to check against the developed solution for validating the product contains the desired features and functions.

Delphi – Experts participate in an anonymous review, while a facilitator uses a questionnaire to solicit feedback on the developed solution. The facilitator summarizes responses and then recirculates them for further comment. Delphi reduces data bias while preventing any one person from having undue influence on the overall outcome.