Requirements Prioritization

Essential Concepts

Prioritization Techniques

Pareto Analysis
Upon conclusion of this module, participants will be able to:
- understand the purpose of requirements prioritization
- list the different types of information that must be prioritized
- describe the BABOK Version 2.0 requirements types
What Is Requirements Prioritization?

• Requirements prioritization is the process of managing the relative importance and urgency of different requirements to cope with the limited resources of projects.

• Adequate prioritization ensures that the most critical requirements are addressed immediately in case time or budget run out.

Purpose of Requirements Prioritization

“Requirements do not all deliver the same value to stakeholders. Requirements prioritization focuses effort on determining which requirements should be investigated first, based on the risk associated with them, the cost to deliver them, the benefits they will produce, or other factors. Timelines, dependencies, resource constraints, and other factors influence how requirements are prioritized.”

BABOK Version 2.0, Section 2.5.4.3
GOALS OF REQUIREMENTS PRIORITIZATION

• The main goals of requirements prioritization are to:
  ▪ ensure that project resources are focused on those requirements that yield the most benefit
  ▪ mitigate risk in developing solutions that allow the organization to achieve its business objectives
  ▪ drive consensus among stakeholders as to which requirements best meet business need

SOLUTIONS VERSUS PROJECT VERSUS SYSTEMS

• A solution may be a system or another means by which the business can address its needs.

• An information system solution is a combination of:
  ▪ People
  ▪ Processes
  ▪ Products/Applications

• An information system product (or application) is built through one or more projects.
**WORKSHOP ACTIVITY**

<table>
<thead>
<tr>
<th>Format:</th>
<th>Groups of 3-4 participants.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal:</td>
<td>Identify top five challenges currently faced when performing vendor assessment.</td>
</tr>
<tr>
<td>Materials:</td>
<td>Flipchart or whiteboard</td>
</tr>
<tr>
<td>Instructions:</td>
<td>Using multi-voting, identify the top five challenges faced by members of the work group when prioritizing requirements:</td>
</tr>
<tr>
<td></td>
<td>• How do you currently prioritize requirements?</td>
</tr>
<tr>
<td></td>
<td>• What techniques do you use?</td>
</tr>
<tr>
<td></td>
<td>• What scale do you use?</td>
</tr>
<tr>
<td></td>
<td>• When do you prioritize requirements?</td>
</tr>
</tbody>
</table>

**REQUIREMENTS MANAGEMENT PLAN**

- The *Requirements Management Plan (RMP)* specifies how, when, and by whom requirements are prioritized.
- Requirements may be prioritized at any time during a project and may have to be re-prioritized periodically as needs change.
- Prioritization requires that the requirements have been stated, but not necessarily fully analyzed.
- The RMP defines the process used to prioritize requirements.
Requirements Prioritization

Requirement: Definition

- A requirement is simply a feature that a product or service must have.
- The BABOK Version 2.0 defines a requirement as:
  - “A condition or capability needed by a user to solve a problem or achieve an objective.”
  - “A condition or capability that must be met or possessed by a system or system component to satisfy a contract, standard, specification, or other formally imposed document.”
- Scope refers to those requirements which have been selected to be addressed in a project.

MediTrax: A State-of-the-Art Prescription Management System for Wellcare Health Management

By Martin Schedlbauer, Ph.D.

Wellcare Health Management (WHM) has grown to 11 community hospitals and health centers in greater Springfield and Worcester, Massachusetts. In its early days of inception in the mid 1990s, WHM invested heavily in information technology to keep its operating costs low. In fact, WHM was an early adopter of electronic records and automatic prescription management. Nonetheless, its IT infrastructure is aging and needs significant updates to keep pace with the changes mandated by looming federal regulations in connection with the Affordable Care Act (ACA).

Prescriptions and drug interaction management is a key concern for WHM. A key application is the prescription management system. Unfortunately, its architecture is no longer compatible with many pharmacies and is in dire need of a complete overhaul. The CIO of WHM, Lesley McCormack, has tasked the Business Analysis team to define and prioritize the requirements for a new state-of-the-art prescription management system. A decision whether to build or buy has not yet been made. There are numerous offerings from companies, such as Medco, under consideration. Nevertheless, the requirements needs to be defined first followed by a gap analysis of the vendor offerings and the current system.
**Requirements, Assumptions, Constraints**

Adapted from BABOK v2.0 Section 1.3.3.1

**Requirement Type: Business**

*Requirement Type:* Business

*Definition:* Describes the needs and objectives of the organization and why some project has been initiated. They describe *WHAT* the business is trying to achieve and *WHY* it is important.

*Discovered Through:* Enterprise Analysis

*Preferred Format:* **SMART** benefit statements specifying metrics that will be used to gauge success.

*Examples:*
- *Reduce incidents of adverse drug interaction by 30% within the next twelve months.*
- *Lower the average cost of prescriptions by 15% within 6 months by substituting generics or alternative medicines.*
- *Require all hospitals and health centers to use the prescription management system exclusively for all prescriptions.*
### REQUIREMENT TYPE: STAKEHOLDER

<table>
<thead>
<tr>
<th>Requirement Type:</th>
<th>Stakeholder</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Definition:</strong></td>
<td>Describes the needs of specific stakeholders and <em>WHAT</em> they need from the solution. They serve as a bridge between business and solution requirements. Regulatory bodies are recognized stakeholders who are often represented by proxy.</td>
</tr>
<tr>
<td><strong>Discovered Through:</strong></td>
<td>Requirements Analysis</td>
</tr>
<tr>
<td><strong>Preferred Format:</strong></td>
<td>Use Cases or User Stories</td>
</tr>
<tr>
<td><strong>Examples:</strong></td>
<td></td>
</tr>
<tr>
<td>• (as a use case) Physician writes prescription</td>
<td></td>
</tr>
<tr>
<td>• (as a use case) Physician checks interaction of prescribed drug with other drugs that have been prescribed previously.</td>
<td></td>
</tr>
<tr>
<td>• (as a user story) As a physician, I want to check if the drug I am prescribing has side effects so that I can alert my patient.</td>
<td></td>
</tr>
<tr>
<td>• (as a regulation) The FDA requires compliance with standard CFR 21 Part 11.</td>
<td></td>
</tr>
</tbody>
</table>

### REQUIREMENT TYPE: FUNCTIONAL SOLUTION

<table>
<thead>
<tr>
<th>Requirement Type:</th>
<th>Functional Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Definition:</strong></td>
<td>Describes the external behavior of the solution and the information that it manages.</td>
</tr>
<tr>
<td><strong>Discovered Through:</strong></td>
<td>Requirements Analysis</td>
</tr>
<tr>
<td><strong>Preferred Format:</strong></td>
<td>Narrative statements or steps in a use case scenario. Screen or report mockups.</td>
</tr>
<tr>
<td><strong>Examples:</strong></td>
<td></td>
</tr>
<tr>
<td>• The system shall list the side effects by order of probability of occurrence.</td>
<td></td>
</tr>
<tr>
<td>• The system shall allow the patient to list the pharmacy to which the prescription will be sent.</td>
<td></td>
</tr>
<tr>
<td>• The system shall transmit prescriptions using the SCRIPT format.</td>
<td></td>
</tr>
</tbody>
</table>
## REQUIREMENT TYPE: NON-FUNCTIONAL

**Requirement Type:** Non-Functional Solution  
**Definition:** Describes quality of service requirements and environmental conditions under which the solutions must remain effective. Includes requirements relating to performance, response time, security, usability, compatibility, availability, and reliability, among others.  
**Discovered Through:** Requirements Analysis  
**Preferred Format:** Narrative statements.  
**Examples:**  
- The system shall be available from 2am through midnight 99% of the time.  
- The system shall not display any patient identifying information except the patient’s name and insurance information on any printed prescription.  
- The system shall list drug side effects and contraindications within 2 seconds after a drug has been selected 90% of the time.

## REQUIREMENT TYPE: TRANSITION

**Requirement Type:** Transition  
**Definition:** Describes the capabilities that the solution must have to ease transition from the current state to the future state. Includes data conversion requirements and ways to bridge skill gaps.  
**Discovered Through:** Solution Assessment and Validation  
**Preferred Format:** Narrative statements.  
**Examples:**  
- Send a memo to all physicians informing them that all prescriptions must be electronic.  
- Inform patients that they must provide the name and address of the pharmacy to which they want prescription to be sent.  
- Enter the addresses of all Walgreen’s, CVS, and RiteAid pharmacies into the database.
### PLUS: ASSUMPTIONS

<table>
<thead>
<tr>
<th>Artifact</th>
<th>Assumption</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Definition:</strong></td>
<td>Describes an understanding that is taken as true without concrete proof.</td>
</tr>
<tr>
<td><strong>Discovered Through:</strong></td>
<td>Requirements Analysis</td>
</tr>
<tr>
<td><strong>Preferred Format:</strong></td>
<td>Narrative statements.</td>
</tr>
<tr>
<td><strong>Examples:</strong></td>
<td>• Patients have access to a pharmacy that accepts electronic prescriptions.</td>
</tr>
<tr>
<td></td>
<td>• Pharmacies accept the SCRIPT format.</td>
</tr>
</tbody>
</table>

### PLUS: CONSTRAINTS

<table>
<thead>
<tr>
<th>Artifact</th>
<th>Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Definition:</strong></td>
<td>Describes a limitation or restriction on the solution.</td>
</tr>
<tr>
<td><strong>Discovered Through:</strong></td>
<td>Requirements Analysis</td>
</tr>
<tr>
<td><strong>Preferred Format:</strong></td>
<td>Narrative statements.</td>
</tr>
<tr>
<td><strong>Examples:</strong></td>
<td>• The solution must be operable by the end of the fiscal year.</td>
</tr>
<tr>
<td></td>
<td>• The solution must be compliant with the regulations of the ACA.</td>
</tr>
</tbody>
</table>
**REQUIREMENTS ARE NOT RULES**

- Often analysts and domain experts confuse requirements with rules.
- Rules are policies and guidelines by which the business operates:
  - independent of any system
  - specified by the business for the business
- Example of business rules:
  - Patients may not receive any samples of medications.
  - The prescribing physician must be licensed in the state in which the prescription is filled.

**COMMON STAKEHOLDER OBJECTION**

- Do I really have to prioritize the requirements? All of them are really important to us?
COMMON STAKEHOLDER OBJECTION

• Do I really have to prioritize the requirements? All of them are really important to us?

• No! You don’t have to prioritize requirements as long as you have unlimited time and resources.

WHY PRIORITIZE?

• All projects are subject to resource constraints:
  • staff, financial, time, quality

• Prioritization is a way of dealing with the economics of projects:
  • how do we allocate limited resources to maximize benefit?
WHO PRIORITIZES?

- Prioritization must be done
  - in collaboration with the stakeholders (customer, product owner, project sponsor, users)
  - as early as possible so that alternate arrangements can be made
- Developers and customers must work together as they often have conflicting views and needs.

COMMON TRAP

- A common trap is to let the customers choose the priorities without any guidance.
- In those situations, the customers likely tag most requirements as being critical with only a few as being important but less than critical.
- The business analyst must guide the customer through the prioritization process.
PRIORITIZATION GUIDANCE

- The BA should challenge the customer:
  - what are the consequences to the business objectives if this requirement were omitted?
  - is there an existing system or manual process that could compensate?
  - why can't this requirement be deferred to the next release?
  - what business risk is being introduced if a particular requirement cannot be implemented right away?

SUMMARY

- An effective vendor assessment is essential in reducing the risk of engaging an external vendor to complete components of a solution.
- A successful vendor selection is one where the organization and the vendor enter a long-term partnership that satisfies both sides.
- Vendor assessment is time-consuming particularly if quantitative measures are employed.
Upon conclusion of this module, participants will be able to:

- list the most common requirements prioritization strategies for scope definition and scheduling the order of implementation
- apply the requirements prioritization process
- distinguish between different prioritization scales
PRIORITIZATION GOALS

• Prioritization is done for two somewhat distinct purposes:
   defining scope
     is a requirement in scope or out of scope
   scheduling implementation
     should the requirement be addressed early in the project or can it be deferred towards the end
     essentially determines the order of implementation

NECESSITY VERSUS URGENCY

• Encourage stakeholders to evaluate each requirement along two dimensions:
   necessity and urgency of implementation
• While it may seem that they are both the same, they are not.

<table>
<thead>
<tr>
<th>Necessity</th>
<th>Critical</th>
<th>Desirable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urgent</td>
<td>High Priority</td>
<td>Low Priority</td>
</tr>
<tr>
<td>Deferrable</td>
<td>Medium Priority</td>
<td>Ignore</td>
</tr>
</tbody>
</table>
**PRIORITIZATION PROCESS**

- Identify Requirements
- Determine Scope
- Determine Schedule and Order of Implementation

**PRIORITIZATION STRATEGIES**

**Scoping**
- Objective Alignment
- Five-Whys
- MoSCoW
- Time-Boxing
- Risk-Based Ranking
- Pareto Analysis

**Ordering**
- Subjective Ranking
- Group-Based Ranking
- Limited Votes
- Pain Ranking
- Pair-Wise Comparison
- Value-Based Ranking
**STRATEGY: OBJECTIVE ALIGNMENT**

- Objective Alignment is a scope delineation strategy.

- Prioritization Process:
  - Define the business requirements (objectives) for the project
  - For each identified stakeholder requirement, determine if its implementation is necessary to achieve an objective
  - For each identified functional requirements, determine if its implementation is necessary to satisfy a stakeholder requirement and consequently an objective
  - Exclude requirements that are not necessary

**OBJECTIVE ALIGNMENT IS TRACEABILITY**

- Objective Alignment basically establishes traceability between lower level requirements and business objectives.

- A lower level requirement that cannot be traced back to a higher level objective should not be included in the scope of the project.

- If a requirement is nevertheless deemed critical then the scope and objectives of the project may not be defined properly and should be revisited.
EXAMPLE: OBJECTIVE ALIGNMENT

• Business Objective/Business Requirement:
  ▪ Reduce incidents of adverse drug interaction by 30% within the next twelve months.

• Identified stakeholder requirement:
  ▪ Physician must be able to check interaction of prescribed drug with other drugs that have been prescribed previously.

• Alignment question:
  ▪ Can the business requirement be achieved without implementing the stakeholder requirement?

STRATEGY: FIVE WHYS

• Five Whys is a scope delineation strategy.
• For each identified requirement, the BA asks the stakeholder about five times why the requirement is necessary.
• This tends to surface requirements that are “personal” rather than traceable to a business need.
• Similar to the 5-why technique used in root-cause analysis.
EXAMPLE: 5-WHYS

• Identified stakeholder requirement:
  • Physician must be able to check interaction of prescribed drug with other drugs that have been prescribed previously.

• Questions asked by BA:
  • BA: Why do you need to check for drug interactions?
  • Stakeholder: Because some drugs might cause adverse reactions.
  • BA: Why would that be important?
  • Stakeholder: Because that could cause problems for the patient.
  • BA: Why would we care if that causes problems?
  • …

STRATEGY: MoSCoW

• The MoSCoW Technique assigns priorities in a collaborative workshop with stakeholders.

• It is a triage technique that helps define scope.

• Stakeholders categorize requirements as a Must, Should, Could, or Won’t.

• Only the Must and a few Should are part of the scope.

• Stakeholders must understand what each category means.
**MOSCOW CATEGORY VALUES**

<table>
<thead>
<tr>
<th>Priority Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUST (M)</td>
<td>The requirement <strong>must</strong> be implemented in order for the final solution to be acceptable.</td>
</tr>
<tr>
<td>SHOULD (S)</td>
<td>While workarounds are available, the requirement <strong>should</strong> be included in scope if time, budget, and technical constraints permit.</td>
</tr>
<tr>
<td>COULD (C)</td>
<td>The requirement <strong>could</strong> enhance the value of the system and provide a useful feature but only if resources are available. Such a requirement is often deferrable to the next release.</td>
</tr>
<tr>
<td>WON'T (W)</td>
<td>A requirement that has been specifically excluded from the scope and <strong>won't</strong> be implemented in this release.</td>
</tr>
</tbody>
</table>

**STRATEGY: TIME-BOXING**

- Time-boxing is primarily a scoping strategy, but also has the benefit of scheduling implementation.
- The strategy works only in iterative and agile project lifecycles where a project is implemented in short spurts (iterations or sprints).
- Each iteration is “time boxed” to last a short and fixed amount of time, e.g., 3 weeks.
**TIME-BOXING PROCESS**

1. Define the requirements and place them into a “backlog” of requirements.

2. At the beginning of an iteration, ask stakeholders and developers to collaboratively choose which requirements to work on based on team capacity.\(^1\)

3. The stakeholders tend to select the most critical requirements which are now part of the scope.

4. Any requirements that could not be completed within the iteration are returned to the backlog.

5. Any new requirements discovered during the review at the end of the iteration are added to the backlog.

\(^1\)Capacity is commonly measured in “story points” or “use case points”, but that is beyond the scope of this course. Suffice it to say that capacity is limited for an iteration.

**STRATEGY: RISK-BASED RANKING**

- Risk-based ranking is both a scope delineation as well as a scheduling technique.

- Each requirement is evaluated to determine if it addresses and identified risk.

- Requirements that eliminate or mitigate a significant risk, i.e., one with a high risk score, are included in the scope and addressed early in the project.

- This strategy works best with regulatory compliance requirements.
**STRATEGY: SUBJECTIVE RANKING**

- Subjective Ranking is a scheduling strategy in which each stakeholder assigns a priority value from a scale.
- This strategy can often lead to conflicting priorities.
- All stakeholders’ priority assignments have the same weight.
- Once the requirements are prioritized, the list is ordered and implementation starts with the most important ones.

**CATEGORICAL SCALE**

- high, medium, low
- critical, important, desirable
- must, should, could, won’t

**LINEAR NUMERIC SCALE**

- range of numeric values
- 1 – 10 or 1 – 100

**NON-LINEAR NUMERIC SCALE**

- Modified Fibonacci (MFS) : 1, 2, 3, 5, 8, 13, 20, 40, 80
- Power Scale: 1, 2, 4, 8, 16, 32, 64, 128, 256

(c) 2013 The Cathris Group
SEMANTICS OF VALUES

- Stakeholders must agree on the semantics of the priority values in order to rate the requirements consistently.

<table>
<thead>
<tr>
<th>Priority</th>
<th>Semantics</th>
</tr>
</thead>
<tbody>
<tr>
<td>High/Critical</td>
<td>A critical requirement without which the product is not acceptable to the stakeholders.</td>
</tr>
<tr>
<td>Medium/Important</td>
<td>A necessary but deferrable requirement which makes the product less usable but still functional.</td>
</tr>
<tr>
<td>Low/Desirable</td>
<td>A nice feature to have if there are resources but the product functions well without it.</td>
</tr>
</tbody>
</table>

WORKSHOP ACTIVITY

Format: Groups of 3-4 participants.
Goal: Evaluate different priority scales.
Materials: Flipchart or whiteboard
Instructions: Which priority scale might be most useful? How do they differ and when might one be better than another? Which one(s) have you used and how did it work?
**EXAMPLE: SUBJECTIVE RANKING**

- **Functional solution requirement:**
  - Physician checks interaction of prescribed drug with other drugs that have been prescribed previously.

- **Rating on different scales:**
  - High
  - Critical
  - Must
  - 80
  - 9
  - 40 on MFS
  - 128 on Power Scale

**STRATEGY: GROUP-BASED RANKING**

- Similar to Subjective Ranking, but priority estimates from stakeholders are averaged.

- To increase accuracy and expose hidden assumptions, apply a group estimation technique, such as *Delphi* or *Planning Poker*.

- Uses the same scales as in Subjective Ranking.
GROUP ESTIMATION TECHNIQUES

- Estimates are improved through the use of planning sessions where priority estimates are elicited from all stakeholders:
  - Planning Poker
  - Delphi
- Estimates are initially provided anonymously and then the team discusses the estimates
- After discussion, a new set of estimates is provided and then averaged

EXAMPLE: DELPHI ESTIMATE WITH MFS

Requirement to prioritize: Mark drug interactions on prescription in bold

20 + 20 + 13 = 33

18

20

13
DELPHI AND PLANNING POKER PROCESSES

- Present requirement to be estimated
- Estimate
- Discuss estimates as a group with focus on highest and lowest estimates
- Reflect
- Merge
- Reach consensus or average estimates

STRATEGY: LIMITED VOTES

- Limited Votes is a scheduling strategy that forces reluctant stakeholders to make decisions.
- Each stakeholder gets a limited number of votes that can be assigned to any of the identified requirements.
- Multiple votes per requirement are allowed.
- The key is to provide each stakeholder with fewer votes than there are requirements.
- Some key stakeholders may be awarded additional votes, e.g., sponsor or CIO.
SIDEBAR: HORSE TRADING?

• Should votes be tradable among stakeholders? In other words, should one stakeholder be able to trade or even “sell” their votes to other stakeholders?

Discussion Questions…
• What would the effect of trading be?
• Wouldn’t that make votes almost like a “currency”?
• Should stakeholders be able to “buy” requirements?
• What about fractional votes?

STRATEGY: PAIN RANKING

• Pain Ranking is a scheduling strategy.
• This technique starts with a brainstorming session (gripe session) in which stakeholders express what they dislike about an existing system:
  • the system is too slow
  • I can't print out filled prescriptions in reverse order
• The gripes (or pain points) are ranked using multi-voting.
• Later, each identified requirement must be linked to help resolve a “pain point” and the rank of the pain point determines the priority of the requirement.
• If it can't resolve a pain point, the requirement has very low priority or may even be removed from scope.
**STRATEGY: PAIR-WISE COMPARISON**

- Pair-wise comparison forces a ranking of requirements, but it only appropriate for a small number of requirements.
- Works best for business and non-functional requirements that are often orthogonal.

**PAIR-WISE COMPARISON PROCESS**

- Convene a collaborative session with stakeholders and compare the requirements through a comparison matrix.
- Place the more important requirement into the cell.
- Count the number of times each requirement was preferred and rank them based on count.
EXAMPLE: PAIR-WISE COMPARISON

A. The project shall not exceed its budget
B. The system must be compliant with SCRIPT
C. The system must comply with the provisions of the ACA
D. The system shall allow importing of data from the current prescription system.

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Count</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>B</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>C</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>D</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>

STRATEGY: VALUE-BASED RANKING

- In this scheduling strategy, each requirement is evaluated along a number of dimensions.
- Each dimension is scored on a scale from 0 to 9.
- The scores are summed for a total score.
- The requirements are ranked from high to low score.
- Dimensions can be weighted when appropriate.

Adapted from the BABOK Version 2.0
## EXPLANATION OF DIMENSIONS

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Meaning/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Business Value (BV)</strong></td>
<td>Provides immediate business value, i.e., increases revenue or decreases expenses; improves market share or brand.</td>
</tr>
<tr>
<td><strong>Technical Risk (TR)</strong></td>
<td>Presents a technical risk that may cause project to fail; risky requirements should have a high priority and should be addressed early, so that alternative plans can be made should implementation fail</td>
</tr>
<tr>
<td><strong>Implementation Complexity (IC)</strong></td>
<td>Simple to implement requirements should have a higher priority as they may present &quot;quick wins&quot; and provide the implementation team an opportunity to familiarize themselves with the project and architecture.</td>
</tr>
<tr>
<td><strong>Likelihood of Success (LoS)</strong></td>
<td>Requirement is a “quick win” and addresses stakeholder concerns because it increases the likelihood of project success and acceptance.</td>
</tr>
<tr>
<td><strong>Regulatory Compliance (RC)</strong></td>
<td>Non-negotiable requirement that is needed for regulatory compliance and generally necessary to be completed by some specific date. May often take precedence over other stakeholder requirements.</td>
</tr>
<tr>
<td><strong>Relationship to other Objectives (OA)</strong></td>
<td>Requirement supports a business objectives or higher level requirement.</td>
</tr>
<tr>
<td><strong>Urgency (U)</strong></td>
<td>Requirement is urgently needed because of a deadline or unmovable date of installation. Regulatory requirements are often urgent, but also often deferrable.</td>
</tr>
</tbody>
</table>
EXPLANATION OF DIMENSIONS

<table>
<thead>
<tr>
<th>Frequency of Use (FoU)</th>
<th>A requirement that represents a feature that is more often needed or used should have a higher priority.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stakeholder Agreement/Consensus</strong> (SA)</td>
<td>Requirements to which stakeholders cannot agree or are contentious should have lower priority in relation to agreed upon requirements.</td>
</tr>
</tbody>
</table>

EXAMPLE: VALUE-BASED RANKING MATRIX

**Stakeholder Requirements (expressed as use cases):**
UC001: Physician must be able to write a prescription
UC002: Physician must be able to refill a prescription
UC003: Physician must be able to print history of prescriptions
UC004: Physician must be able to view drug side effects

<table>
<thead>
<tr>
<th>UC001</th>
<th>BV</th>
<th>TR</th>
<th>IC</th>
<th>LoS</th>
<th>RC</th>
<th>QA</th>
<th>U</th>
<th>FoU</th>
<th>SA</th>
<th>Score</th>
<th>Rank</th>
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<tbody>
<tr>
<td>9</td>
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Ranking Scale from 0 to 9, where 9 is highest priority/value
WORKSHOP ACTIVITY

Format: Groups of 3-4 participants.
Goal: Complete a value-based ranking matrix.
Materials: Flipchart or whiteboard
Instructions: Complete the value-based ranking matrix and rank the requirements.

REQUIREMENTS METRICS

• Determine the priority distribution to assure adequate prioritization.
• The distribution should be uniform.
**INADEQUATE PRIORITIZATION**

- The distribution below is not uniform enough and may point to inadequate prioritization efforts.

![Bar chart showing distribution of critical, important, and desirable requirements](chart)

**SUMMARY**

- The Business Analyst can leverage a variety of prioritization techniques to define scope and schedule of implementation.
- A combination of techniques is often required.
- Start by applying one or more scope delineation techniques followed by ranking the requirements found to be in scope to schedule order of implementation.
WORKSHOP ACTIVITY

Format: Groups of 3-4 participants.
Goal: Select prioritization techniques.
Materials: Flipchart or whiteboard
Instructions: Which prioritization techniques would you recommend for the MediTrax project? In what order should the techniques be applied?

PARETO ANALYSIS
LEARNING OBJECTIVES

• Upon completion of this module, participants will be able to:
  ▪ identify the most important requirements using Pareto Analysis
  ▪ build a Pareto Chart to visualize identify the most important requirements

PARETO ANALYSIS TO PRIORITIZE NEEDS

• **Prioritize Needs**: Not all needs or requirements are equally valuable to stakeholders.

• **Pareto Analysis is the "80/20 Rule"**: 
  ▪ 80% of the needs can likely be met by 20% of the requirements or product features

• As part of “gap analysis” determine which requirements or needs solve the majority of problem and which vendors meet those needs more completely.

• Use a scale to determine the level of conformance with each high priority feature that is needed.
**PARETO CHART**

- A Pareto Chart visualizes the top needs and how they address problems of the organization.
  - Address these top contributors to avoid the "law of diminishing returns".

- **PARETO ANALYSIS TO PRIORITIZE NEEDS**
  - **Prioritize Needs:** Not all needs or requirements are equally valuable to stakeholders.
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    - 80% of the needs can likely be met by 20% of the requirements or product features
  - As part of “gap analysis” determine which requirements or needs solve the majority of problem and which vendors meet those needs more completely.
  - Use a scale to determine the level of conformance with each high priority feature that is needed.
PARETO CHART

• A Pareto Chart visualizes the top needs and how they address problems of the organization.
  • Address these top contributors to avoid the "law of diminishing returns".

SUMMARY

• Pareto Analysis identifies the small number of requirements that have the most impact on solving a problem or meeting a business need.
COURSE SUMMARY

• Ranking of requirements is a critical business analysis activity that serves two important purposes:
  ▪ identifying requirements that must be included in the project scope
  ▪ determining the urgency of implementation of requirements

• The analyst can take advantage of many effective prioritization techniques.

COURSE SUMMARY & REVIEW

Essential Concepts

Prioritization Techniques

Pareto Analysis