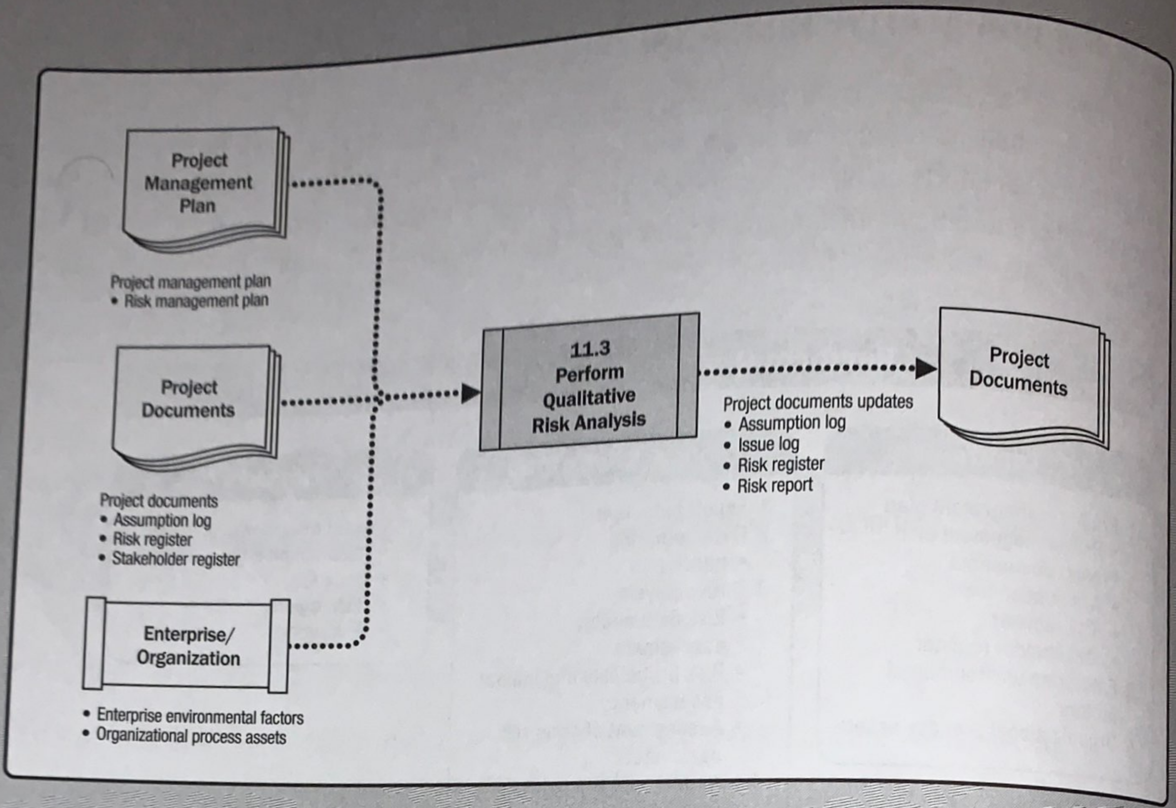

Figure 11-9. Perform Qualitative Risk Analysis: Data Flow Diagram

Perform Qualitative Risk Analysis assesses the priority of identified individual project risks using their probability o occurrence, the corresponding impact on project objectives if the risks occur, and other factors. Such assessments a subjective as they are based on perceptions of risk by the project team and other stakeholders. Effective assessme therefore requires explicit identification and management of the risk attitudes of key participants in the Perfor Qualitative Risk Analysis process. Risk perception introduces bias into the assessment of identified risks, so attentio should be paid to identifying bias and correcting for it. Where a facilitator is used to support the Perform Qualitativ Risk Analysis process, addressing bias is a key part of the facilitator's role. An evaluation of the quality of the availabl information on individual project risks also helps to clarify the assessment of each risk's importance to the project.

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Perform Qualitative Risk Analysis establishes the relative priorities of individual project risks for Plan Risk Responses. It identifies a risk owner for each risk who will take responsibility for planning an appropriate risk response and ensuring that it is implemented. Perform Qualitative Risk Analysis also lays the foundation for Perform Quantitative Risk Analysis if this process is required.

The Perform Qualitative Risk Analysis process is performed regularly throughout the project life cycle, as defined in the risk management plan. Often, in an agile development environment, the Perform Qualitative Risk Analysis process is conducted before the start of each iteration.

11.3.1 PERFORM QUALITATIVE RISK ANALYSIS: INPUTS

11.3.1.1 PROJECT MANAGEMENT PLAN

Described in Section 4.2.3.1. Project management plan components include the risk management plan as described in Section 11.1.3.1. Of particular interest in this process are the roles and responsibilities for conducting risk management, budgets for risk management, schedule activities for risk management, risk categories (often defined in a risk breakdown structure), definitions of probability and impact, the probability and impact matrix, and stakeholders' risk thresholds. These inputs are usually tailored to the project during the Plan Risk Management process. If they are not available, they may be developed during the Perform Qualitative Risk Analysis process and presented to the project sponsor for approval before use.

11.3.1.2 PROJECT DOCUMENTS

Project documents that can be considered as inputs for this process include but are not limited to:

- **Assumption log.** Described in Section 4.1.3.2. The assumption log is used for identifying, managing, and monitoring key assumptions and constraints that may affect the project. These may inform the assessment of the priority of individual project risks.
- **Risk register.** Described in Section 11.2.3.1. The risk register contains details of each identified individual project risk that will be assessed during the Perform Qualitative Risk Analysis process.
- **Stakeholder register.** Described in Section 13.1.3.1. This includes details of project stakeholders who may be nominated as risk owners.

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11.3.1.3 ENTERPRISE ENVIRONMENTAL FACTORS

The enterprise environmental factors that can influence Perform Qualitative Risk Analysis include but are not limited to:

- Industry studies of similar projects, and
- Published material, including commercial risk databases or checklists.

11.3.1.4 ORGANIZATIONAL PROCESS ASSETS

The organizational process assets that can influence Perform Qualitative Risk Analysis include but are not limited to information from similar completed projects.

11.3.2 PERFORM QUALITATIVE RISK ANALYSIS: TOOLS AND TECHNIQUES

11.3.2.1 EXPERT JUDGMENT

Described in Section 4.1.2.1. Expertise should be considered from individuals or groups with specialized knowledge or training in the following topics:

- *Previous similar projects, and*
- *Qualitative risk analysis.*

Expert judgment is often obtained through facilitated risk workshops or interviews. The possibility of expert views being biased should be taken into account in this process.

11.3.2.2 DATA GATHERING

Data-gathering techniques that can be used for this process include but are not limited to interviews. Structured or semi-structured interviews (Section 5.2.2.2) can be used to assess the probability and impacts of individual project risks, as well as other factors. The interviewer should promote an environment of trust and confidentiality in the interview setting to encourage honest and unbiased assessments.

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11.3.2.3 DATA ANALYSIS

Data analysis techniques that can be used during this process include but are not limited to:

- **Risk data quality assessment.** Risk data quality assessment evaluates the degree to which the data about individual project risks is accurate and reliable as a basis for qualitative risk analysis. The use of low-quality risk data may lead to a qualitative risk analysis that is of little use to the project. If data quality is unacceptable, it may be necessary to gather better data. Risk data quality may be assessed via a questionnaire measuring the project's stakeholder perceptions of various characteristics, which may include completeness, objectivity, relevancy, and timeliness. A weighted average of selected data quality characteristics can then be generated to give an overall quality score.

- **Risk probability and impact assessment.** Risk probability assessment considers the likelihood that a specific risk will occur. Risk impact assessment considers the potential effect on one or more project objectives such as schedule, cost, quality, or performance. Impacts will be negative for threats and positive for opportunities. Probability and impact are assessed for each identified individual project risk. Risks can be assessed in interviews or meetings with participants selected for their familiarity with the types of risk recorded in the risk register. Project team members and knowledgeable persons external to the project are included. The level of probability for each risk and its impact on each objective are evaluated during the interview or meeting. Differences in the levels of probability and impact perceived by stakeholders are to be expected, and such differences should be explored. Explanatory detail, including assumptions justifying the levels assigned, are also recorded. Risk probabilities and impacts are assessed using the definitions given in the risk management plan (see Table 11-1). Risks with low probability and impact may be included within the risk register as part of a watch list for future monitoring.

- **Assessment of other risk parameters.** The project team may consider other characteristics of risk (in addition to probability and impact) when prioritizing individual project risks for further analysis and action. These characteristics may include but are not limited to:

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- *Urgency.* The period of time within which a response to the risk is to be implemented in order to be effective. A short period indicates high urgency.
- *Proximity.* The period of time before the risk might have an impact on one or more project objectives. A short period indicates high proximity.
- *Dormancy.* The period of time that may elapse after a risk has occurred before its impact is discovered. A short period indicates low dormancy.
- *Manageability.* The ease with which the risk owner (or owning organization) can manage the occurrence or impact of a risk. Where management is easy, manageability is high.
- *Controllability.* The degree to which the risk owner (or owning organization) is able to control the risk's outcome. Where the outcome can be easily controlled, controllability is high.
- *Detectability.* The ease with which the results of the risk occurring, or being about to occur, can be detected and recognized. Where the risk occurrence can be detected easily, detectability is high.
- *Connectivity.* The extent to which the risk is related to other individual project risks. Where a risk is connected to many other risks, connectivity is high.
- *Strategic impact.* The potential for the risk to have a positive or negative effect on the organization's strategic goals. Where the risk has a major effect on strategic goals, strategic impact is high.
- *Propinquity.* The degree to which a risk is perceived to matter by one or more stakeholders. Where a risk is perceived as very significant, propinquity is high.

The consideration of some of these characteristics can provide a more robust prioritization of risks than is possible by only assessing probability and impact.

11.3.2.4 INTERPERSONAL AND TEAM SKILLS

Interpersonal and team skills that can be used for this process include but are not limited to facilitation (see Section 4.1.2.3). Facilitation improves the effectiveness of the qualitative analysis of individual project risks. A skilled facilitator can help participants remain focused on the risk analysis task, follow the method associated with the technique accurately, reach consensus on assessments of probability and impacts, identify and overcome sources of bias, and resolve any disagreements that may arise.

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11.3.2.5 RISK CATEGORIZATION

Risks to the project can be categorized by sources of risk (e.g., using the risk breakdown structure (RBS); see Figure 11-4), the area of the project affected (e.g., using the work breakdown structure (WBS); see Figures 5-12, 5-13, and 5-14), or other useful categories (e.g., project phase, project budget, and roles and responsibilities) to determine the areas of the project most exposed to the effects of uncertainty. Risks can also be categorized by common root causes. Risk categories that may be used for the project are defined in the risk management plan.

Grouping risks into categories can lead to the development of more effective risk responses by focusing attention and effort on the areas of highest risk exposure, or by developing generic risk responses to address groups of related risks.

11.3.2.6 DATA REPRESENTATION

Data representation techniques that can be used during this process include but are not limited to:

- **Probability and impact matrix.** A probability and impact matrix is a grid for mapping the probability of each risk occurrence and its impact on project objectives if that risk occurs. This matrix specifies combinations of probability and impact that allow individual project risks to be divided into priority groups (see Figure 11-5). Risks can be prioritized for further analysis and planning of risk responses based on their probability and impacts. The probability of occurrence for each individual project risk is assessed as well as its impact on one or more project objectives if it does occur, using definitions of probability and impact for the project as specified in the risk management plan. Individual project risks are assigned to a priority level based on the combination of their assessed probability and impact, using a probability and impact matrix.

  An organization can assess a risk separately for each objective (e.g., cost, time, and scope) by having a separate probability and impact matrix for each. Alternatively, it may develop ways to determine one overall priority level for each risk, either by combining assessments for different objectives, or by taking the highest priority level regardless of which objective is affected.

- **Hierarchical charts.** Where risks have been categorized using more than two parameters, the probability and impact matrix cannot be used and other graphical representations are required. For example, a bubble chart displays three dimensions of data, where each risk is plotted as a disk (bubble), and the three parameters are represented by the x-axis value, the y-axis value, and the bubble size. An example bubble chart is shown in Figure 11-10, with detectability and proximity plotted on the x and y axes, and impact value represented by bubble size.

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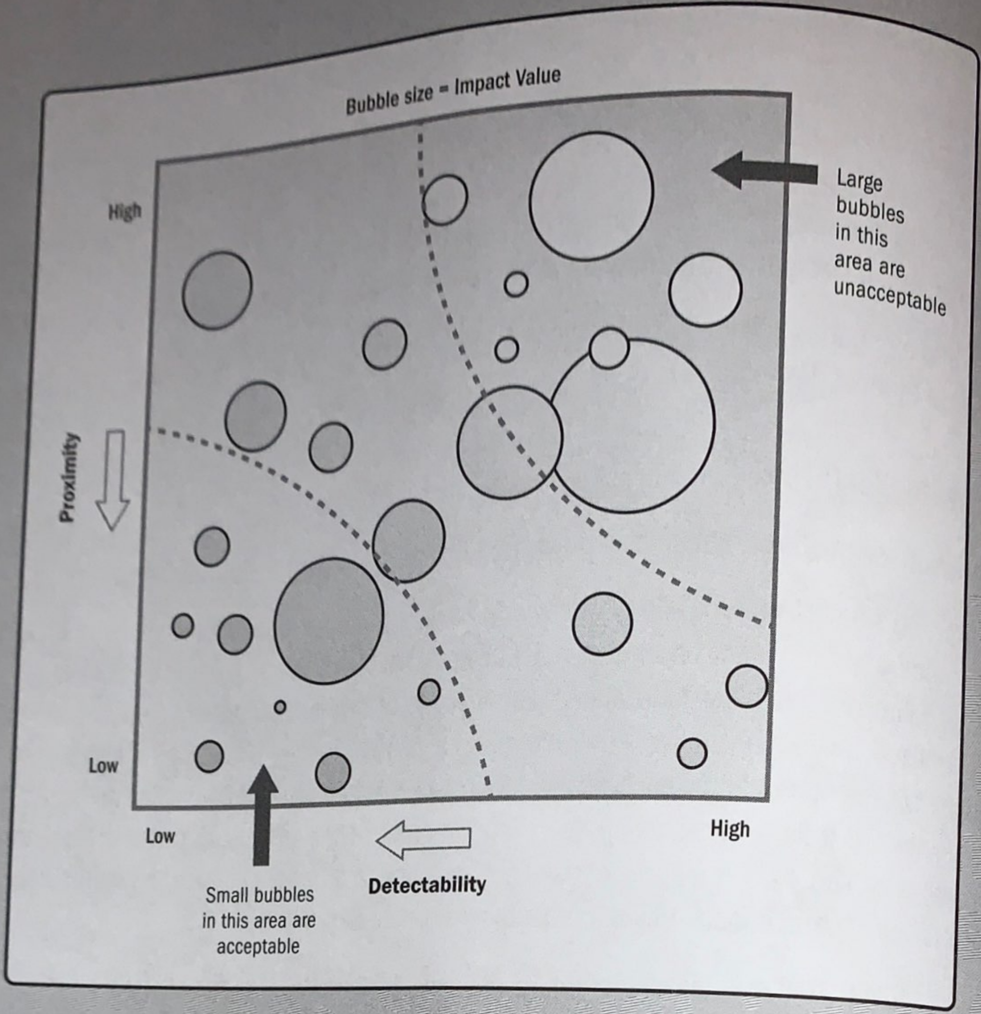

Figure 11-10. Example Bubble Chart Showing Detectability, Proximity, and Impact Value

11.3.2.7 MEETINGS

To undertake qualitative risk analysis, the project team may conduct a specialized meeting (often called a r workshop) dedicated to the discussion of identified individual project risks. The goals of this meeting include the revie of previously identified risks, assessment of probability and impacts (and possibly other risk parameters), categorizatio and prioritization. A risk owner, who will be responsible for planning an appropriate risk response and for reportin progress on managing the risk, will be allocated to each individual project risk as part of the Perform Qualitative Ris Analysis process. The meeting may start by reviewing and confirming the probability and impact scales to be used f the analysis. The meeting may also identify additional risks during the discussion, and these should be recorded f analysis. Use of a skilled facilitator will increase the effectiveness of the meeting.

11.3.3 PERFORM QUALITATIVE RISK ANALYSIS: OUTPUTS

11.3.3.1 PROJECT DOCUMENTS UPDATES

Project documents that may be updated as a result of carrying out this process include but are not limited to:

- **Assumption log.** Described in Section 4.1.3.2. During the Perform Qualitative Risk Analysis process, new assumptions may be made, new constraints may be identified, and existing assumptions or constraints may be revisited and changed. The assumption log should be updated with this new information.
- **Issue log.** Described in Section 4.3.3.3. The issue log should be updated to capture any new issues uncovered or changes in currently logged issues.
- **Risk register.** Described in Section 11.2.3.1. The risk register is updated with new information generated during the Perform Qualitative Risk Analysis process. Updates to the risk register may include assessments of probability and impacts for each individual project risk, its priority level or risk score, the nominated risk owner, risk urgency information or risk categorization, and a watch list for low-priority risks or risks requiring further analysis.
- **Risk report.** Described in Section 11.2.3.2. The risk report is updated to reflect the most important individual project risks (usually those with the highest probability and impact), as well as a prioritized list of all identified risks on the project and a summary conclusion.

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11.4 PERFORM QUANTITATIVE RISK ANALYSIS

Perform Quantitative Risk Analysis is the process of numerically analyzing the combined effect of identified individual project risks and other sources of uncertainty on overall project objectives. The key benefit of this process is that it quantifies overall project risk exposure, and it can also provide additional quantitative risk information to support risk response planning. This process is not required for every project, but where it is used, it is performed throughout the project. The inputs and outputs of this process are depicted in Figure 11-11. Figure 11-12 depicts the data flow diagram for the process.

Perform Quantitative Risk Analysis

Inputs

.1 Project management plan
- Risk management plan
- Scope baseline
- Schedule baseline
- Cost baseline

.2 Project documents
- Assumption log
- Basis of estimates
- Cost estimates
- Cost forecasts
- Duration estimates
- Milestone list
- Resource requirements
- Risk register
- Risk report
- Schedule forecasts

.3 Enterprise environmental factors

.4 Organizational process assets

Tools & Techniques

.1 Expert judgment

.2 Data gathering
- Interviews

.3 Interpersonal and team skills
- Facilitation

.4 Representations of uncertainty

.5 Data analysis
- Simulation
- Sensitivity analysis
- Decision tree analysis
- Influence diagrams

Outputs

.1 Project documents updates
- Risk report

Figure 11-11. Perform Quantitative Risk Analysis: Inputs, Tools & Techniques, and Outputs

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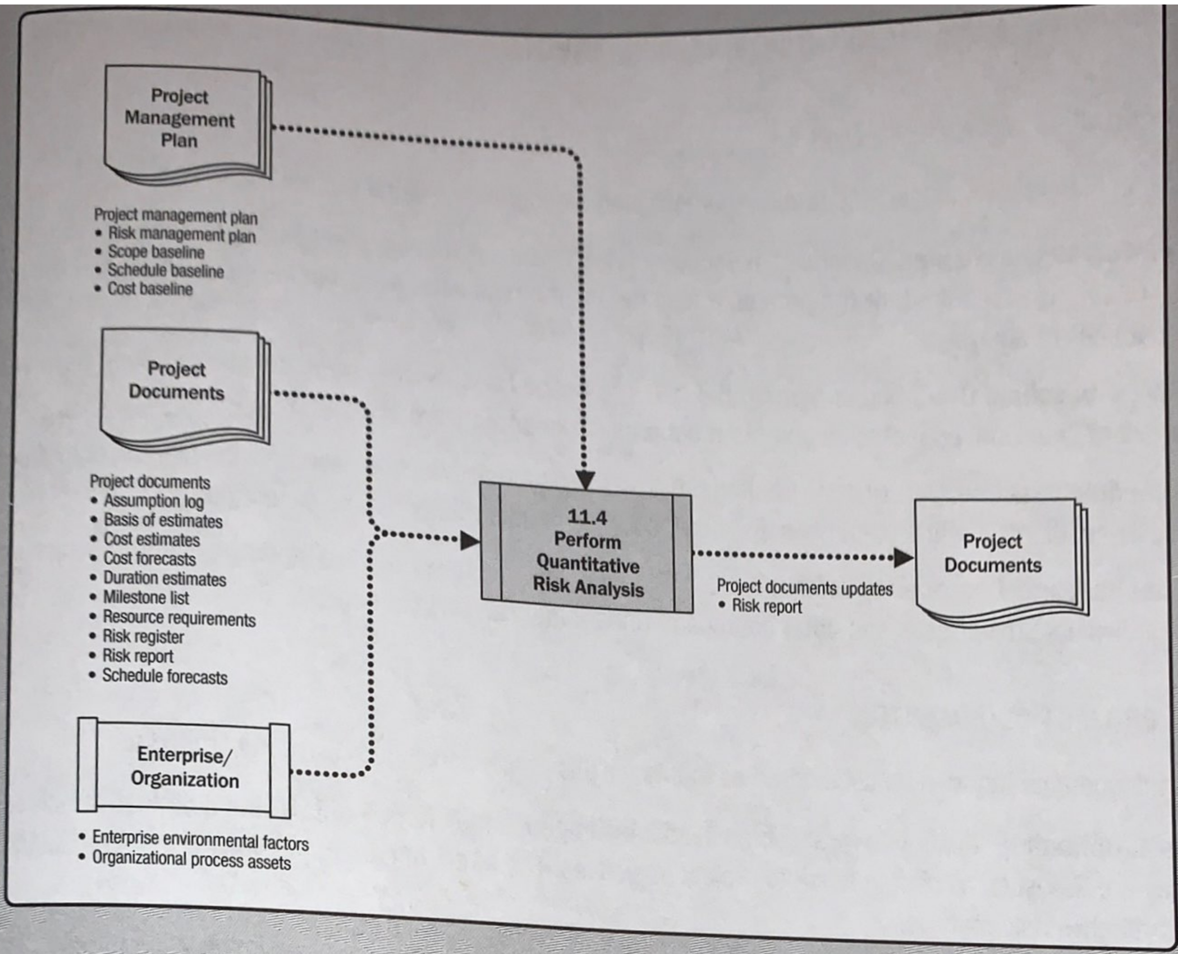

Figure 11-12. Perform Quantitative Risk Analysis: Data Flow Diagram

Perform Quantitative Risk Analysis is not required for all projects. Undertaking a robust analysis depends on the availability of high-quality data about individual project risks and other sources of uncertainty, as well as a sound underlying project baseline for scope, schedule, and cost. Quantitative risk analysis usually requires specialized risk software and expertise in the development and interpretation of risk models. It also consumes additional time and cost. The use of quantitative risk analysis for a project will be specified in the project's risk management plan. It is most likely appropriate for large or complex projects, strategically important projects, projects for which it is a contractual requirement, or projects in which a key stakeholder requires it. Quantitative risk analysis is the only reliable method to assess overall project risk through evaluating the aggregated effect on project outcomes of all individual project risks and other sources of uncertainty.

Perform Quantitative Risk Analysis uses information on individual project risks that have been assessed by the Perform Qualitative Risk Analysis process as having a significant potential to affect the project's objectives.

Outputs from Perform Quantitative Risk Analysis are used as inputs to the Plan Risk Responses process, particularly in recommending responses to the level of overall project risk and key individual risks. A quantitative risk analysis may also be undertaken following the Plan Risk Responses process, to determine the likely effectiveness of planned responses in reducing overall project risk exposure.

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11.4.1 PERFORM QUANTITATIVE RISK ANALYSIS: INPUTS

11.4.1.1 PROJECT MANAGEMENT PLAN

Described in Section 4.2.3.1. Project management plan components include but are not limited to:

- **Risk management plan.** Described in Section 11.1.3.1. The risk management plan specifies whether quantitative risk analysis is required for the project. It also details the resources available for the analysis and the expected frequency of analyses.
- **Scope baseline.** Described in Section 5.4.3.1. The scope baseline describes the starting point from which the effect of individual project risks and other sources of uncertainty are evaluated.
- **Schedule baseline.** Described in Section 6.5.3.1. The schedule baseline describes the starting point from which the effect of individual project risks and other sources of uncertainty can be evaluated.
- **Cost baseline.** Described in Section 7.3.3.1. The cost baseline describes the starting point from which the effect of individual project risks and other sources of uncertainty can be evaluated.

11.4.1.2 PROJECT DOCUMENTS

Project documents that can be considered as inputs for this process include but are not limited to:

- **Assumption log.** Described in Section 4.1.3.2. Assumptions may form inputs to the quantitative risk analysis if they are assessed as posing a risk to project objectives. The effect of constraints may also be modeled during a quantitative risk analysis.
- **Basis of estimates.** Described in Sections 6.4.3.2 and 7.2.3.2. The basis of estimates used in the planning of the project may be reflected in variability modeled during a quantitative risk analysis process. This may include information on the estimate's purpose, classification, assumed accuracy, methodology, and source.
- **Cost estimates.** Described in Section 7.2.3.1. Cost estimates provide the starting point from which cost variability is evaluated.
- **Cost forecasts.** Described in Section 7.4.3.2. Forecasts such as the project's estimate to complete (ETC), estimate at completion (EAC), budget at completion (BAC), and to-complete performance index (TCPI) may be compared to the results of a quantitative cost risk analysis to determine the confidence level associated with achieving these targets.
- **Duration estimates.** Described in Section 6.4.3.1. Duration estimates provide the starting point from which schedule variability is evaluated.
- **Milestone list.** Described in Section 6.2.3.3. Significant events in the project define the schedule targets against which the results of a quantitative schedule risk analysis are compared, in order to determine the confidence level associated with achieving these targets.

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- **Resource requirements.** Described in Section 9.2.3.1. Resource requirements provide the starting point from which variability is evaluated.
- **Risk register.** Described in Section 11.2.3.1. The risk register contains details of individual project risks to be used as input for quantitative risk analysis.
- **Risk report.** Described in Section 11.2.3.2. The risk report describes sources of overall project risk and the current overall project risk status.
- **Schedule forecasts.** Described in Section 6.6.3.2. Forecasts may be compared to the results of a quantitative schedule risk analysis to determine the confidence level associated with achieving these targets.

11.4.1.3 ENTERPRISE ENVIRONMENTAL FACTORS

The enterprise environmental factors that can influence the Perform Quantitative Risk Analysis process include but are not limited to:

- Industry studies of similar projects, and
- Published material, including commercial risk databases or checklists.

11.4.1.4 ORGANIZATIONAL PROCESS ASSETS

The organizational process assets that can influence the Perform Quantitative Risk Analysis process include information from similar completed projects.

11.4.2 PERFORM QUANTITATIVE RISK ANALYSIS: TOOLS AND TECHNIQUES

11.4.2.1 EXPERT JUDGMENT

Described in Section 4.1.2.1. Expertise should be considered from individuals or groups with specialized knowledge or training in the following topics:

- Translating information on individual project risks and other sources of uncertainty into numeric inputs for the quantitative risk analysis model,
- Selecting the most appropriate representation of uncertainty to model particular risks or other sources of uncertainty,
- Modeling techniques that are appropriate in the context of the project,
- Identifying which tools would be most suitable for the selected modeling techniques, and
- Interpreting the outputs of quantitative risk analysis.

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11.4.2.2 DATA GATHERING

Interviews (see Section 5.2.2.2) may be used to generate inputs for the quantitative risk analysis, drawing on inputs that include individual project risks and other sources of uncertainty. This is particularly useful where information is required from experts. The interviewer should promote an environment of trust and confidentiality during the interview to encourage honest and unbiased contributions.

11.4.2.3 INTERPERSONAL AND TEAM SKILLS

Interpersonal and team skills that can be used for this process include but are not limited to facilitation (see Section 4.1.2.3). A skilled facilitator is useful for gathering input data during a dedicated risk workshop involving project team members and other stakeholders. Facilitated workshops can improve effectiveness by establishing a clear understanding of the purpose of the workshop, building consensus among participants, ensuring continued focus on the task, and using creative approaches to deal with interpersonal conflict or sources of bias.

11.4.2.4 REPRESENTATIONS OF UNCERTAINTY

Quantitative risk analysis requires inputs to a quantitative risk analysis model that reflect individual project risks and other sources of uncertainty.

Where the duration, cost, or resource requirement for a planned activity is uncertain, the range of possible values can be represented in the model as a probability distribution. This may take several forms. The most commonly used are triangular, normal, lognormal, beta, uniform, or discrete distributions. Care should be taken when selecting an appropriate probability distribution to reflect the range of possible values for the planned activity.

Individual project risks may be covered by probability distributions. Alternatively, risks may be included in the model as probabilistic branches, where optional activities are added to the model to represent the time and/or cost impact of the risk should it occur, and the chance that these activities actually occur in a particular simulation run matches the risk's probability. Branches are most useful for risks that might occur independently of any planned activity. Where risks are related, for example, with a common cause or a logical dependency, correlation is used in the model to indicate this relationship.

Other sources of uncertainty may also be represented using branches to describe alternative paths through the project.

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11.4.2.5 DATA ANALYSIS

Data analysis techniques that can be used during this process include but are not limited to:

- **Simulation.** Quantitative risk analysis uses a model that simulates the combined effects of individual project risks and other sources of uncertainty to evaluate their potential impact on achieving project objectives. Simulations are typically performed using a Monte Carlo analysis. When running a Monte Carlo analysis for cost risk, the simulation uses the project cost estimates. When running a Monte Carlo analysis for schedule risk, the schedule network diagram and duration estimates are used. An integrated quantitative cost-schedule risk analysis uses both inputs. The output is a quantitative risk analysis model.

  Computer software is used to iterate the quantitative risk analysis model several thousand times. The input values (e.g., cost estimates, duration estimates, or occurrence of probabilistic branches) are chosen at random for each iteration. Outputs represent the range of possible outcomes for the project (e.g., project end date, project cost at completion). Typical outputs include a histogram presenting the number of iterations where a particular outcome resulted from the simulation, or a cumulative probability distribution (S-curve) representing the probability of achieving any particular outcome or less. An example S-curve from a Monte Carlo cost risk analysis is shown in Figure 11-13.

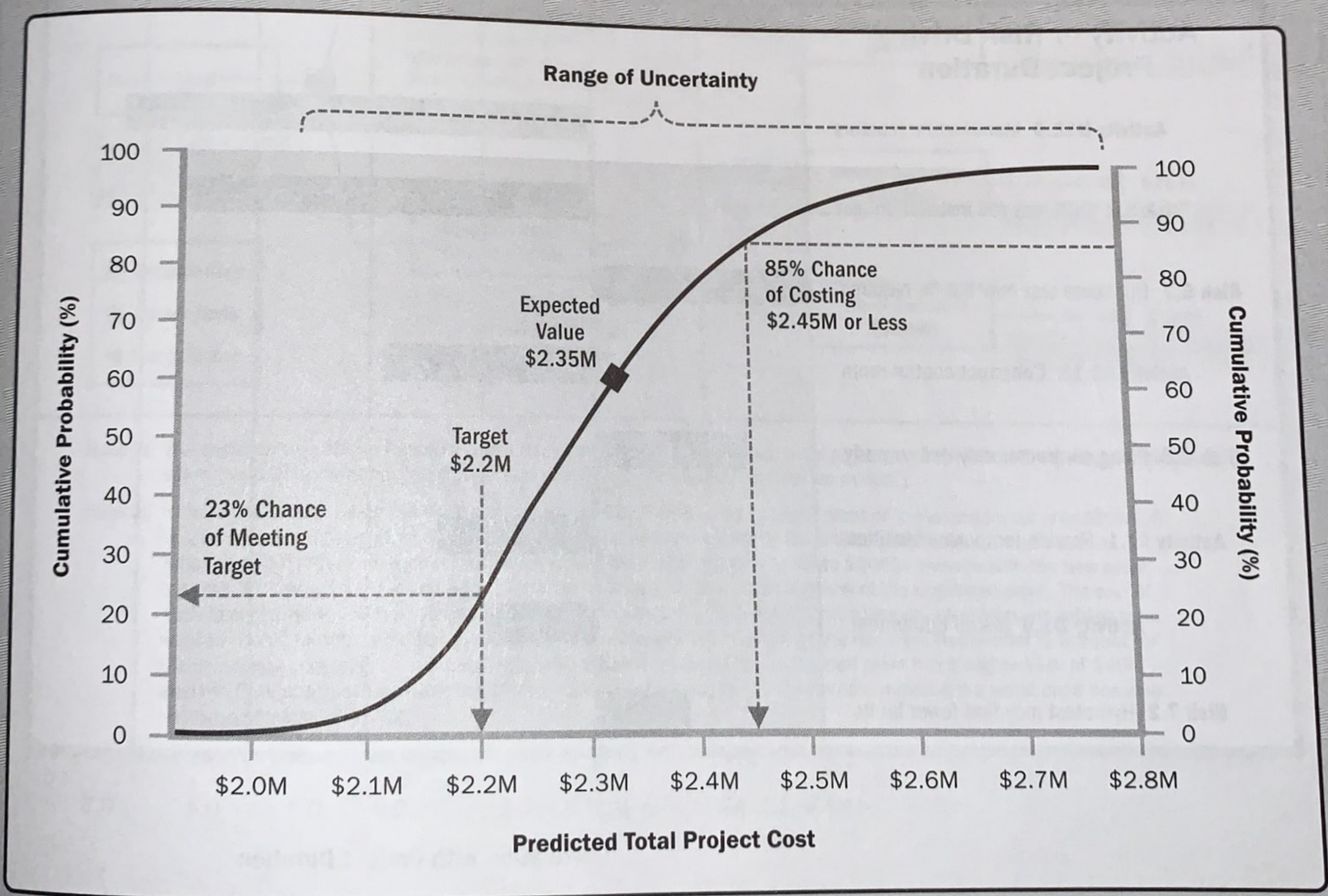

Figure 11-13. Example S-Curve from Quantitative Cost Risk Analysis

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For a quantitative schedule risk analysis, it is also possible to conduct a criticality analysis that determines which elements of the risk model have the greatest effect on the project critical path. A criticality index is calculated for each element in the risk model, which gives the frequency with which that element appears on the critical path during the simulation, usually expressed as a percentage. The output from a criticality analysis allows the project team to focus risk response planning efforts on those activities with the highest potential effect on the overall schedule performance of the project.

- **Sensitivity analysis.** Sensitivity analysis helps to determine which individual project risks or other sources of uncertainty have the most potential impact on project outcomes. It correlates variations in project outcomes with variations in elements of the quantitative risk analysis model.

  One typical display of sensitivity analysis is the tornado diagram, which presents the calculated correlation coefficient for each element of the quantitative risk analysis model that can influence the project outcome. This can include individual project risks, project activities with high degrees of variability, or specific sources of ambiguity. Items are ordered by descending strength of correlation, giving the typical tornado appearance. An example tornado diagram is shown in Figure 11-14.

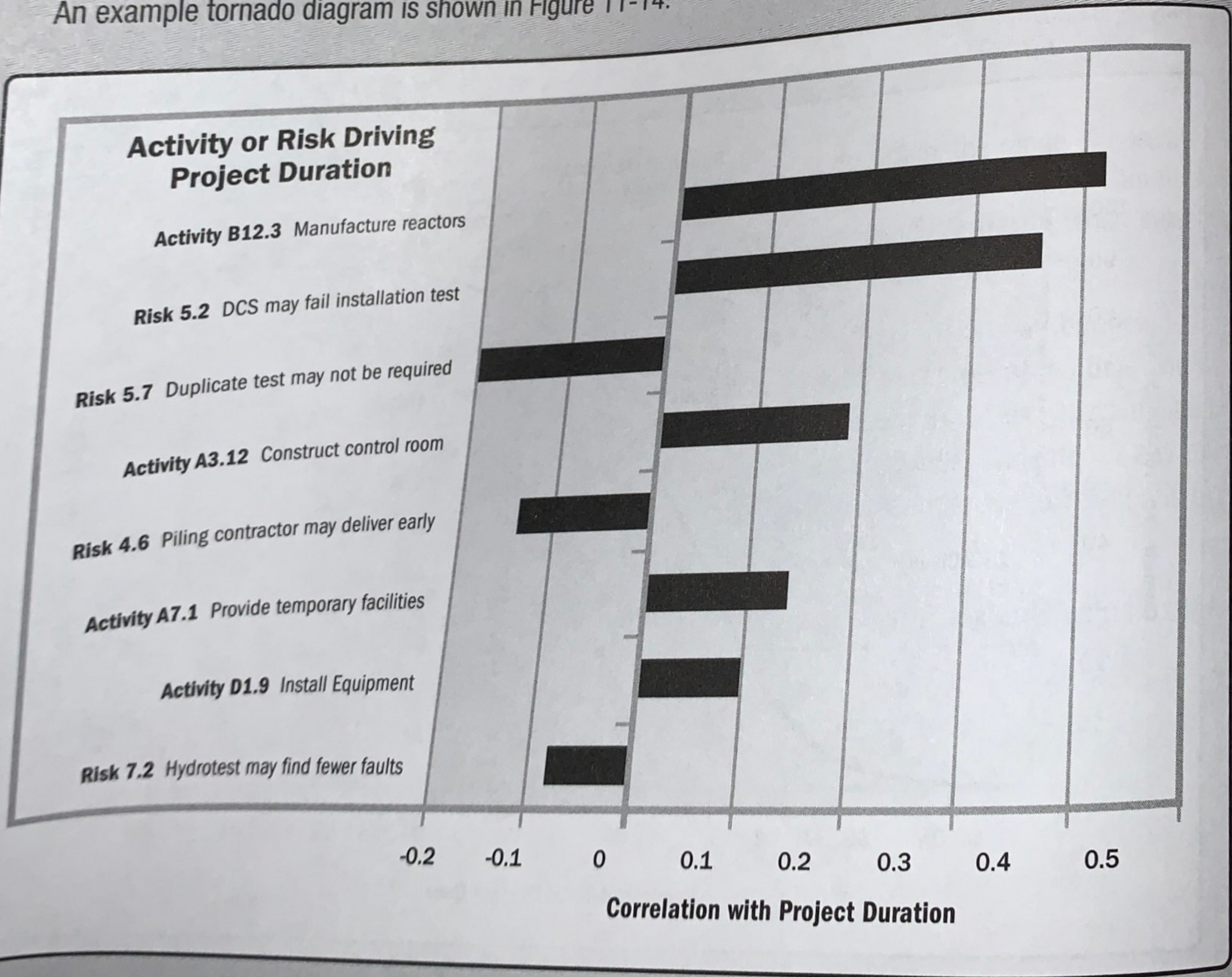

Figure 11-14. Example Tornado Diagram

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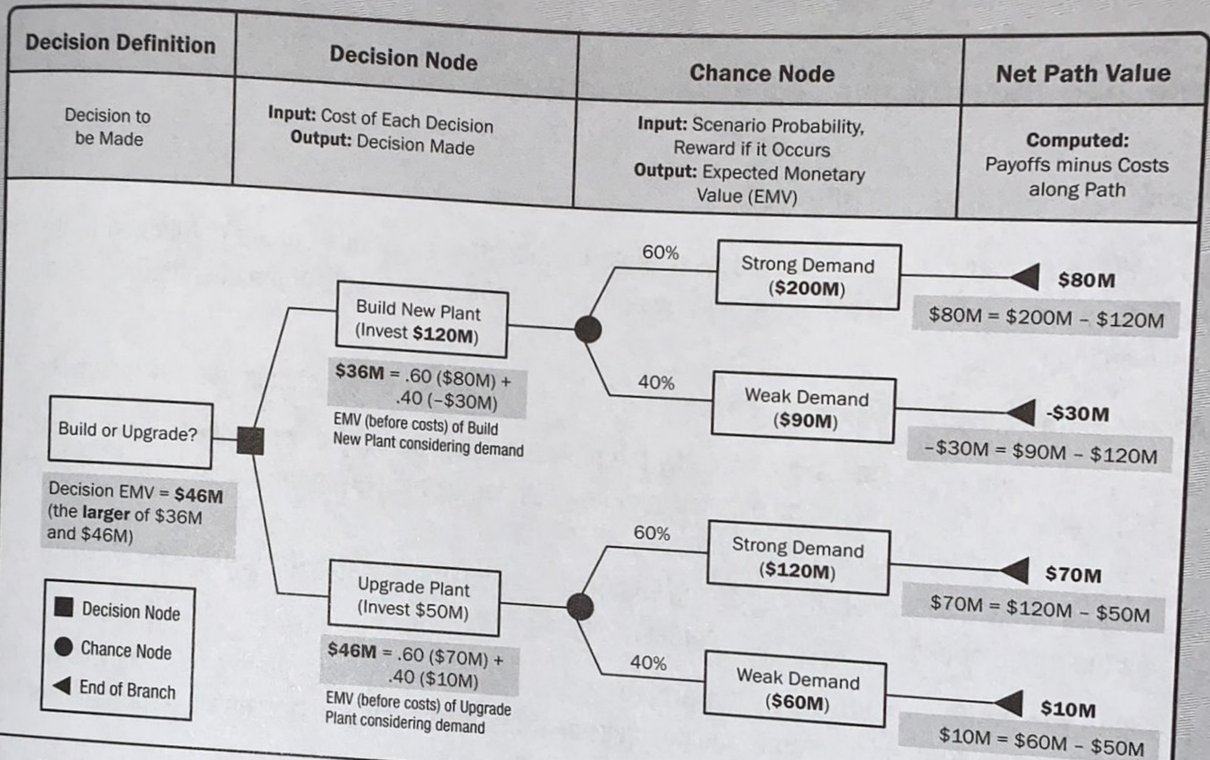
- **Decision tree analysis.** Decision trees are used to support selection of the best of several alternative courses of action. Alternative paths through the project are shown in the decision tree using branches representing different decisions or events, each of which can have associated costs and related individual project risks (including both threats and opportunities). The end-points of branches in the decision tree represent the outcome from following that particular path, which can be negative or positive.

The decision tree is evaluated by calculating the expected monetary value of each branch, allowing the optimal path to be selected. An example decision tree is shown in Figure 11-15.



Note 1: The decision tree shows how to make a decision between alternative capital strategies (represented as "decision nodes") when the environment contains uncertain elements (represented as "chance nodes").

Note 2: Here, a decision is being made whether to invest $120M US to build a new plant or to instead invest only $50M US to upgrade the existing plant. For each decision, the demand (which is uncertain, and therefore represents a "chance node") must be accounted for. For example, *strong* demand leads to $200M revenue with the new plant but only $120M US for the upgraded plant, perhaps due to capacity limitations of the upgraded plant. The end of each branch shows the net effect of the payoffs minus costs. For each decision branch, all effects are added (see shaded areas) to determine the overall Expected Monetary Value (EMV) of the decision. Remember to account for the investment costs. From the calculations in the shaded areas, the upgraded plant has a higher EMV of $46M – also the EMV of the overall decision. (This choice also represents the lowest risk, avoiding the worst case possible outcome of a loss of $30M).

Figure 11-15. Example Decision Tree

- **Influence diagrams.** Influence diagrams are graphical aids to decision making under uncertainty. An influence diagram represents a project or situation within the project as a set of entities, outcomes, and influences, together with the relationships and effects between them. Where an element in the influence diagram is uncertain as a result of the existence of individual project risks or other sources of uncertainty, this can be represented in the influence diagram using ranges or probability distributions. The influence diagram is then evaluated using a simulation technique, such as Monte Carlo analysis, to indicate which elements have the greatest influence on key outcomes. Outputs from an influence diagram are similar to other quantitative risk analysis methods, including S-curves and tornado diagrams.

11.4.3 PERFORM QUANTITATIVE RISK ANALYSIS: OUTPUTS

11.4.3.1 PROJECT DOCUMENTS UPDATES

Project documents that can be considered as outputs for this process include but are not limited to the risk report described in Section 11.2.3.2. The risk report will be updated to reflect the results of the quantitative risk analysis. This will typically include:

- **Assessment of overall project risk exposure.** Overall project risk is reflected in two key measures:
  - Chances of project success, indicated by the probability that the project will achieve its key objectives (e.g., required end date or interim milestones, required cost target, etc.) given the identified individual project risks and other sources of uncertainty; and
  - Degree of inherent variability remaining within the project at the time the analysis was conducted, indicated by the range of possible project outcomes.
- **Detailed probabilistic analysis of the project.** Key outputs from the quantitative risk analysis are presented, such as S-curves, tornado diagrams, and criticality analysis, together with a narrative interpretation of the results. Possible detailed results of a quantitative risk analysis may include:
  - Amount of contingency reserve needed to provide a specified level of confidence;
  - Identification of individual project risks or other sources of uncertainty that have the greatest effect on the project critical path; and
  - Major drivers of overall project risk, with the greatest influence on uncertainty in project outcomes.
- **Prioritized list of individual project risks.** This list includes those individual project risks that pose the greatest threat or present the greatest opportunity to the project, as indicated by sensitivity analysis.
- **Trends in quantitative risk analysis results.** As the analysis is repeated at different times during the project life cycle, trends may become apparent that inform the planning of risk responses.
- **Recommended risk responses.** The risk report may present suggested responses to the level of overall project risk exposure or key individual project risks, based on the results of the quantitative risk analysis. These recommendations will form inputs to the Plan Risk Responses process.

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