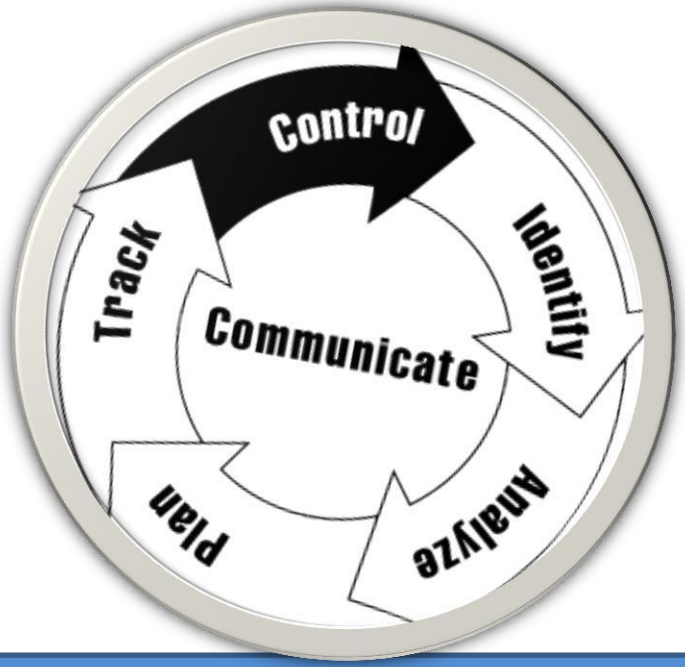
Software Risk Management



Chapter 6: Control Outline

- What Is control?
- Analyze
- Execute
- Guidelines and Tips

The mastery of risk is the foundation of modern life, from insurance to the stock market to engineering, science, and medicine. We cannot see the future, but by calculating probabilities, we can do the next best thing: make intelligent decisions and take control of our lives on the basis of scientific forecasts.

—Peter L. Bernstein

S1:What is control?

- The **Control** function is the process that takes the tracking status reports for the watched and mitigated project risks and decides what to do with them based on the reported data.
- The general process of controlling risks includes the following:
  - analyzing the status reports
  - deciding how to proceed
  - executing the decisions
- The objective of the Control function is to make informed, timely, and effective decisions regarding risks and their mitigation plans.

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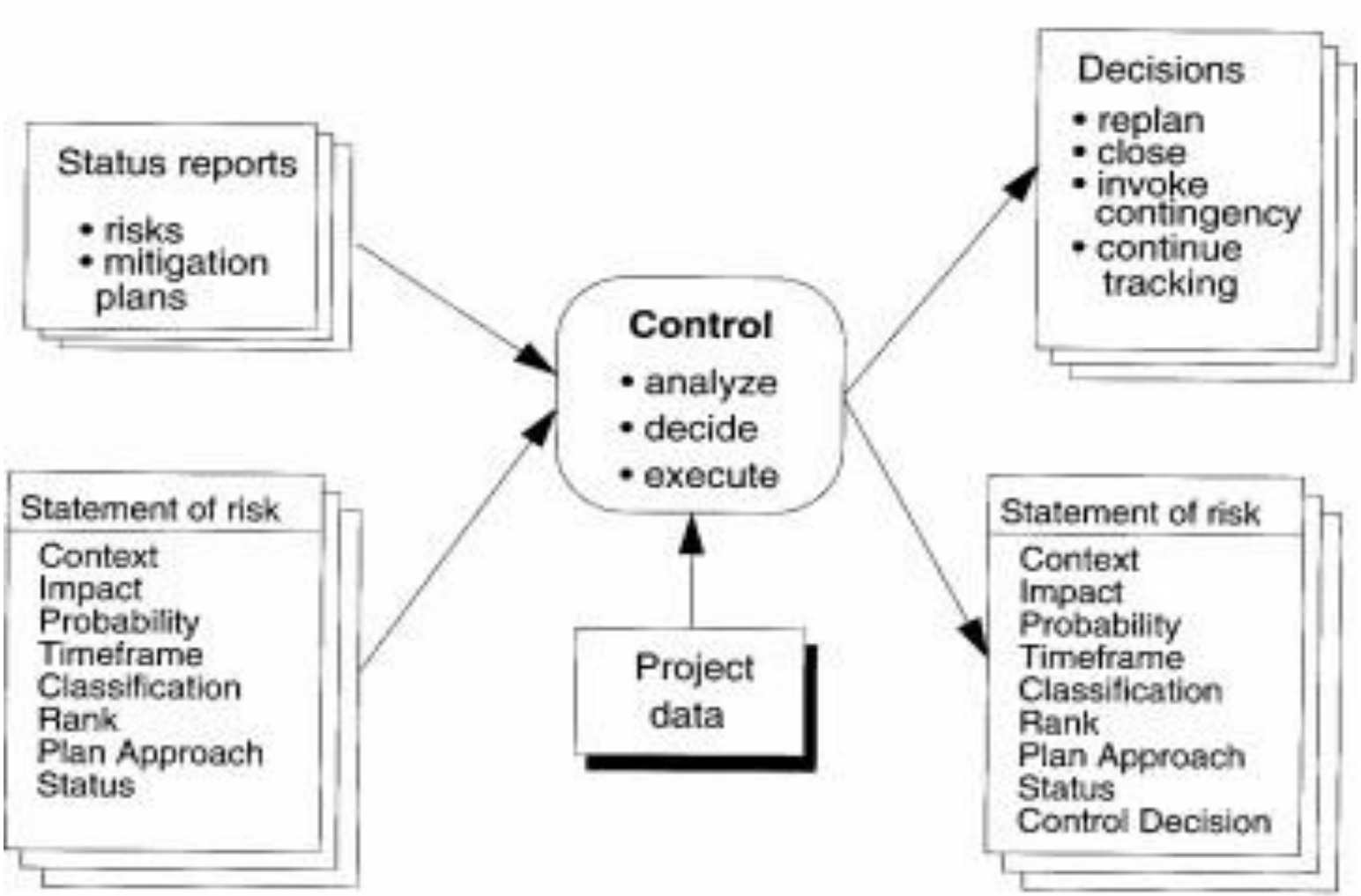
- The risk control process is sufficient when it satisfies these goals:
  - Assign responsibility and authority to the lowest possible level.
  - Follow a documented risk action plan.
  - Report results of risk resolution efforts.
  - Provide for risk aware decision making.
  - Determine the cost-effectiveness of risk management.
  - Is prepared to adapt to changing circumstances.
  - Take corrective actions when necessary.
  - Improve communication within the team.
  - Systematically control software risk.
- **NB**:- These goals can be used as a checklist to ensure the process quality.

Inputs and outputs of the control function



Data Item and its description

Data Item	Description
➢ Status reports ▪ Risks ▪ mitigation plans	✓ These reports can be verbal or written, covering the statuses of both individual risks and aggregated risk areas as appropriate.
➢ Statement of risk. ▪ Context ▪ Impact ▪ Probability ▪ Timeframe ▪ Classification ▪ Rank ▪ Plan Approach ▪ Status	✓ Prior to the Control function, the risk information for each risk comprises the statement of risk, supporting context, impact, probability, timeframe, class, rank, plan approach, and status. ✓ This could be for all of the risks or for a small subset of risks targeted for risk control
➢ Project data	✓ Project information, such as schedule and budget variances, critical path changes, and project/performance indicators can be used to support decision making where appropriate.

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Data item	description
➢ Decisions ▪ re-plan ▪ Close ▪ Invoke contingency ▪ Continue tracking	✓ The output of the Control function is a decision that determines the next action for the risk or set of risks under consideration. ✓ There are four possible decisions: • re-plan • close the risk • invoke a contingency plan • continue tracking and executing the current plan
➢ Statement of risk ▪ Context ▪ Impact ▪ Probability ▪ Timeframe ▪ Classification ▪ Rank ▪ Plan Approach ▪ Status ▪ Control Decision	✓ In addition to making a control decision, the Control function updates the information associated with each risk ✓ to include the current control decision for the risk (i.e., re-plan, close the risk, invoke a contingency plan, and continue tracking and executing the current plan).

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- Effective control requires anticipating and assessing the effectiveness of mitigation plans as well as monitoring the quality of executing the plans (i.e.,
  - Are the plans being executed correctly?
  - Are the results what was expected?).
  - It also involves assessing significant changes in risks

Methods and Tools

Activity	Method or Tool
➢ Analyze	▪ Cause and effect analysis ▪ Cost-benefit analysis ▪ Mitigation status reports ▪ PERT charts ▪ Spreadsheet risk tracking ▪ Stoplight charts
➢ Decide	▪ Closing a risk ▪ List reduction ▪ Multi-voting
➢ Execute	▪ Closing a risk ▪ Mitigation status reports ▪ Risk information sheet ▪ Spreadsheet risk tracking ▪ Stoplight charts Note: Making changes to plans requires a return to planning, while taking predefined contingency actions and continuing to track risks require a return to tracking.

S2:Analyze

- The Analyze activity uses tracking data to examine project risks for trends, deviations, and anomalies.
- The goal is to achieve a clear understanding of the current status of each risk and mitigation plan relative to the project.
- The objective of the Analyze activity is to provide information needed by decision makers to accurately determine the best courses of action for project risks.

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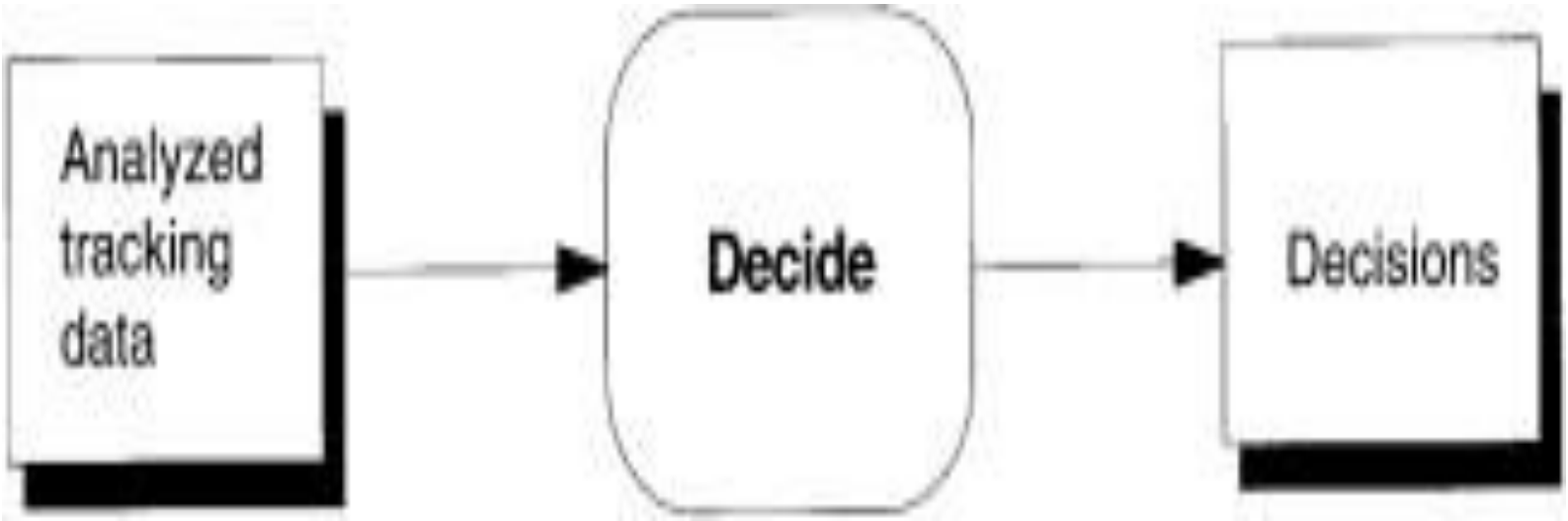
Inputs and outputs for making control decisions



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- Classification of decision .
  - **Re-plan**: A new or modified plan is required
  - **Close a risk**: Closure of a risk requires the agreement of all affected parties.
  - **Invoke contingency plan**: contingency plan invoked when some other related action needs to be taken.
  - **Continue tracking and executing the current plan**: when project personnel decide to continue tracking the risk or mitigation plan as before.

Control: Decide Methods and Tools

- **Closing a Risk:**
  - Closed risks need to be documented, lessons learned incorporated, and appropriate personnel notified.
- **List Reduction**:
  - This is used to reduce the number of options to an optimal few.
- **Multi-voting:**
  - This voting technique is used to choose a solution from a number of alternatives.

S4:Execute

- The Execute activity is the process where control decisions are implemented.
- If the decision is to take a planned action, then either the action is executed or the contingency plan is implemented.
- All closed risks should be documented along with the rationale for closure.
- However, when a decision is made to continue tracking a risk, it generally does not require documentation.
- Making changes to plans requires a return to the **Plan** function, while taking predefined contingency actions and continuing to track risks requires a return to the Track function.

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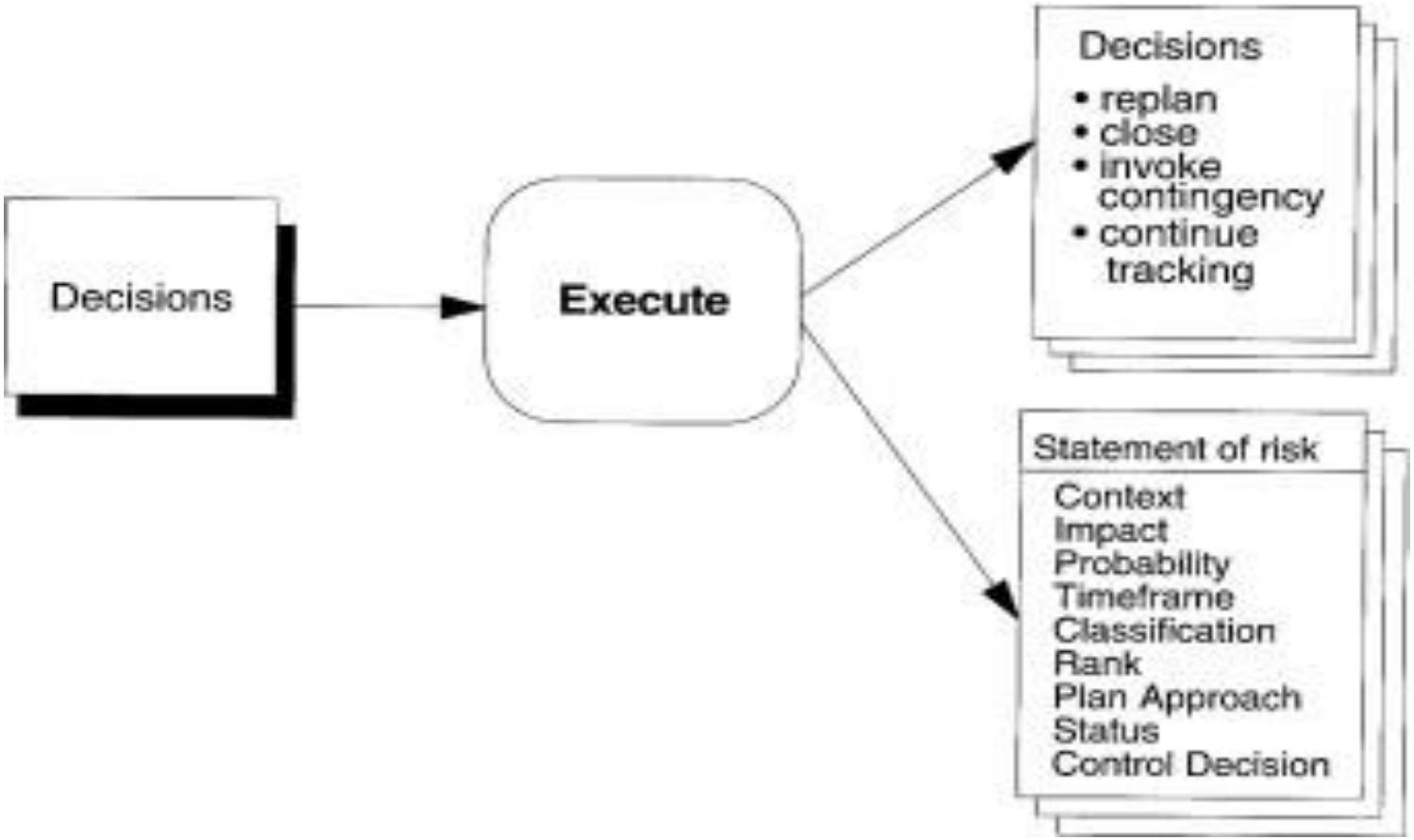
- The objective of the Execute activity is to implement both
  - the decision made about a risk and mitigation plan as well as
  - to ensure that all decisions are appropriately documented for future reference and historical record maintenance.

Inputs and outputs for executing decisions



Considerations for Closing Risks

- Several considerations need to be made when closing risks:
  - The person responsible for the risk is the one who closes the risk.
  - Personnel who either received status information or originated the risk should be notified.
  - Proper approval for closing a risk (e.g., signature from responsible project member, team leader, project manager, etc.) must be obtained before it can be closed.
  - If the risk being closed is a part of a set of risks, an informed decision should be made either to close the set or to close selected risks within the set.

Reopening Closed Risks

- If a closed risk resurfaces at a future time, there should be a process in place indicating now to handle the situation.
- Either the old risk should be reopened or a new risk that references the old one should be opened.
- Important information and trends can be lost if the linkages are not maintained.

Control: Execute Methods and Tools

- **Closing a Risk:**
  - Closed risks need to be documented, lessons learned incorporated, and appropriate personnel notified.
- **Mitigation Status Report**:
  - Documentation of the contingency actions taken is added to in the status report (this may require redrawing the time graph).
- **Risk Information Sheet:**
  - The risk information sheet is updated to reflect the implementation of a contingency plan.

Control: Execute Methods and Tools

- **Spreadsheet Risk Tracking:**
  - Documentation of the action being executed and other relevant information such as the scheduled completion date is added to the spreadsheet.
- **Stoplight Chart:**
  - Documentation of the action being executed, its current state of success, and other relevant information such as the scheduled completion date is added to the chart.

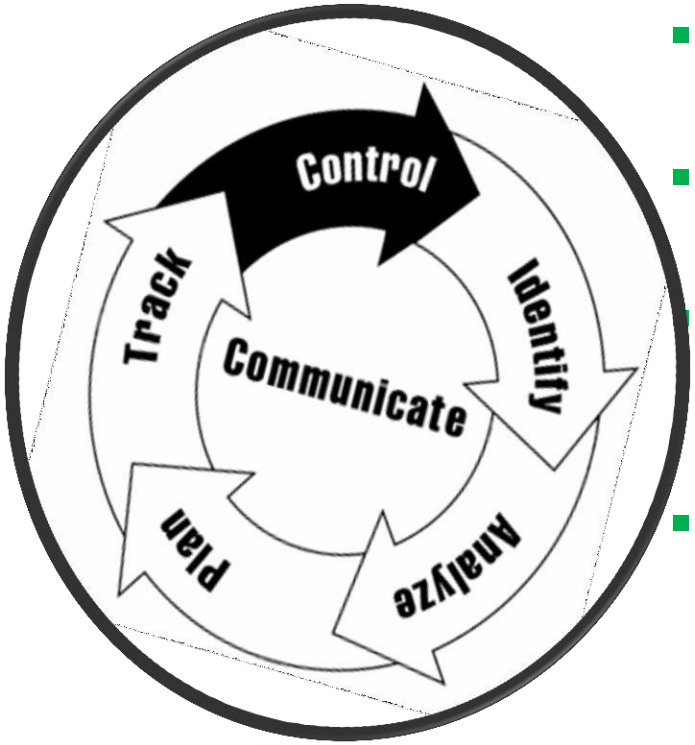
The principles applicable during the **Control** function

- Open communication.
- Integrated management.
- Shared product vision and
- A global perspective.

S5:Guidelines and Tips

- Make informed decisions based on explicit measures of success, defined during risk planning, for risk mitigation plans.
- Make the conclusion of the mitigation activity and its associated risk an explicit activity.
- Document the lessons learned and the rationale for closing a risk.

Summary



- Correct for deviations from the risk mitigation plans.
- Actions can lead to corrections in products or processes.
- Changes to risks, risks that become problems, or faulty plans require adjustments in plans or actions.
- Analyze tracking data, decide on how to proceed, and execute decision.
  Example methods and tools: PERT charts, cost-benefit analysis, closing a risk.