PROJECT MANAGEMENT

Topic 14

Quality & Comunications

Nội dung

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14.2	• Quality Assurance
14.3	• Project quality plan
14.4	• Plan communications
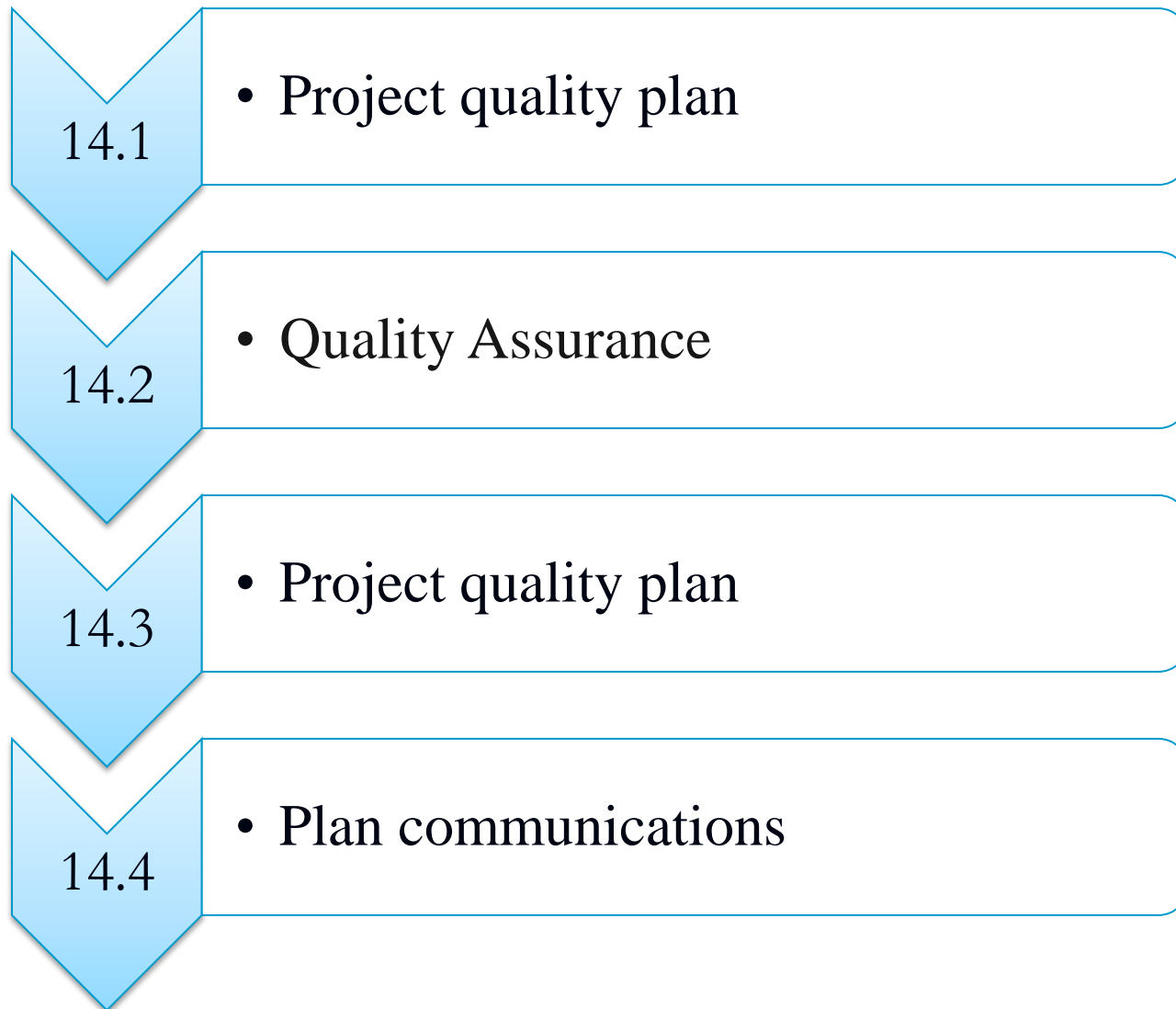
Project quality plan

Introduction

- ❖ Project quality management includes the process required to ensure that the project satisfies the needs for which it is undertaken.

- ❖ PQM includes all the activities of the overall management function that determine the quality policy, objectives, and responsibilities and implement them within the quality system.

Project quality plan

Implementation of PQM

1. QUALITY PLANING

2. QUALITY ASSURANCE

3. QUALITY CONTROL

❖ These processes interact with each other as well as with the processes of other knowledge areas

❖ Each process involves an effort of one or more individual or group of individuals based on the need of the project.

❖ Each process occurs at least once in every project phase during the project life cycle.

Project quality plan

1. QUALITY PLANNING

Quality Planning is identifying which quality standards are relevant to the project and determining how to satisfy them

2. QUALITY ASSURANCE

Quality assurance is evaluating the overall project performance on a regular basis to provide a confidence that the project will satisfy the relevant quality standards.

3. QUALITY CONTROL

Quality Control is the monitoring of specific project results to determine if they comply with the relevant quality standards and identifying ways to eliminate causes of unsatisfactory performance.

PROJECT QUALITY MANAGEMENT

QUALIT PLANNING

1- INPUTS

-Quality policy

-Scope statement

-Product description

-Standards and regulations

-Other process outputs

2- TOOLS AND TECH.

-benefit/ cost analysis

-Benchmarking

-Flowcharting

-Design of experiments

3- OUTPUTS

-Quality management plan

-Operational definitions

-checklists

-Inputs to other processes

QUALITY ASSURANCE

1- INPUTS

-Quality management plan

-result of quality control measurements

-Operational definitions

2- TOOLS AND TECH.

-Quality planning tools and techniques

-Quality audits

3- OUTPUTS

-Quality improvement

QUALITY CONTROL

1- INPUTS

-work results

-quality management plan

-Operational definitions

-checklists

2- TOOLS AND TECH.

-inspection

-Control charts

-Pareto diagrams

-Statistical sampling

-flowcharting

-Trend analysis

3- OUTPUTS

-Quality improvement

-Acceptance decisions

-rework

-Completed checklist

-Process adjustment

Project quality plan

PQM Approach

- ❖ compatible with ISO 9000 and 1000 series of standard guidelines

- ❖ Proprietary approaches to quality as recommended by Deming, Juran, and Crosby, and others.

- ❖ Nonproprietary approaches such as TQM, Continuous improvement approaches and others.

Project quality plan

Common understanding

Quality management should complement modern project management as they both recognize the importance of.

1- Customer satisfaction

2- Prevention over inspection

3- Management responsibility

4- Processes within phases
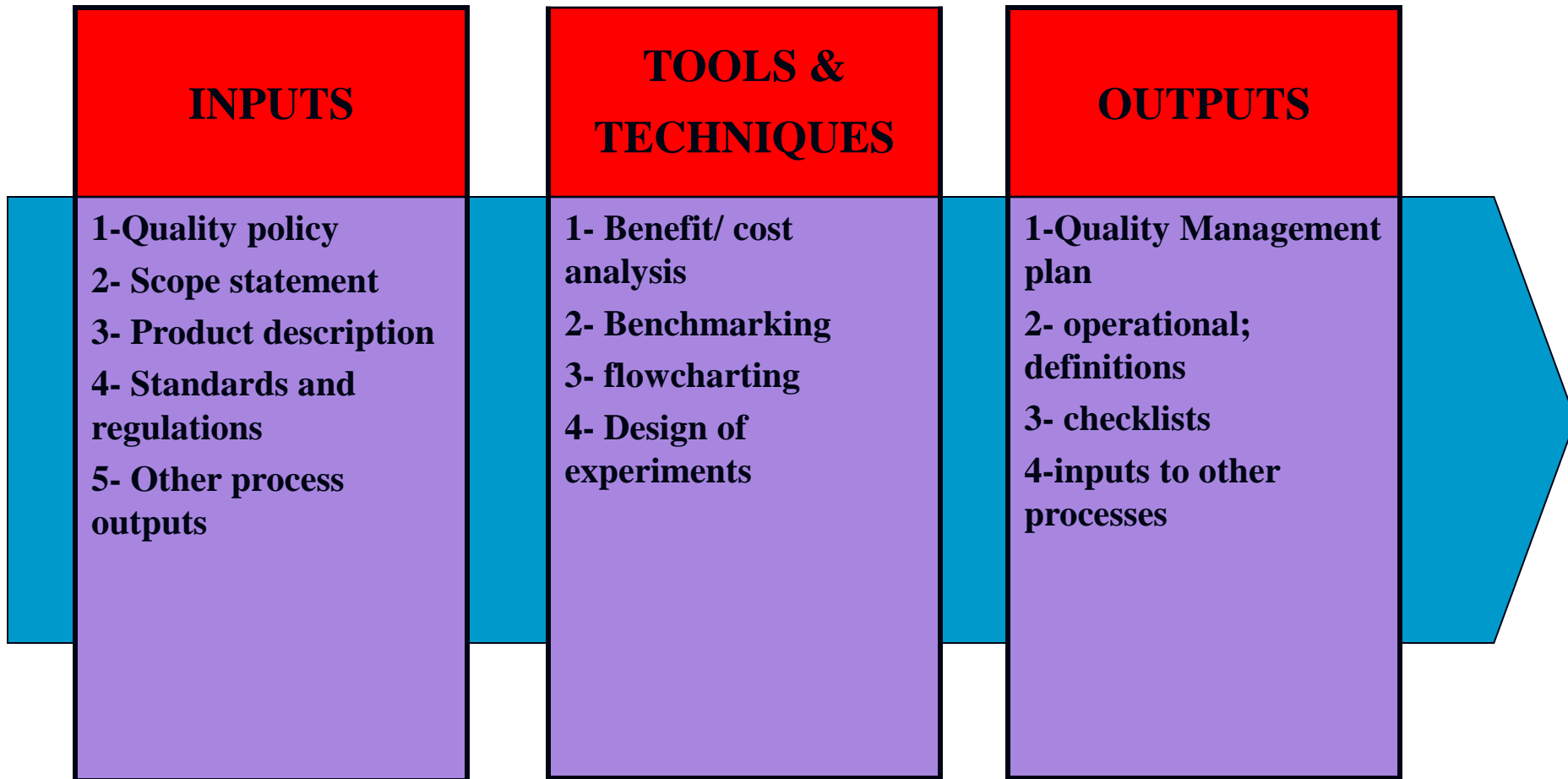
(Plan – Do – Check – Act cycle)

Project quality plan

- ❑ Quality Planning involves identifying with quality standards

- ❑ It is a key facilitating process during the Project planning Process

- ❑ In modern quality management quality is planned in and not inspected in

- ❑ Prior to the development of ISO 9000 series, quality planning concepts were widely discussed as part of quality assurance.

Project quality plan

Quality planning Flowchart

INPUTS	TOOLS & TECHNIQUES	OUTPUTS
1-Quality policy	1- Benefit/ cost analysis	1-Quality Management plan
2- Scope statement	2- Benchmarking	2- operational; definitions
3- Product description	3- flowcharting	3- checklists
4- Standards and regulations	4- Design of experiments	4-inputs to other processes
5- Other process outputs		

Project quality plan

INPUTS

Quality policy

❑ The over all intentions and direction of an organization with regard to quality, as formally expressed by the top management

❑ In the case of a joint venture, a quality policy for the individual project should be developed

❑ The management team is responsible for dissipating the quality policy to all project stakeholders through appropriate information distribution channels.

Project quality plan

INPUTS

Scope Statement

The scope statement is a key input to quality planning because it documents major project deliverables as well as project objectives which serve to define important stakeholder requirements.

Product description

Although the elements of the product description may be embodied in the scope statement, the product description often contains details of technical issues and other concerns that may affect quality planning.

Project quality plan

INPUTS

Standards and Regulations

The project management team any application-area-specific standards or regulations that may affect the project.

Other Process Outputs

In addition to the scope statement and product description, processes in other knowledge areas may produce outputs that should be considered as part of the quality planning

Example: procurement planning outputs may identify contractor quality requirements that should be reflected in the overall Quality Management Plan.

Project quality plan

TOOLS & TECHNIQUES

Benefit / cost analysis

❑ The planning process must consider benefit/cost tradeoffs

❑ The Primary Benefit: Is less work, higher productivity, lower costs, and increased stakeholder satisfaction

❑ The Primary Cost: Is the expanses associated with PQM activities

Note: it is elementary that the benefit should outweigh the cost.

Project quality plan

TOOLS & TECHNIQUES

Benchmarking

Benchmarking involves comparing actual or planned project practices to those of other projects to generate ideas to:

    1- Generate ideas for improvement

    2- provide a standard for measurement of performance

Note: other projects compared may be within the same organization or out side and may be within the same application area or in another.

Project quality plan

TOOLS & TECHNIQUES

Flow charting

❑ The flowcharting techniques in quality management generally include

   ❖ Cause and effect diagram

   ❖ System or process flow charts

❑ Flowcharting can help in anticipating probable quality problems and thus helps to develop approaches for dealing with them.

Project quality plan

TOOLS & TECHNIQUES

Design of Experiments

❑ This is an analytical technique which aims to define variables that have most influence on the overall outcome

❑ This technique is commonly applicable to the product of the project issues.

❑ However this technique can also be used in project management issues such as cost and schedule tradeoffs to allow for optima solutions.

Project quality plan

OUTPUTS

Quality Management Plan

❑ The quality management plan should describe how a project management team will implement its quality policy

❑ Also called Quality System, (in ISO terminology), the plan should define:

  ❖ The organizational structure

  ❖ Roles and responsibilities

  ❖ Resources needed for implementation of quality management

Project quality plan

OUTPUTS

Quality Management Plan (cont')

The Quality Plan should address:

❖ Quality Control of the project

❖ Quality Assurance

❖ Quality Improvement of the project

Note: the project quality plan can be highly detailed or broadly framed based on the needs of the project.

Project quality plan

OUTPUTS

Operational Definitions

An operational definition describes what something is and how it is measured by the quality control process. For example:

- ❖ The project management team must indicate the start and end of every activity in a detailed schedule

- ❖ Weather the whole activity or certain deliverables are to be measured

Operational definitions are also called *Metrics* in some areas of application.

Project quality plan

OUTPUTS

Checklists

❑ A checklist is a structured tool used to verify that a set of required steps or requirements have been performed.

❑ Many organizations have standard checklists to ensure consistency of frequently performed activities

Inputs To Other Processes

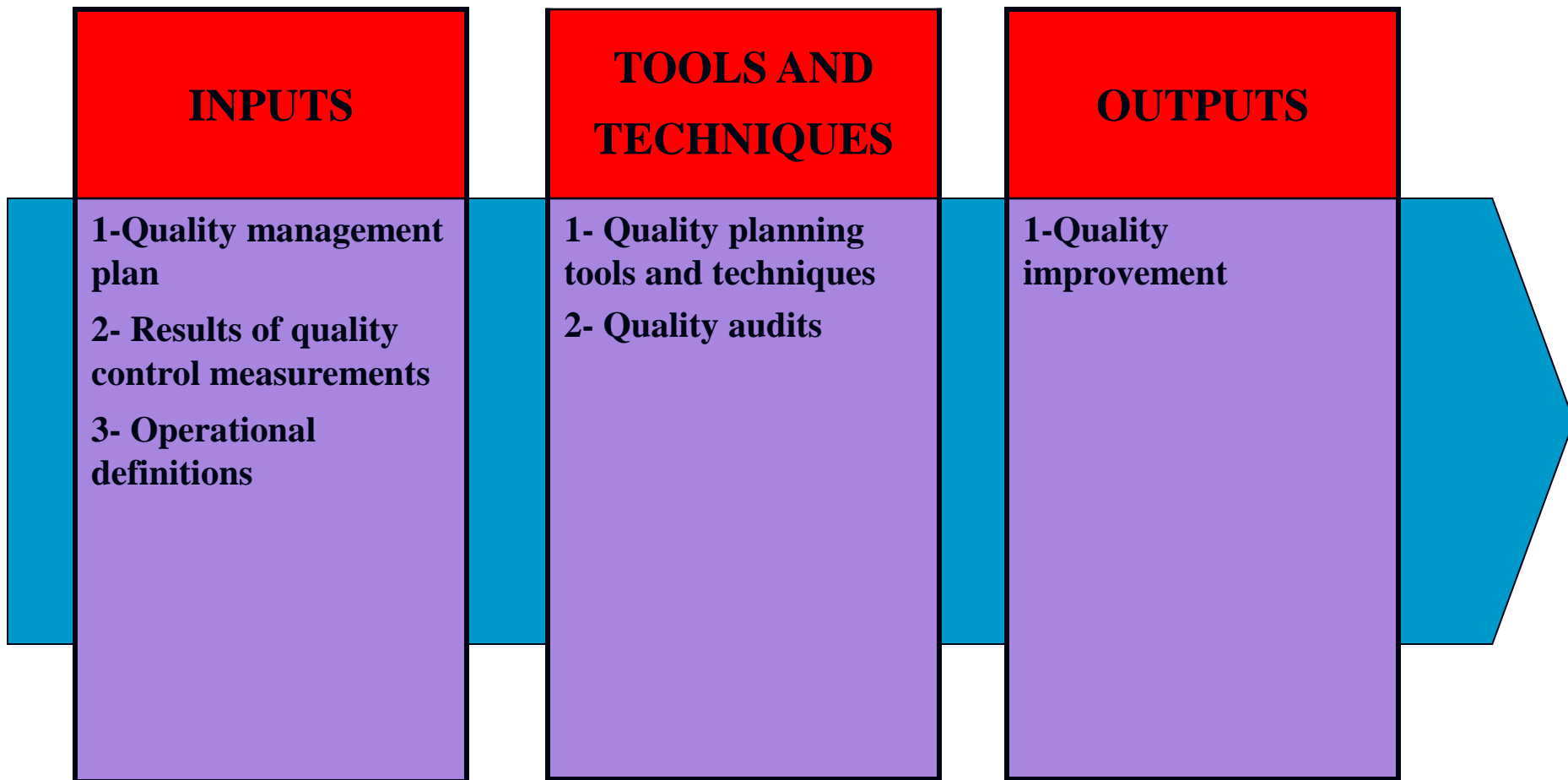The quality planning process may identify need for further activity in another area.

Quality Assurance

❑ Quality assurance encompasses all the planned and systematic activity implemented in a quality system to provide confidence that the project will satisfy the relevant quality standards

❑ Quality assurance is provided by a Quality Assurance dept.

❑ Quality assurance can be INERNAL (from the project management team to the performing organization)

❑ Quality assurance can be EXTERNAL (provided to the customer and other parties actively involved in the work of the project.

Quality Assurance

Quality Assurance Flowchart

INPUTS	TOOLS AND TECHNIQUES	OUTPUTS
1-Quality management plan 2- Results of quality control measurements 3- Operational definitions	1- Quality planning tools and techniques 2- Quality audits	1-Quality improvement

Quality Assurance

INPUTS

❑ Quality management plan as previously described

❑ Results of quality control measurements which are records of quality control testing and measurement in a format of comparison or analysis

❑ Operational definitions as previously described in the output of the Quality Planning.

Quality Assurance

TOOLS & TECHNIQUES

❑ Quality Planning tools and techniques , which can be used for quality assurance as well

❑ Quality Audits which are a structured review of other quality management activities.

❖ They may be timely or carried out randomly

❖ They may be carried out by properly trained Internal-auditors or by third parties such as quality systems registration agencies.

Quality Assurance

OUTPUTS

Quality Improvement

❑ Quality improvement includes taking action to increase the effectiveness and efficiency of the project to be provide added benefits to the stakeholders of that project.

❑ In many cases the implementation of quality improvements will require preparation of change requests or taking corrective actions and will be handled according to procedure for overall change control.

Quality Control

- Quality control involves monitoring specific project results to determine if they comply with relevant standards and identifying ways to eliminate causes of unsatisfactory results.

- Project results mentioned include both PRODUCT results such as deliverables and MANAGEMENT results such as cost and schedule performance

- Quality control is often performed by a quality control department

- The project management team should have a working knowledge of statistical quality control especially sampling and probability to help evaluate and control outputs.
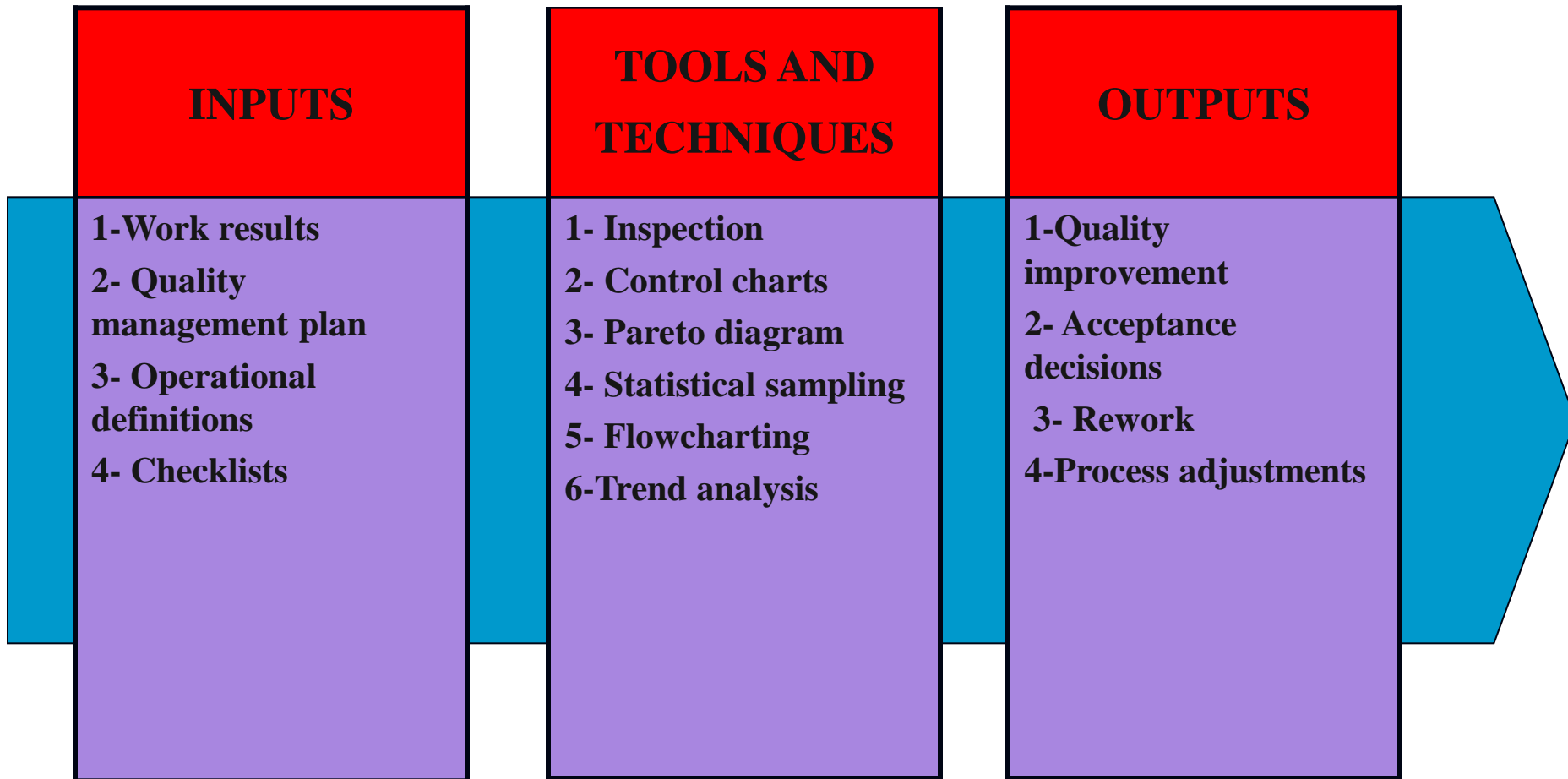
Quality Control

The project management should be aware of the following among other subjects.

❖ *Prevention* (keeping errors out of the process)

❖ *Inspection* (keeping errors out of the customers hand

❖ *Attribute sampling* (for conformity of results)

❖ *Variable sampling* (where the results are rated on a continuous scale that measures the degree of conformity or non conformity

❖ *Special cause* (unusual events)

❖ *Random causes* (normal process variations)

❖ *Tolerances* (where results should fall with in a defined tolerance range)

❖ *Control limits* (the process is in control if it falls within these defined limits)

Quality Control

Quality control Flowchart

INPUTS	TOOLS AND TECHNIQUES	OUTPUTS
1-Work results	1- Inspection	1-Quality improvement
2- Quality management plan	2- Control charts	2- Acceptance decisions
3- Operational definitions	3- Pareto diagram	3- Rework
4- Checklists	4- Statistical sampling	4-Process adjustments
	5- Flowcharting	
	6-Trend analysis	

Quality Control

INPUTS

1. **Work results**: including both product results and process results

2. **The quality management plan**

3. **Operational definitions**

4. **Checklists.**

Quality Control

TOOLS & TECHNIQUES

Inspection

❑ Inspection includes activities such as measuring, examining and testing undertaken to determine whether results conform to requirements

❑ Inspection can be carried out on the level of a single activity or a final product

❑ Inspections can be called reviews, product reviews, audits, and walk-throughs.

Quality Control

TOOLS & TECHNIQUES

Control Charts

- ❖ These charts are graphical representations that display the result of a process over time and are used to determine if the process is "in control"

- ❖ When in control the process should *not* be adjusted , however it may be *changed* in order to provide improvements

- ❖ Control charts may be used ot monitor any type of output variable

- ❖ Control charts are most often used to monitor repetitive activity in production but can also be used to monitor cost and schedule variances.

Quality Control

TOOLS & TECHNIQUES

Pareto Diagram

❑ A Pareto diagram is a histogram ordered by frequency of occurrence which shows how many results were generated by what category or identified cause

❑ The project management team should take action to fix the problems that are causing the greatest number of defects first

❑ Typically the Pareto diagram reflects that a relatively small number of causes are responsible for the majority of the problems or defects.

Quality Control

TOOLS & TECHNIQUES

Statistical Sampling

❑ Statistical sampling involves choosing a part of a population of interest for inspection

❑ Appropriate sampling can effectively reduce the cost of quality control

❑ There is a vast body of knowledge related to statistical sampling and therefore the management must be aware of the various sampling techniques.

Quality Control

TOOLS & TECHNIQUES

Flowcharting

Flowcharting is used in quality control to help analyze how a problem occurs

Trend Analysis

The trend analysis involves the use of mathematical techniques to forecast future outcomes based on historical results it is often used to monitor.

 - Technical performance – *how many defects have been identified and how many remain uncorrected*

 - Cost and schedule performance – *how many activities in a certain period were completed with significant variances*

Project quality plan

OUTPUTS

❑ Quality improvement (previously described)

❑ Acceptance decisions, where the inspected items will either be accepted or rejected and those rejected may be reworked

❑ Rework, which is an action taken to bring defects or nonconforming items into compliance with requirements and specifications. Rework is a frequent cause of project over-runs and the project management team must make an effort to minimize it .

Project quality plan

OUTPUTS

Completed Checklists, which become a part of a project record when they are used

Process Adjustments, which involves immediate corrective or preventive action as a result of quality control measurements. In some cases the adjustment may need to be handled according to procedures for overall change control.

Project quality plan

In **conclusion** we find that in order to achieve PQM or Project Quality Management , one has to integrate the concepts of Project management with the processes of quality management at the project scale and throughout its different phases.

for effective PQM it is essential that the project management team be aware of the concepts of quality management to be able to make use of the described processes and implement them to achieve the required end product.

Plan Communication

Communication plan: Kế hoạch thông tin

Tech. Asst.		PM

Trưởng nhóm		

Thành viên
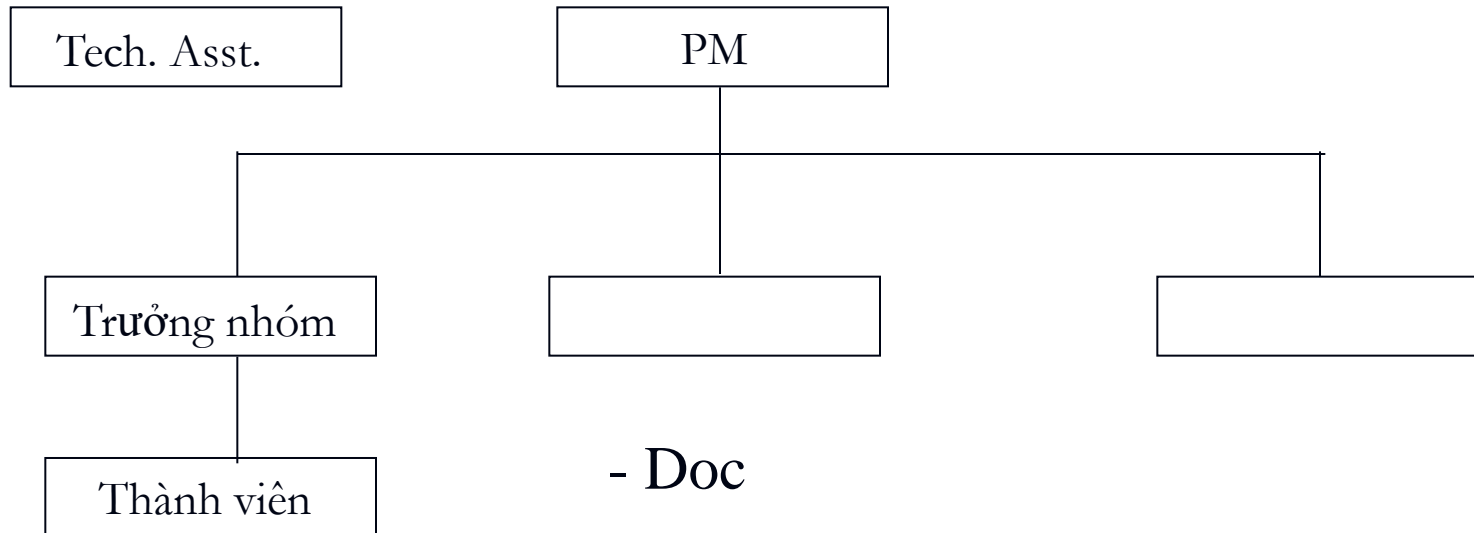
- Doc

- Report

- Problem

- Mechanism (cơ chế): Các cách thức liên lạc bằng Email, cách thức báo cáo vượt cấp, biên bản các cuộc họp.

Plan Communication

How do we Manage Communications?

Five processes

- Identify Stakeholders
- Plan Communications
- Distribute Information
- Manage Stakeholder Expectations
- Report Performance

Identify Stakeholders	→	Plan Communications	→	Distribute Information	→	Manage Stakeholder Expectations	→	Report Performance
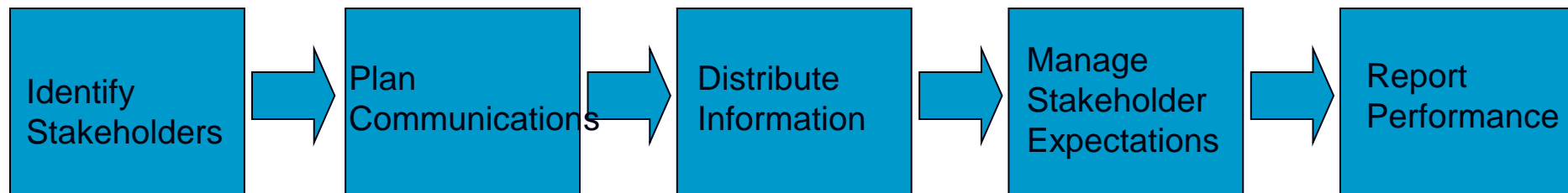
Plan Communication

Identify Stakeholders

Inputs

Tools & Techniques

Project Charter

Procurement Documents

Enterprise Environmental Factors

Organizational Process Assets

❑ Stakeholder analysis

❑ Expert Judgment

Outputs

Stakeholder Register

Stakeholder Management Strategy

Identify Stakeholders → Plan Communications → Distribute Information → Manage Stakeholder Expectations → Report Performance
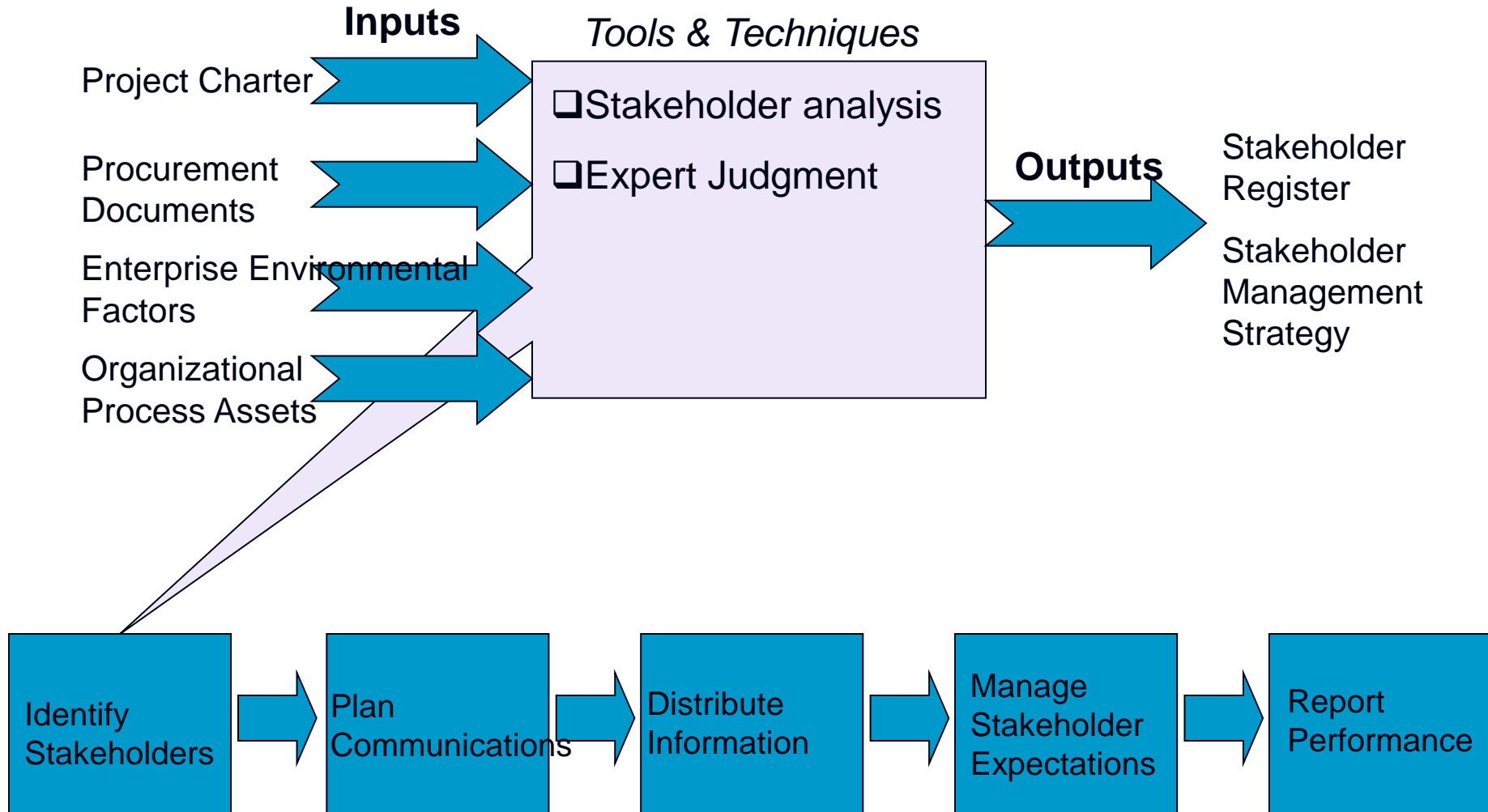
Plan Communications

Stakeholder Register

Stakeholder Management Strategy

Enterprise Environmental Factors

Organizational Process Assets

Inputs

Tools & Techniques

❑ Communications requirement analysis

❑ Communications technology

❑ Communications models

❑ Communications methods

Outputs

Communications Management Plan

Project Document Updates

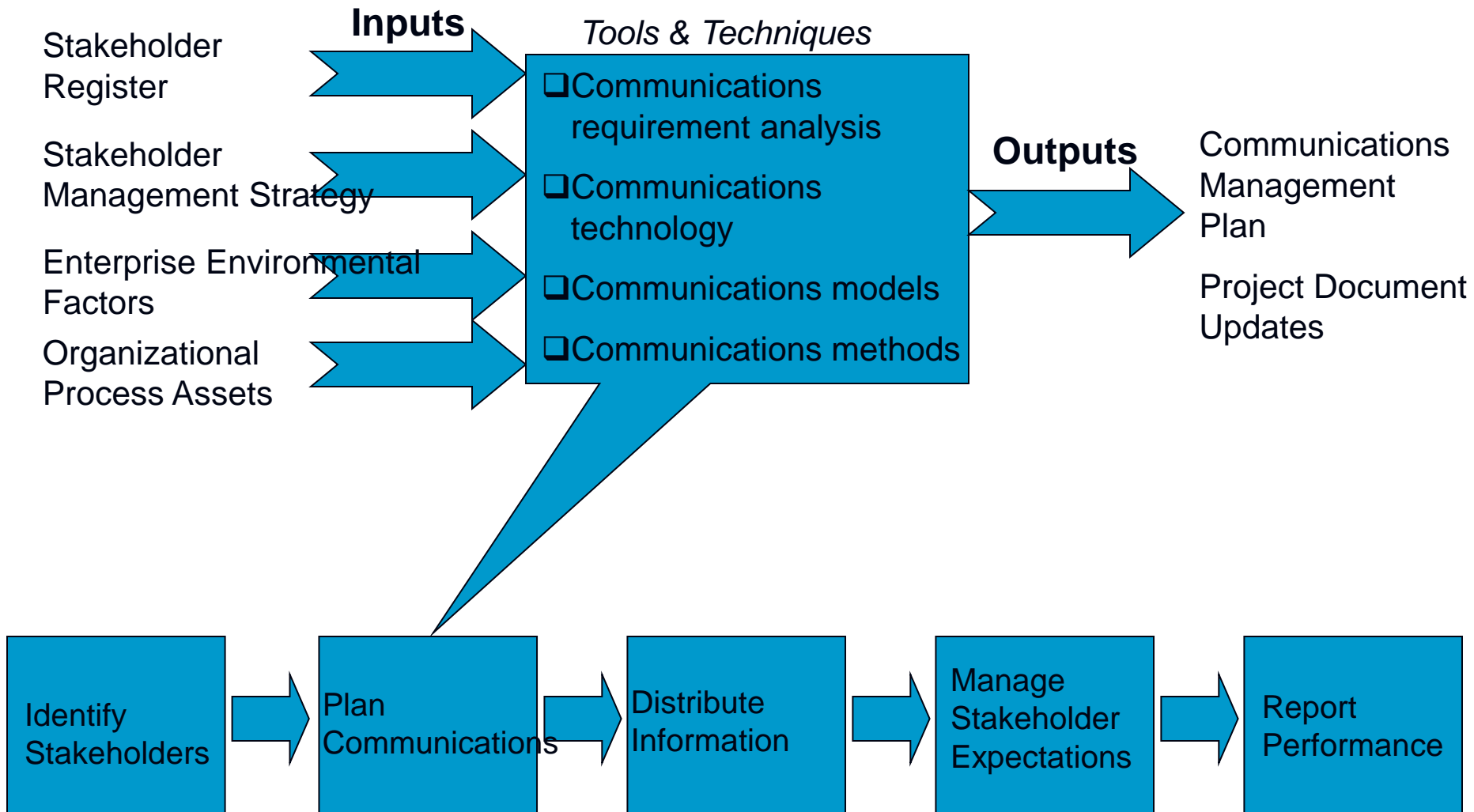| Identify Stakeholders	Plan Communications	Distribute Information	Manage Stakeholder Expectations	Report Performance

Plan Communications

Com Requirement Analysis

❑ Who needs to know and how much?

❑ Communicate good and bad, but not too much to overwhelm team

❑ Communication channels grows exponentially not linearly as team members are added!

> # of Com Channels = N(N-1)/2
>
> Where N = # of Stakeholders

Plan Communications
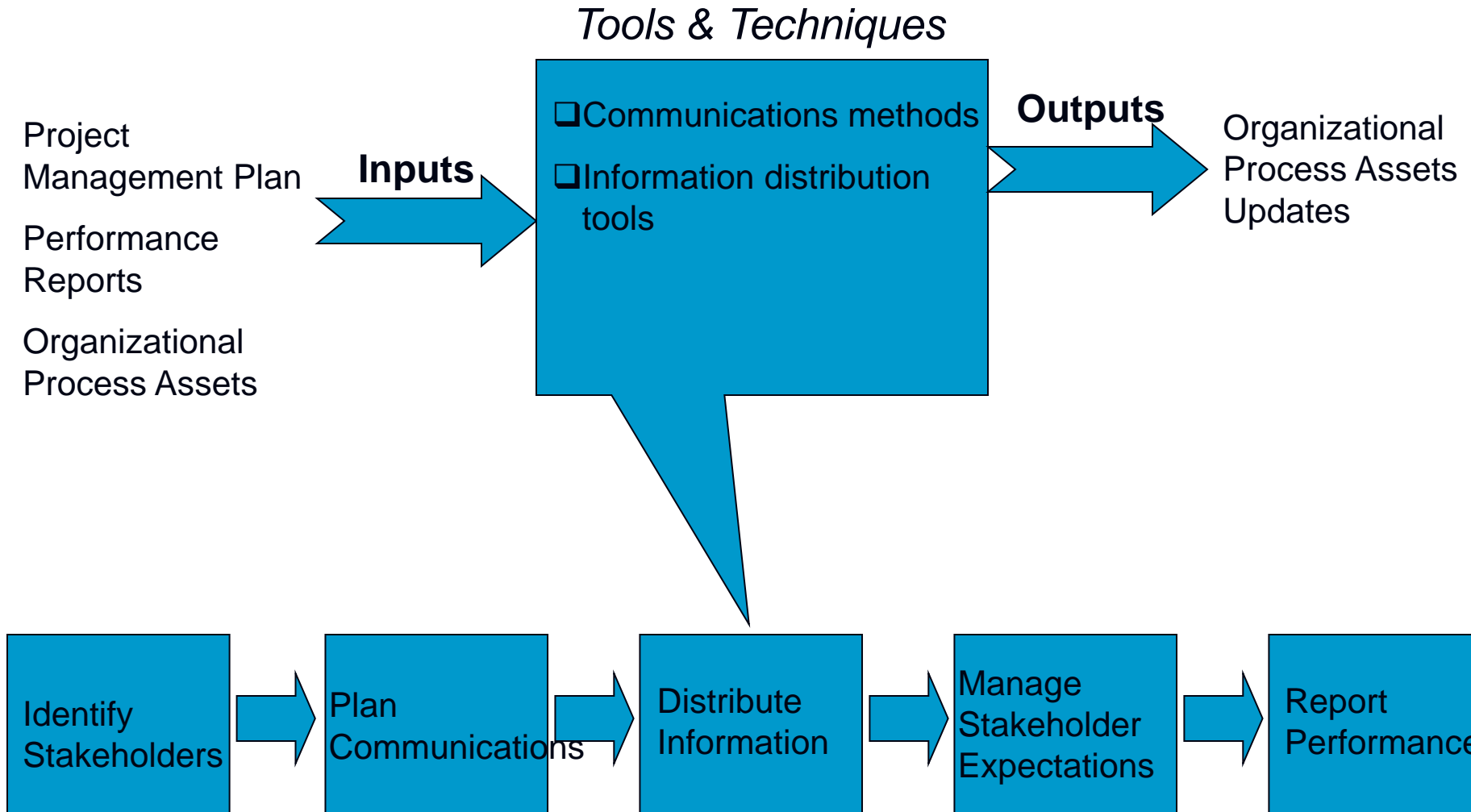
Communications Management Plan

Who, what, when, and how information is to be distributed

Issue escalation process.

Information Type	Distribution Frequency	Champion	Project Manager	R&D	Distribution	Sales and Marketing	File
Charter	Revision	✓	✓	✓	✓	✓	✓
Project Plan	Revision	✓	✓	✓	✓	✓	✓
Launch Plan	Revision	✓	✓				✓
Product Specifications	Revision		✓	✓		✓	✓
Schedule	Monthly	✓	✓	✓	✓	✓	✓
Weekly Updates	Weekly	✓	✓	✓	✓	✓	✓
Project Minutes	Weekly		✓				✓
Project emails	As-Appropriate						✓
Project Memos	As-Appropriate		✓				✓
Vendor Info	As-Appropriate				✓		✓
Progress Update	Quarterly	✓	✓	✓	✓	✓	✓
Contractor Info			✓		✓		✓

Plan Communications

Distribute Information

Tools & Techniques

Inputs

Project Management Plan

Performance Reports

Organizational Process Assets

- Communications methods
- Information distribution tools

Outputs

Organizational Process Assets Updates

Identify Stakeholders → Plan Communications → Distribute Information → Manage Stakeholder Expectations → Report Performance

Plan Communications

Distribution Techniques - Written

PM Sort and Distribute

- Small projects only, issues with timely delivery of info

Document Control Sort & Distribute

- Mid sized projects, issues with retention of staff qualified to sort info

Document Control Notification

- Daily list of all docs received emailed to team, who are directed to central location for document review.

Plan Communications
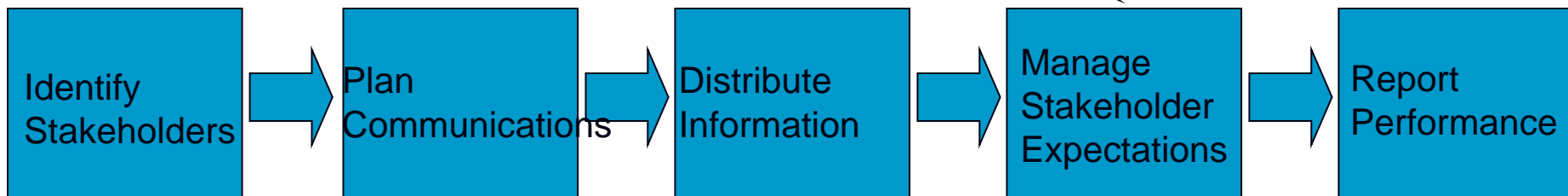
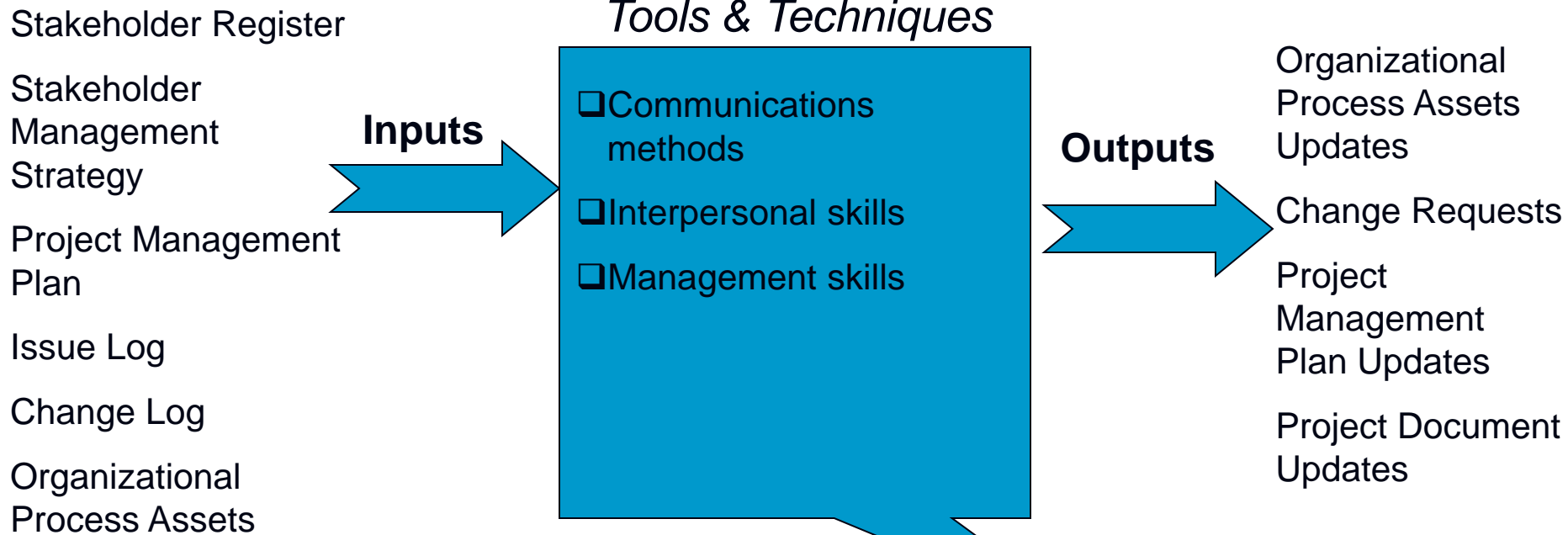**Distribution Techniques** - Verbal

Where do team members get their information[1]?

- 7% from words
- 38% from tone
- 55% non-verbal cues

Your presentation style is extremely important

Plan Communications

Manage Stakeholder Expectations

Stakeholder Register

Stakeholder Management Strategy

Project Management Plan

Issue Log

Change Log

Organizational Process Assets

Tools & Techniques

Inputs

❑ Communications methods

❑ Interpersonal skills

❑ Management skills

Outputs

Organizational Process Assets Updates

Change Requests

Project Management Plan Updates

Project Document Updates

| Identify Stakeholders | → | Plan Communications | → | Distribute Information | → | Manage Stakeholder Expectations | → | Report Performance |

Plan Communications

Why Manage Stakeholders?

We Retain[1]

- 10% from reading
- 20% hearing
- 30% read and hear
- 50% that we discuss
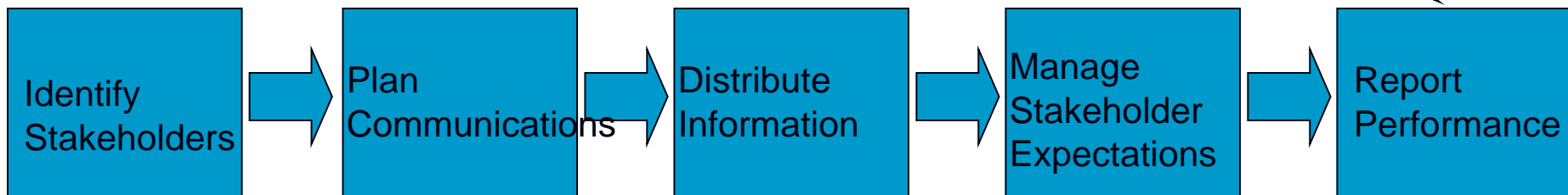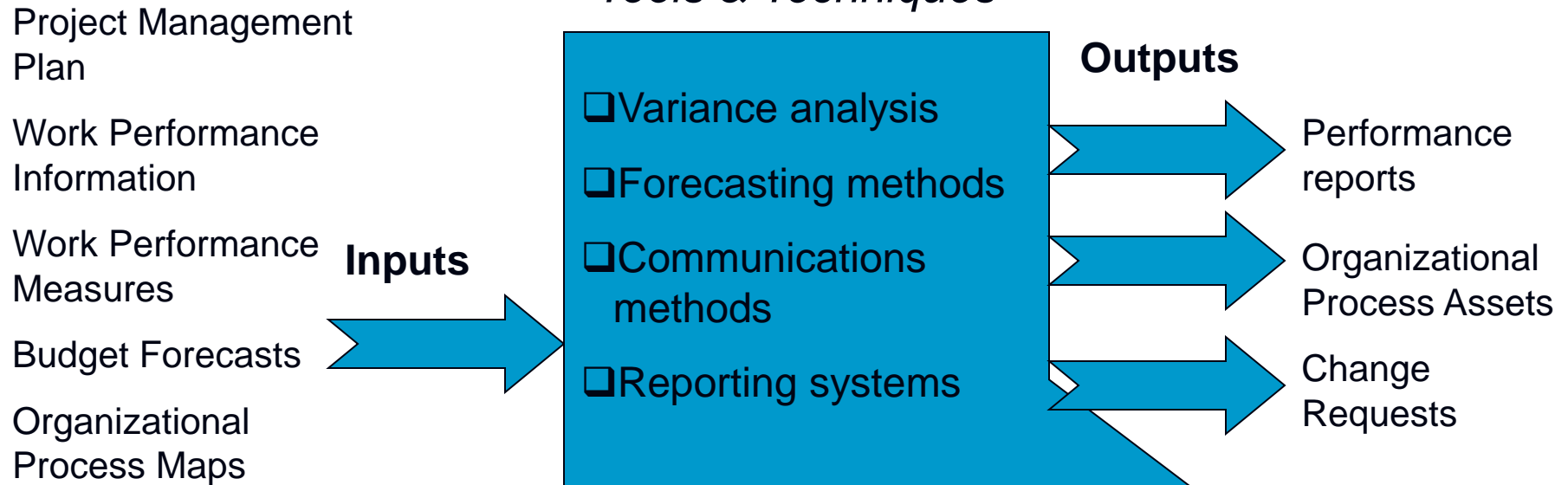- 80% of experiences
- 90% that we teach

How Long[1]

- 50% now
- 25% in 2 days
- 10% after 7 days

Agreements without documentation will come back to haunt you!
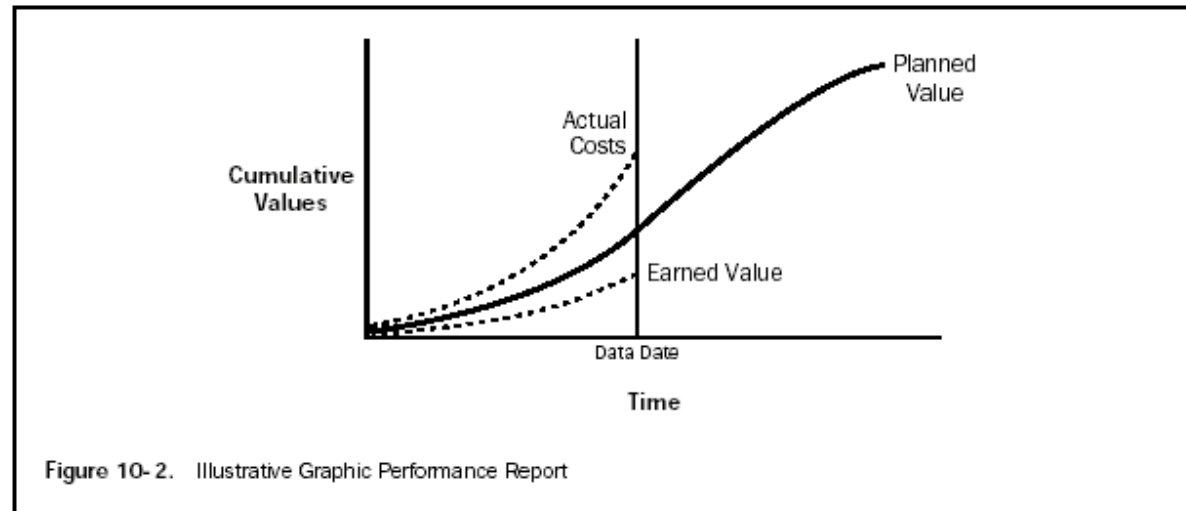
Plan Communications

Report Performance

Tools & Techniques

Project Management Plan

Work Performance Information

Work Performance Measures

Inputs

Budget Forecasts

Organizational Process Maps

- ❑ Variance analysis
- ❑ Forecasting methods
- ❑ Communications methods
- ❑ Reporting systems

Outputs

Performance reports

Organizational Process Assets

Change Requests

| Identify Stakeholders | → | Plan Communications | → | Distribute Information | → | Manage Stakeholder Expectations | → | Report Performance |

Plan Communications

Performance Reports

- Common Types
  - Gantt Charts
  - S-Curves
  - Histograms
  - EVA Tables

Figure 10-2. Illustrative Graphic Performance Report

WBS Element	Planned Budget ($) (PV)	Earned Earned Value ($) (EV)	Cost Actual Cost ($) (AC)	Cost Variance ($) (EV − AC)	Cost Variance (%) (CV ÷ EV)	Schedule Variance ($) (EV − PV)	Schedule Variance (%) (SV ÷ PV)	Performance Index Cost CPI (EV ÷ AC)	Performance Index Schedule SPI (EV ÷ PV)
1.0 Pre-Pilot Plan	63,000	58,000	62,500	−4,500	−7.8	−5,000	−7.9	0.93	0.92
2.0 Checklists	64,000	48,000	46,800	1,200	2.5	−16,000	−25.0	1.03	0.75
3.0 Curriculum	23,000	20,000	23,500	−3,500	−17.5	−3,000	−13.0	0.85	0.87
4.0 Mid-Term Evaluation	68,000	68,000	72,500	−4,500	−6.6	0	0.0	0.94	1.00
5.0 Implementation Support	12,000	10,000	10,000	0	0.0	−2,000	−16.7	1.00	0.83
6.0 Manual of Practice	7,000	6,200	6,000	200	3.2	−800	−11.4	1.03	0.89
7.0 Roll-Out Plan	20,000	13,500	18,100	−4,600	−34.1	−6,500	−32.5	.075	0.68
Totals	257,000	223,700	239,400	- 15,700	-7.0	-33,300	- 13.0	0.93	0.87

Note: All figures are project-to-date.

*Other units of measure that may be used in these calculations may include: labor hours, cubic yards of concrete, etc.

Figure 10-3. Illustrative Tabular Performance Report

Plan Communications

Communication Summary

- An effective message must survive the noise and return as feedback to the sender

- Channels increase exponentially with additional people [# = N(N-1)/2]

- Communicate and document to keep the team and stakeholders happy and productive!

Tài liệu tham khảo

[1] Bernard W. Taylor III, "*Introduction to Management Science*", NXB Pearson 2010.

[2] Cao Hào Thi "*Quản trị dự án*", NXB ĐH Quốc Gia Tp. HCM 2012.