

NETWORK SECURITY PROJECT INTEGRATION MANAGEMENT

BY: DR. ZAHEERA BINTI ZAINAL ABIDIN



zaheera@utem.edu.my



LEARNING OUTCOME



Upon completion of this module, candidate should be able to:

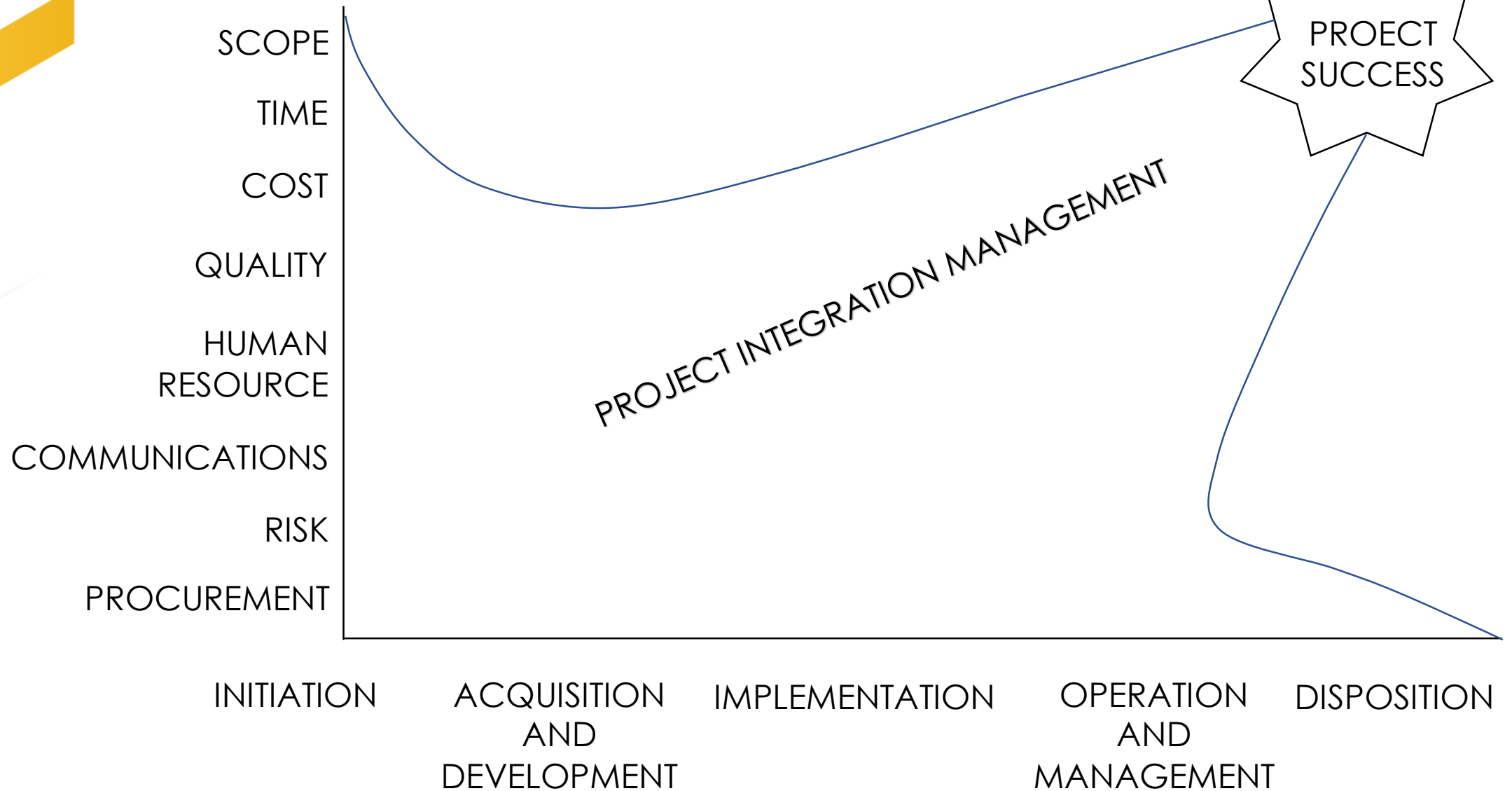
- Understand the framework for project integration
- Explain the project integration process



FRAMEWORK

Fig 1: Framework for Project Integration Management

KNOWLEDGE AREAS





PROJECT INTEGRATION MANAGEMENT

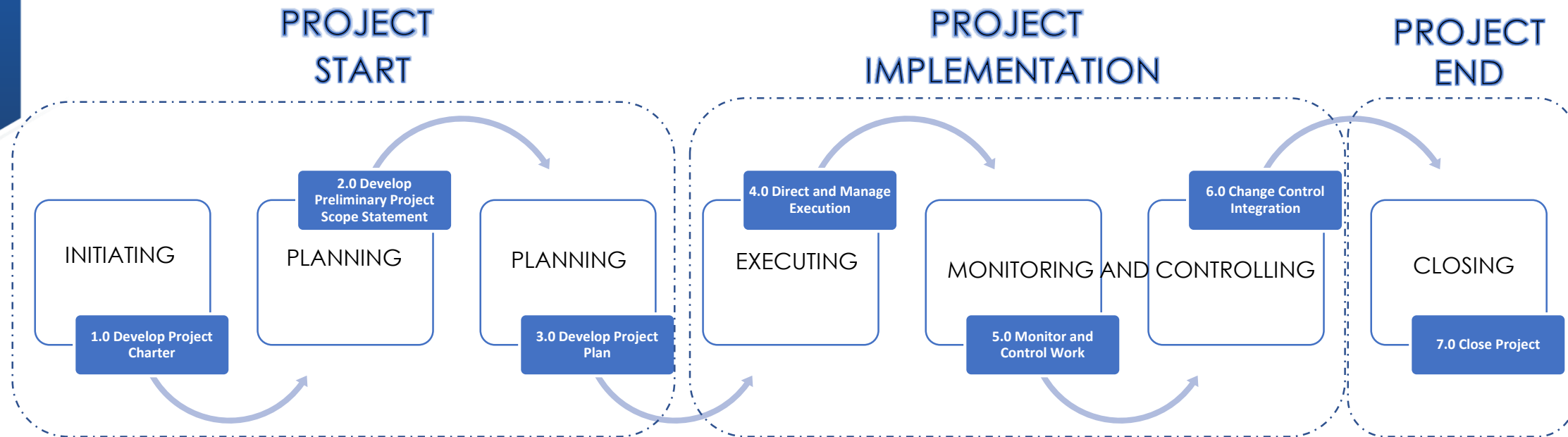
- Project integration management helps in sustaining the stability of the project, which consists of phases of project management group such as initiation, planning, executing, monitoring and control, and closing.
- During the course of a project, a project manager may have to schedule tasks, purchase products, address risks, replace project team members, re-schedule tasks, and accomplish many other things necessary to ensure successful project completion.
- Keeping track of these tasks can be overwhelming, and knowing how to manage outcomes when different project processes overlap is crucial. Project integration management helps a project manager to coordinate different project activities in a systematic way.



PROJECT INTEGRATION MANAGEMENT

- It is possible to execute projects while keeping a wider picture by adopting a holistic approach to manage projects and their interdependencies.
- The project integration is vital since it provides a synchronization through the project lifecycle.
- All members of the project team have a clear understanding of their position roles and responsibilities.
- The project integration is to ensures the project runs smoothly.
- The progress of the project is monitored and measured based on the demand from the customer and the key performance indicators.

PROJECT INTEGRATION MANAGEMENT PROCESSES



Keeping the project together



PROJECT INTEGRATION MANAGEMENT PROCESSES

- **Develop the project charter:** working with stakeholders to create the document that formally authorizes a project—the charter
- **Develop the preliminary project scope statement:** working with stakeholders, especially users of the project's products, services, or results, to develop the high-level scope requirements and create a preliminary project scope statement
- **Develop the project management plan:** coordinating all planning efforts to create a consistent, coherent document—the project management plan



PROJECT INTEGRATION MANAGEMENT PROCESSES

- **Direct and manage project execution:** carrying out the project management plan by performing the activities included in it
- **Monitor and control the project work:** overseeing project work to meet the performance objectives of the project
- **Perform integrated change control:** coordinating changes that affect the project's deliverables and organizational process assets
- **Close the project:** finalizing all project activities to formally close the project

PROJECT INTEGRATION MANAGEMENT SUMMARY

Initiating

Process: **Develop project charter**

Output: Project charter

Process: **Develop preliminary project scope statement**

Output: Preliminary project scope statement

Planning

Process: **Develop project management plan**

Output: Project management plan

Executing

Process: **Direct and manage project execution**

Outputs: Deliverables, requested changes, work performance information, implemented change request, corrective actions, preventive actions, defect repair

Monitoring and Controlling

Process: **Monitor and control project work**

Outputs: Recommended corrective and preventive actions, forecasts, recommended defect repair, requested changes

Process: **Integrated change control**

Outputs: Approved and rejected change requests, approved corrective and preventive actions, approved and validated defect repair, deliverables, updates to the project management plan and scope statement

Closing

Process: **Close Project**

Outputs: Final products, services, or results, administrative and contract closure procedures, updates to organizational process assets

Project Start

Project Finish



PROJECT INTEGRATION MANAGEMENT PROCESSES

- The project managers takes responsibility for
 - Coordinating all the people, plans and work required to complete a project
 - Focusing on the big picture and steering the project team toward successful completion
 - Making the final decisions when there are conflicts among project goals or people involved
 - Communicating key project information to top management



PROJECT INTEGRATION MANAGEMENT PROCESSES

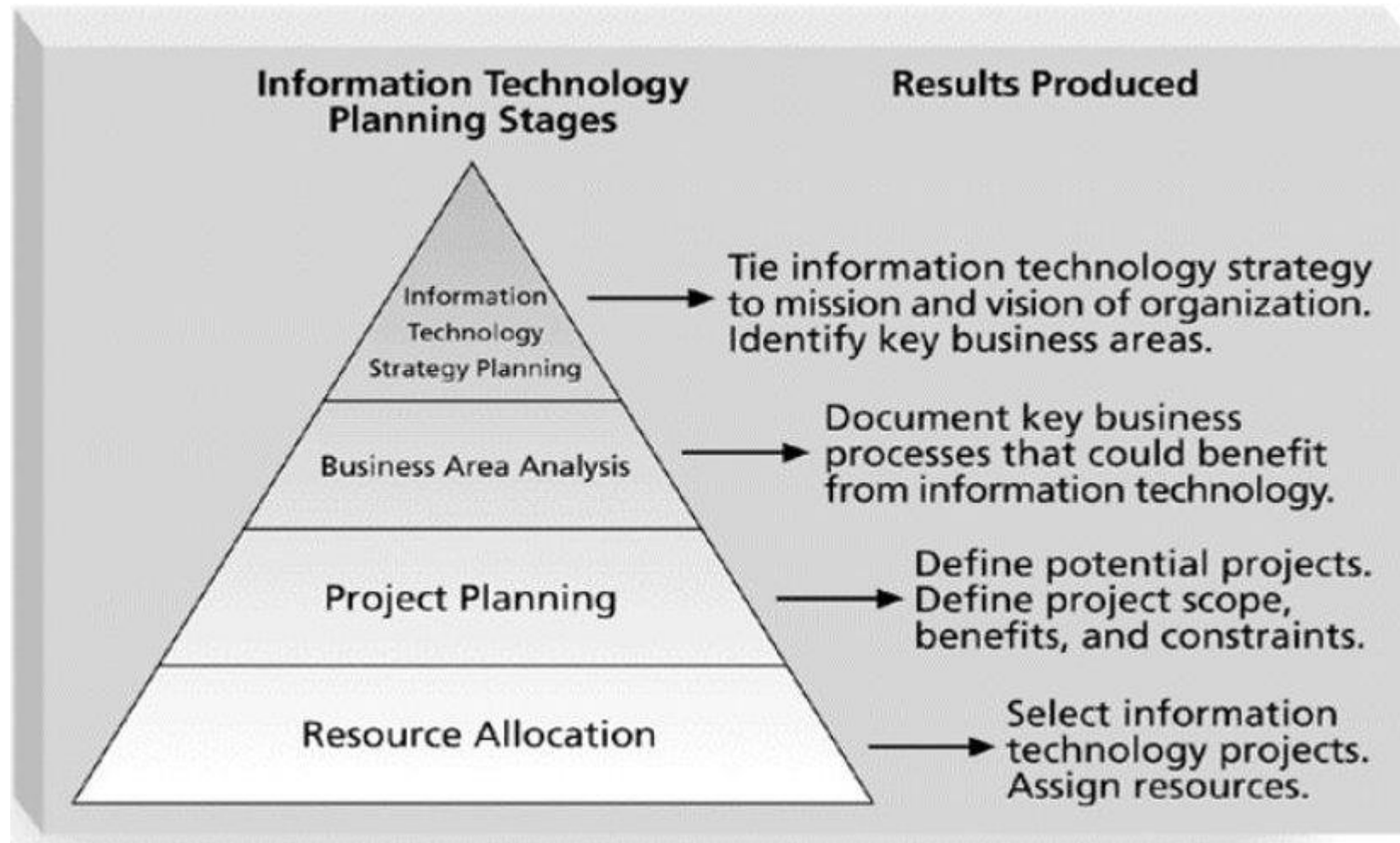
- Good project integration management is critical to providing stakeholder satisfaction
 - **Interface management** – identifying and managing the points of interaction between various elements of the project
 - The number of interfaces can increase exponentially as the number of people involved in the project increases
 - Therefore, the PM must establish and maintain good communication and relationships with all stakeholders, customers the project team, top management , other PMs and opponents of the project.
 - This was one of Nick Carson's mistakes – he did not find out what top management expected of him as PM and did not see the big picture



STRATEGIC PLANNING & PROJECT SELECTION

- **Strategic planning** involves determining long-term objectives, predicting future trends, and projecting the need for new products and services
- Organizations often perform a **SWOT Analysis**
 - Analyzing **S**trengths, **W**eaknesses, **O**pportunities, and **T**hreats
 - Very important to have managers from outside the IT dept assist in the planning process as they can help to understand organizational strategies and identify the business areas that support them
- As part of strategic planning, organizations:
 - Identify potential projects
 - Use realistic methods to select which projects to work on
 - Formalize project initiation by issuing a project charter

IT PLANNING PROCESS





ALIGNING IT WITH BUSINESS STRATEGY

- This is consistently the top concern for CIOs
- Research shows that supporting explicit business objectives is the number one reason cited for why organizations invest in IT projects
 - An organization's strategic plan should guide the IT project selection process
- Many IT systems are “strategic” because they directly support key business strategies
 - Wal-Mart's inventory control system
 - Fed-Ex's online package tracking system



BEST PRACTICE

- Only one in seven product concepts comes to fruition
 - Companies like Proctor & Gamble, Johnson and Johnson, Hewlett Packard, and Sony are consistently successful in New Product Development (NPD) because they use a disciplined, systematic approach to NPD projects based on best practices
 - Align projects and resources with business strategies
 - Focus on customer needs when identifying potential projects
 - Assign project managers to lead the projects
- Four important forces behind NPD success include the following:
 1. A product innovation and technology strategy for the business
 2. Resource commitment and focusing on the right projects, or solid portfolio management
 3. An effective, flexible and streamlined idea-to-launch process
 4. The right climate and culture for innovation, true cross-functional teams, and senior management commitment to NPD



METHODS FOR SELECTING PROJECTS

- There are usually more projects than available time and resources to implement them
- Methods for selecting projects include:
 - Focusing on broad organizational needs
 - Categorizing information technology projects
 - Performing net present value or other financial analyses
 - Using a weighted scoring model
 - Implementing a balanced scorecard
- In practice, organizations usually use a combination of these approaches to select projects. Each approach has its pros and cons



FOCUSING ON BROAD ORGANIZATIONAL NEEDS

- Projects that address broad organizational needs are more likely to be successful because they will be important to the organization
- It is often difficult to provide strong justification for many IT projects and/or estimate their financial value, but everyone agrees they have a high value
- “It is better to measure gold roughly than to count pennies precisely”
- Three important criteria for projects:
 - There is a **need** for the project
 - There are **funds** available
 - There’s a strong **will** to make the project succeed



CATEGORIZING IT PROJECTS

- One categorization is the impetus for a project i.e., responding to :
 - A **problem** is an undesirable situation that prevents an org. from achieving its goals – system slow, needs upgrades
 - An **opportunity** is a chance to improve the org. – creating a new product
 - A **directive** is a new requirement imposed by management, govt or some external influence – medical technologies must meet govt requirements
- Another categorization is how long it will take to do and when it is needed.
- Another is the overall priority of the project.



FINANCIAL ANALYSIS OF PROJECTS

- Financial considerations are often an important consideration in selecting projects
 - “Projects are never ends in themselves. Financially they are always a means to an end, cash” Dennis Cohen and Robert Graham , *The Project Manager’s MBA*
- Three primary methods for determining the projected financial value of projects
 - Net present value (NPV) analysis
 - Return on investment (ROI)
 - Payback analysis
- PMs must become familiar with the language of business executives in order to make their case



NET PRESENT VALUE ANALYSIS

- A ringgit earned today is worth more than a ringgit earned five years from now.
- **Net present value** (NPV) analysis is a method of calculating the expected net monetary gain or loss from a project by discounting all expected future cash inflows and outflows to the present point in time.
- Projects with a positive NPV should be considered if financial value is a key criterion because that means the return from a project exceeds the cost of capital (the return available by investing the capital elsewhere)
- The higher the NPV, the better.



NET PRESENT VALUE ANALYSIS

- NPV is the difference between the present value of cash inflows and the present value of cash outflows.
- NPV compares the value of a dollar today to the value of that same dollar in the future, taking inflation and returns into account.
- For example, if a retail clothing business wants to purchase an existing store, it would first estimate the future cash flows that store would generate, and then discount those cash flows into one lump-sum present value amount, say \$565,000.
 - If the owner of the store was willing to sell his business for less than \$565,000, the purchasing company would likely accept the offer as it presents a positive NPV investment.
 - Conversely, if the owner would not sell for less than \$565,000, the purchaser would not buy the store, as the investment would present a negative NPV at that time and would, therefore, reduce the overall value of the clothing company.

NET PRESENT VALUE ANALYSIS

- NPV = Net Present value = Present value of net cash flows
 - Each cash inflow/outflow is discounted back to its PV and then they are summed.

$$NPV = C_0 + \sum_{t=1}^N \frac{C_t}{(1+r)^t}$$

$$NPV = \sum_{t=0}^N \frac{C_t}{(1+r)^t}$$

or shortened

t - the time of the cash flow

N - the total time of the project

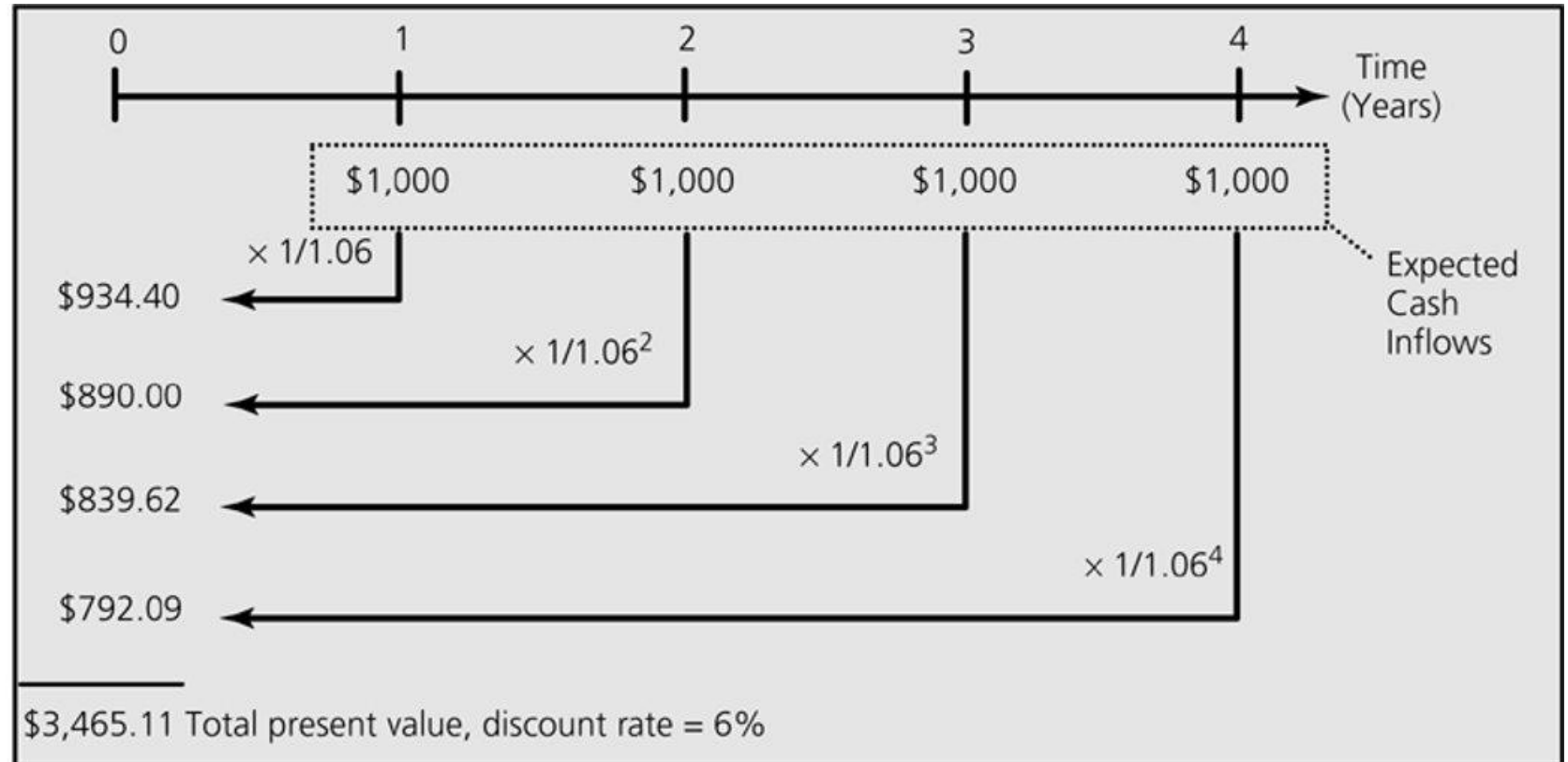
r - the discount rate (the rate of return that could be earned on an investment in the financial markets with similar risk.)

C_t - the net cash flow (the amount of cash) at time t

C_0 - the initial investment

NET PRESENT VALUE ANALYSIS

FIGURE 7.3
Example of
Present Value
of Future Cash
Flows



NET PRESENT VALUE ANALYSIS

	A	B	C	D	E	F	G
1	Discount rate	10%					
2							
3	PROJECT 1	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL
4	Benefits	\$0	\$2,000	\$3,000	\$4,000	\$5,000	\$14,000
5	Costs	\$5,000	\$1,000	\$1,000	\$1,000	\$1,000	\$9,000
6	Cash flow	(\$5,000)	\$1,000	\$2,000	\$3,000	\$4,000	\$5,000
7	NPV →	\$2,316					
8		Formula =npv(b1,b6:f6)					
9							
10	PROJECT 2	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL
11	Benefits	\$1,000	\$2,000	\$4,000	\$4,000	\$4,000	\$15,000
12	Costs	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$10,000
13	Cash flow	(\$1,000)	\$0	\$2,000	\$2,000	\$2,000	\$5,000
14	NPV →	\$3,201					
15		Formula =npv(b1,b13:f13)					
16							

JWD CONSULTING NPV EXAMPLE

Multiply
by the
discount
factor each
year, then take
cum.
benefits –
costs to
get NPV

Discount rate	8%					
Assume the project is completed in Year 0			Year			
	0	1	2	3	Total	
Costs	140,000	40,000	40,000	40,000		
Discount factor	1	0.93	0.86	0.79		
Discounted costs	140,000	37,200	34,400	31,600	243,200	
Benefits	0	200,000	200,000	200,000		
Discount factor	1	0.93	0.86	0.79		
Discounted benefits	0	186,000	172,000	158,000	516,000	
Discounted benefits - costs	(140,000)	148,800	137,600	126,400	272,800	← NPV
Cumulative benefits - costs	(140,000)	8,800	146,400	272,800		
ROI	112%					
	Payback In Year 1					

Note: See the template called business_case_financials.xls



NPV CALCULATIONS

- Determine estimated costs and benefits for the life of the project and the products it produces
- Determine the discount rate
- Calculate the NPV
 - Use NPV function in Excel (npv9discount rate, cash flows range)
 - Calculate total discounted benefits and total discounted costs . NPV is benefits - costs

RETURN ON INVESTMENT

- **Return on investment** (ROI) is calculated by subtracting the project costs from the benefits and then dividing by the costs
$$\text{ROI} = (\text{total discounted benefits} - \text{total discounted costs}) / \text{discounted costs}$$
- The higher the ROI, the better
- Many organizations have a **required rate of return** or minimum acceptable rate of return on investment for projects
- **Internal rate of return** (IRR) can be calculated by finding the discount rate that makes the NPV of all cash flows equal to zero



INTERNAL RATE OF RETURN

- **Internal Rate of Return (IRR):** The discount rate that makes the net present value of investment zero.
 - It is an indicator of the **efficiency** of an investment, as opposed to NPV, which indicates value or magnitude.
 - The IRR is the annualized effective compounded return rate which can be earned on the invested capital, i.e., the yield on the investment.
 - A project is a good investment proposition if its IRR is greater than the rate of return that could be earned by alternate investments (investing in other projects, buying bonds, even putting the money in a bank account).
 - Thus, the IRR should be compared to any alternate costs of capital including an appropriate risk premium.



INTERNAL RATE OF RETURN

- Mathematically the IRR is defined as any discount rate that results in an NPV of zero of a series of cash flows.
- In general, if the IRR is greater than the project's cost of capital, or hurdle rate (minimum rate of return that must be met for a company to undertake a particular project), the project will add value for the company.

INTERNAL RATE OF RETURN

To find the internal rate of return, find the value(s) of r that satisfies the following equation:

$$NPV = C_0 + \sum_{t=1}^N \frac{C_t}{(1+r)^t} = 0$$

(See [net present value](#) for details on this formula.)

Example

Year	Cash Flow
0	-100
1	+30
2	+35
3	+40
4	+45

Internal Rate of Return (IRR)

$$NPV = -100 + \frac{30}{(1+r)^1} + \frac{35}{(1+r)^2} + \frac{40}{(1+r)^3} + \frac{45}{(1+r)^4} = 0 \Rightarrow r \approx 17.09$$

IRR = r ,

IRR = 17.09%

Net Present Value (NPV)

Thus using $r = \text{IRR} = 17.09\%$,

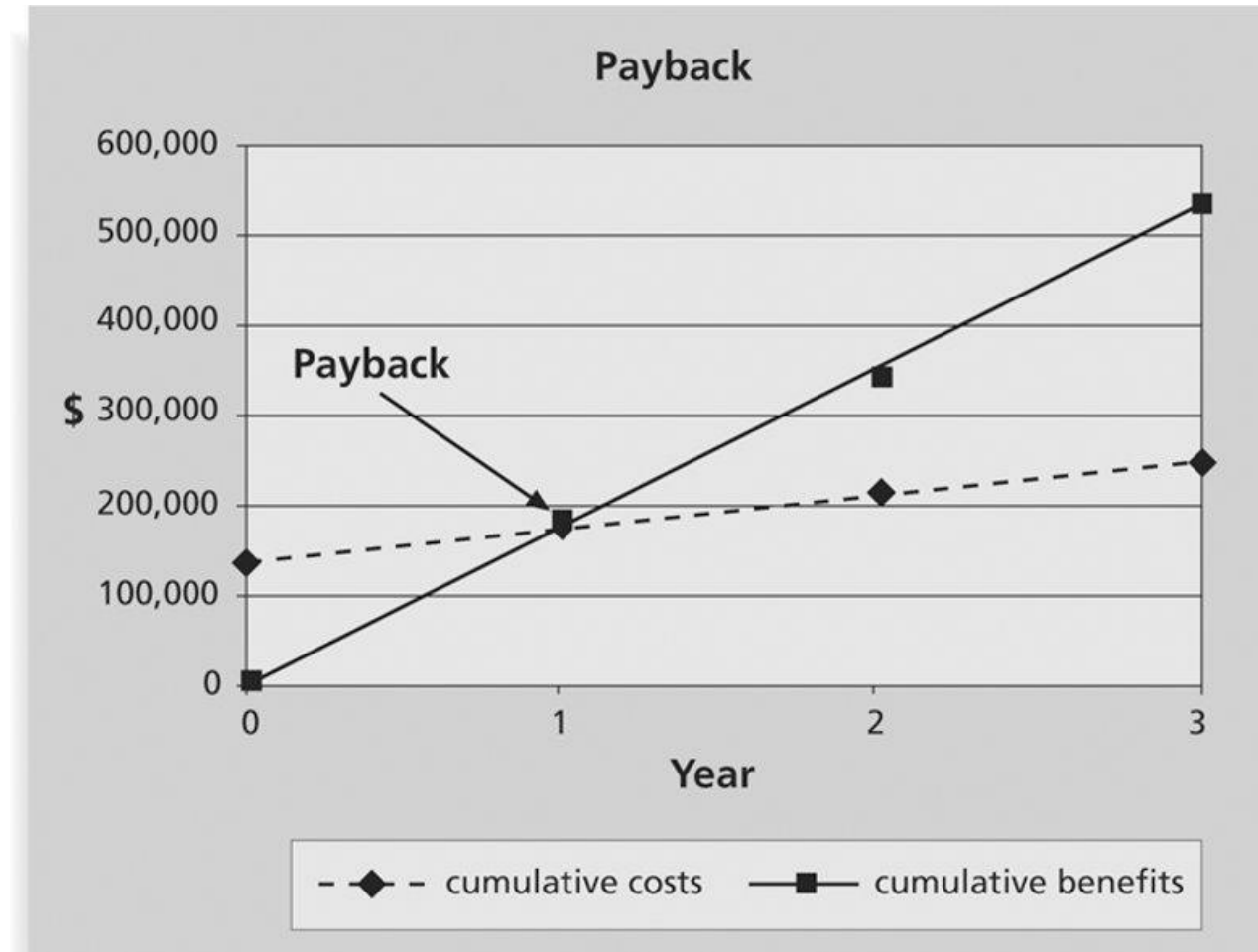
$$NPV = -100 + \frac{30}{(1+17.09\%)^1} + \frac{35}{(1+17.09\%)^2} + \frac{40}{(1+17.09\%)^3} + \frac{45}{(1+17.09\%)^4} = 0.00$$



PAYBACK ANALYSIS

- Another important financial consideration is payback analysis
- The **payback period** is the amount of time it will take to recoup, in the form of net cash inflows, the total dollars invested in a project
- Payback occurs when the net cumulative benefits equals the net cumulative costs
- Many organizations want IT projects to have a fairly short payback period

CHARTING THE PAYBACK PERIOD



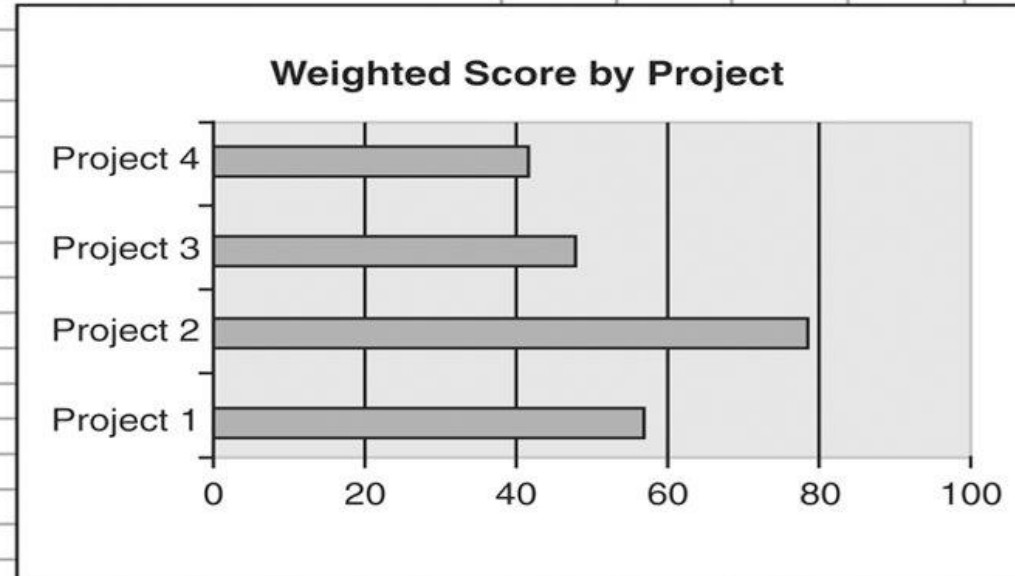


WEIGHTED SCORING MODEL

- A weighted scoring model is a tool that provides a systematic process for selecting projects based on many criteria
 1. Identify criteria important to the project selection process, e.g.,
 1. Supports key business objectives
 2. Has strong internal sponsor
 3. Has strong customer support
 2. Assign weights (percentages) to each criterion so they add up to 100%
 3. Assign scores to each criterion for each project
 4. Multiply the scores by the weights and get the total weighted scores
- The higher the weighted score, the better

SAMPLE WEIGHTED SCORING MODEL FOR PROJECT SOLUTION

	A	B	C	D	E	F
1	Criteria	Weight	Project 1	Project 2	Project 3	Project 4
2	Supports key business objectives	25%	90	90	50	20
3	Has strong internal sponsor	15%	70	90	50	20
4	Has strong customer support	15%	50	90	50	20
5	Uses realistic level of technology	10%	25	90	50	70
6	Can be implemented in one year or less	5%	20	20	50	90
7	Provides positive NPV	20%	50	70	50	50
8	Has low risk in meeting scope, time, and cost goals	10%	20	50	50	90
9	Weighted Project Scores	100%	56	78.5	50	41.5





IMPLEMENTING A BALANCED SCORECARD

- Drs. Robert Kaplan and David Norton developed this approach to help select and manage projects that align with business strategy
- A **balanced scorecard**:
 - Is a methodology that converts an organization's value drivers, such as customer service, innovation, operational efficiency, and financial performance, to a series of defined metrics
 - Organizations record and analyze these metrics to determine how well projects help them achieve strategic goals
- See www.balancedscorecard.org for more information



BALANCES SCORECARD INSTITUTE

- The balanced scorecard is a strategic planning and management system that is used extensively in business and industry, government, and nonprofit organizations worldwide to align business activities to the vision and strategy of the organization, improve internal and external communications, and monitor organizational performance against strategic goals.
- It can help your organization by translating high level organizational strategy into something that employees can understand and act upon in their day-to-day operations and initiatives

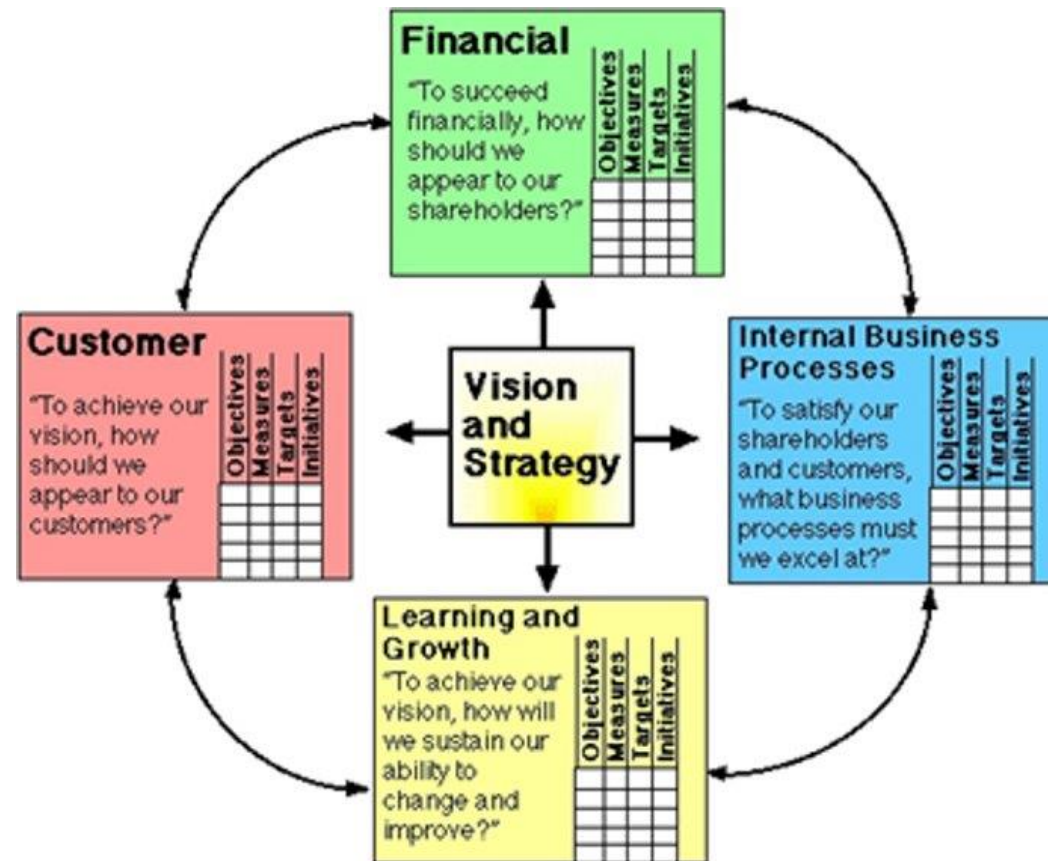


BALANCES SCORECARD INSTITUTE

- An effectively implemented balanced scorecard can help an organization in many ways:
 - Increase focus on strategy and results instead of tasks
 - Break down communication silos between departments
 - Better understand and react to customer needs
 - Improve organizational performance by measuring what matters
 - Help leaders make better decisions based on leading performance indicators instead of lagging financial data
 - Help leaders budget time and resources more effectively
 - Help leaders and employees prioritize the work they do

BALANCES SCORECARD INSTITUTE

- The balanced scorecard suggests that we view the organization from four perspectives, and to develop metrics, collect data and analyze it relative to each of these perspectives



BALANCED SCORECARD EXAMPLE



Defense Finance and Accounting Service, "DFAS Strategic Plan," Nov 2001
(<http://balancedscorecard.org/files/DFAS-strategic-plan.pdf>), p. 13.



PROJECT CHARTERS

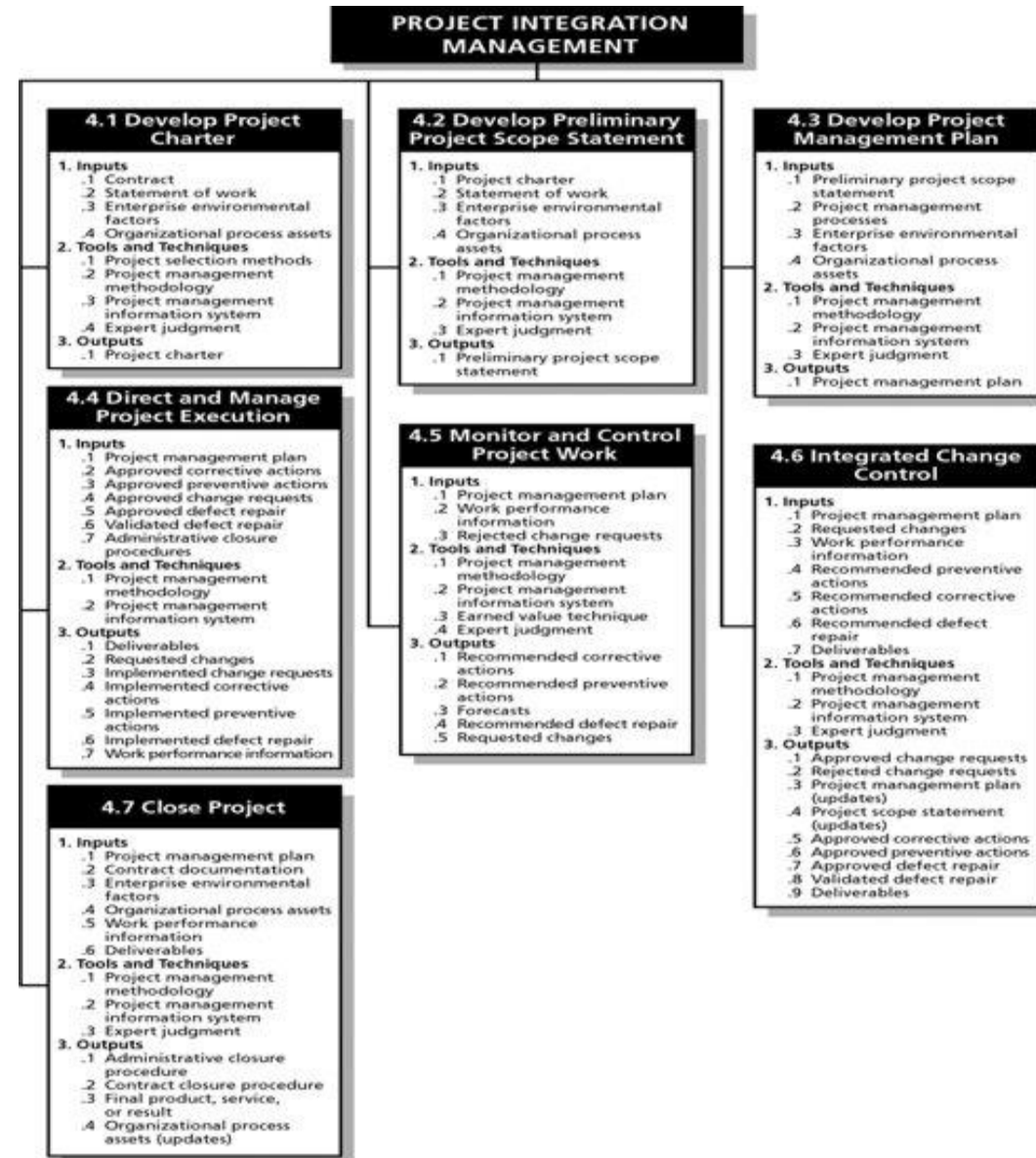
- After deciding what project to work on, it is important to let the rest of the organization know
- A **project charter** is a document that formally recognizes the existence of a project and provides direction on the project's objectives and management
- Key project stakeholders should sign a project charter to acknowledge agreement on the need and intent of the project; a signed charter is a key output of project integration management



PROJECT CHARTERS

- Input
 - Contract
 - Statement of work
 - Enterprise environmental factors
 - Organizational process assets
- Tools & Techniques
 - Project selection methods
 - Project management methodology
 - Project management information system
 - Expert judgment
- Outputs
 - Project charter

PROJECT INTEGRATION MANAGEMENT OVERVIEW





Integration

- Coordinate activities across all project management areas and process groups

Scope

- Ensure the project work includes all elements required to complete the work

Schedule

- Ensure the project work is completed in a timely way

Cost

- Plan, estimate, manage and control project finances

Quality

- Ensure the project delivers a quality output that is fit for purpose

Resource

- Secure, manage and monitor use of resources throughout the project

Communications

- Ensure communications on the project are planned and carried out appropriately

Risk

- Identify, assess and manage risk

Procurement

- Carry out purchasing and contracting as required

Stakeholder

- Identify and engage stakeholders throughout the project



PRELIMINARY SCOPE STATEMENTS

- Once the existence of the project has been formally recognized via the project charter, the next step is preparing a preliminary scope statement
- A **scope statement** is a document used to develop and confirm a common understanding of the project scope
- It's important for preventing **scope creep**
 - The tendency for project scope to keep getting bigger
- It's good practice to develop a preliminary or initial scope statement during project initiation and a more detailed scope statement as the project progresses



PROJECT MANAGEMENT PLANS

- A **project management plan** is a document used to coordinate all project planning documents and help guide a project's execution and control
 - Documents project planning assumptions and decisions regarding choices, facilitates communication among stakeholders, provides a baseline for progress measurement and project control
 - Should be dynamic, flexible and subject to change when the environment or project changes
- Includes all project planning documents
 - Plans created in the other knowledge areas are subsidiary parts of the overall project management plan



COMMON ELEMENTS OF A PROJECT MANAGEMENT PLAN

- Introduction or overview of the project
- Description of how the project is organized
- Management and technical processes used on the project
- Work to be done, schedule, and budget information
- Many govt. agencies (e.g., DOD, IEEE) provide guidelines for creating PMPs

SAMPLE CONTENTS FOR A SPMP – SOFTWARE PROJECT MANAGEMENT PLAN

MAJOR SECTION HEADINGS	SECTION TOPICS
Overview	Purpose, scope, and objectives; assumptions and constraints; project deliverables; schedule and budget summary; evolution of the plan
Project Organization	External interfaces; internal structure; roles and responsibilities
Managerial Process Plan	Start-up plans (estimation, staffing, resource acquisition, and project staff training plans); work plan (work activities, schedule, resource, and budget allocation); control plan; risk management plan; closeout plan
Technical Process Plans	Process model; methods, tools, and techniques; infrastructure plan; product acceptance plan
Supporting Process Plans	Configuration management plan; verification and validation plan; documentation plan; quality assurance plan; reviews and audits; problem resolution plan; subcontractor management plan; process improvement plan



WHAT THE WINNERS DO

“The winners clearly spell out what needs to be done in a project, by whom, when, and how. For this they use an integrated toolbox, including PM tools, methods, and techniques...If a scheduling template is developed and used over and over, it becomes a repeatable action that leads to higher productivity and lower uncertainty. Sure, using scheduling templates is neither a breakthrough nor a feat. But laggards exhibited almost no use of the templates. Rather, in constructing schedules their project managers started with a clean sheet, a clear waste of time.”*

*Milosevic, Dragan and Ozbay. “Delivering Projects: What the Winners Do.” Proceedings of the Project Management Institute Annual Seminars & Symposium (November 2001).



STAKEHOLDER ANALYSIS

- Needed because the ultimate goal of project management is to meet or exceed stakeholder needs and expectations from a project
- A **stakeholder analysis** documents important information about stakeholders such as:
 - Stakeholders' names and organizations
 - Roles on the project
 - Unique facts about stakeholders
 - Level of influence and interest in the project
 - Suggestions for managing relationships
- Info is often sensitive; available only to PMs and key team members
 - Can provides insights in how to relate to stakeholders to best accomplish the project

SAMPLE STAKEHOLDER ANALYSIS FOR OPENING CASE

	KEY STAKEHOLDERS				
	AHMED	SUSAN	ERIK	MARK	DAVID
<i>Organization</i>	Internal senior management	Project team	Project team	Hardware vendor	Project manager for other internal projects
<i>Role on project</i>	Project sponsor and one of the company's founders	DNA sequencing expert	Lead programmer	Supplier of some instrument hardware	Competitor for company resources
<i>Unique facts</i>	Quiet, demanding, likes details, business-focused, Stanford MBA	Ph.D. in biology, easy to work with, has toddler	Very smart, best programmer I know, weird sense of humor	Head of a start-up company, he knows we can make him rich if this works	Nice guy, one of the oldest people at company, has three kids in college
<i>Level of interest</i>	Very high	Very high	High	Very high	Low to medium
<i>Level of influence</i>	Very high; can call the shots	Subject matter expert; critical to success	High; hard to replace	Low; other vendors available	Low to medium
<i>Suggestions on managing relationship</i>	Keep informed, let him lead conversations, do as he says and quickly	Make sure she reviews specifications and leads testing; can do some work from home	Keep him happy so he stays; emphasize stock options; likes Mexican food	Give him enough lead time to deliver hardware	He knows his project takes a back seat to this one, but I can learn from him



PROJECT EXECUTION

- Project execution involves managing and performing the work described in the project management plan.
- The majority of time and money is usually spent on execution.
- The application area of the project directly affects project execution because the products of the project are produced during execution.



COORDINATING PLANNING AND EXECUTION

- Project planning and execution are intertwined and inseparable activities.
- Those who will do the work should help to plan the work.
- Project managers must solicit input from the team to develop realistic plans.



PROVIDING LEADERSHIP AND A SUPPORTIVE CULTURE

- Project managers must lead by example to demonstrate the importance of creating and then following good project plans
- Organizational culture can help project execution by:
 - Providing guidelines and templates
 - Tracking performance based on plans
- Project managers may still need to break the rules to meet project goals, and senior managers must support those actions
 - Requires excellent leadership, communication and political skills



RISK ASSESSMENT, MITIGATION – TIME BUFFER

- Buffers are an open indication of the anticipated risk associated with the project as it relates to the promised due date. Project buffers protect external deliverables and objectives of the project, while Feeding Buffers help to keep the project manageable by helping to “keep the Critical Chain critical” through the life of the project, isolating critical chain tasks from noncritical task risks.
- As tasks are actually worked, there is better understanding of the risks than during the planning process. As the project progresses, it is possible that more becomes known about later tasks as a result of findings in earlier tasks.
- Critical Chain Scheduling and Buffer Management is not only a technique for the development and tracking of project schedules. It is a coherent and comprehensive approach to project management that encompasses and effects other processes and practices associated with project management as well.



IMPORTANT SKILLS FOR PROJECT EXECUTION

- General management skills like leadership, communication, and political skills
- Product, business, and application area skills and knowledge
 - Northwest Airlines spent millions of dollars and had a team of 70 full-time people working on the project led by a PM who had never worked in an IT dept but had extensive knowledge of the airline industry and reservation process
- Use of specialized tools and techniques



PROJECT EXECUTION TOOLS & TECHNIQUE

- **Project management methodology:** many experienced project managers believe the most effective way to improve project management is to follow a methodology that describes not only what to do in managing a project, but how to do it
- **Project management information systems:** there are hundreds of project management software products available on the market today, and many organizations are moving toward powerful enterprise project management systems that are accessible via the Internet
- PMs should delegate these tasks to other team members and concentrate on providing leadership for the whole project
- See the “What Went Right?” example of Kuala Lumpur’s Integrated Transport Information System on p. 161



MONITORING & CONTROLLING PROJECT WORK

- Changes are inevitable on most projects, so it's important to develop and follow a process to monitor and control changes
 - On large projects, 90% of the PMs job is communicating and managing changes
- Monitoring project work includes collecting, measuring, and disseminating performance information
- Two important outputs of monitoring and controlling project work include recommended corrective and preventive actions
 - Corrective result in improvements in project performance and preventive reduce the chances of negative consequences associated with project risks
 - Other outputs – forecasts, recommended defect repairs and requested changes



INTEGRATED CHANGE CONTROL

- Three main objectives are:
 - Influencing the factors that create changes to ensure that changes are beneficial
 - Tradeoff on scope, time and cost and quality
 - Determining that a change has occurred
 - PM must be on top of the status of key project areas at all times and communicate changes to top management and stakeholders
 - Managing actual changes as they occur
 - Change is unavoidable so careful change control is a critical success factor to a project
- A **baseline** is the approved project management plan plus approved changes



CHANGE CONTROL ON NETWORK SECURITY PROJECTS

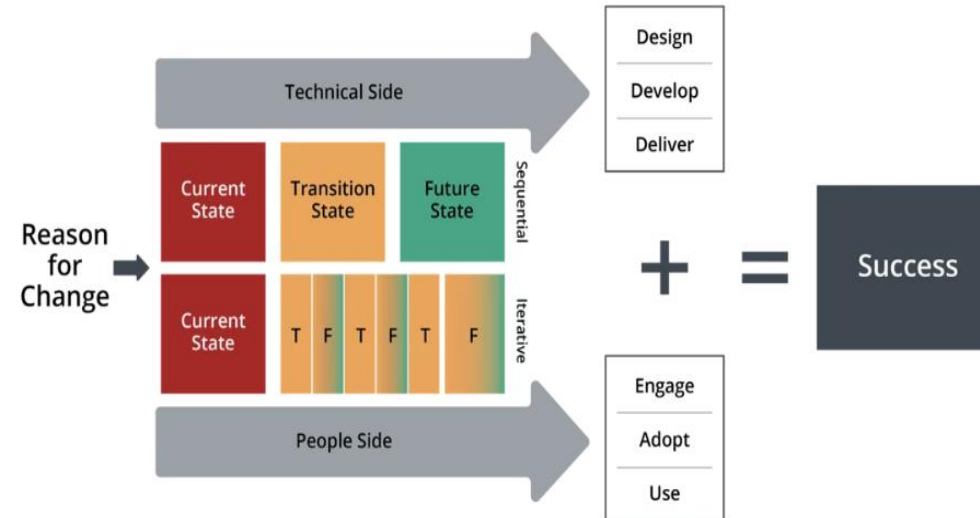
- Former view: the project team should strive to do exactly what was planned on time and within budget
- Problem: stakeholders rarely agreed up-front on the project scope, and time and cost estimates were inaccurate
- Modern view: project management is a process of constant communication and negotiation
- Solution: changes are often beneficial, and the project team should plan for them



CHANGE CONTROL SYSTEM

- A formal, documented process that describes when and how official project documents and work may be changed
 - Change is necessary but it needs to be properly managed and controlled
- Describes who is authorized to make changes and how to make them

change management provides the structure, processes and tools to accomplish this outcome.



Prosci's Unified Value Proposition

A helpful analogy for understanding the Unified Value Proposition is to consider two strands of rope that are different colors. One strand of rope represents the technical side of a change, and the other strand represents the people side of the change. If you intertwine the two strands of rope, you will have a stronger rope. Similarly, if the individuals involved in addressing the technical and people sides of change work together collaboratively, they will deliver a more successful change.



CHANGE CONTROL BOARD (CCB)

- A formal group of people responsible for approving or rejecting changes on a project.
- CCBs provide guidelines for preparing change requests, evaluate change requests, and manage the implementation of approved changes.
- Includes stakeholders from the entire organization.
- Includes milestones meetings – discussion about what is happening and is projected and follow an agenda that is prepared and distributed by the project manager.



MAKING TIMELY CHANGES

- Some CCBs only meet occasionally, so it may take too long for changes to occur
- Some organizations have policies in place for time-sensitive changes
 - “48-hour policy” allows project team members to make decisions, then they have 48 hours to reverse the decision pending senior management approval
 - Delegate changes to the lowest level possible, but keep everyone informed of changes



CONFIGURATION MANAGEMENT

- Ensures that the descriptions of the project's products are correct and complete
- Involves identifying and controlling the functional and physical design characteristics of products and their support documentation
- Configuration management specialists identify and document configuration requirements, control changes, record and report changes, and audit the products to verify conformance to requirements
- See Institute of Configuration Management (www.icmhq.com)



SUGGESTION FOR PERFORMING INTEGRATED CHANGE CONTROL

- It is the responsibility of the PM to integrate all project changes so that the project stays on track

View project management as a process of constant communication and negotiation.

Plan for change.

Establish a formal change control system, including a change control board (CCB).

Use effective configuration management.

Define procedures for making timely decisions on smaller changes.

Use written and oral performance reports to help identify and manage change.

Use project management and other software to help manage and communicate changes.

Focus on leading the project team and meeting overall project goals and expectations.



CLOSING PROJECTS

- To close a project, you must finalize all activities and transfer the completed or cancelled work to the appropriate person in charge.
- Main outputs include:
 - Administrative closure procedures
 - Contract closure procedures
 - Final products, services, or results
 - Organizational process asset updates
 - Project documentation, project closure documents, historical information produced by the project, lessons-learned report.
- The project manager and customer must have agreed at the beginning of the project how the project will end. A demonstration is delivered at the end of the project. A closure needs a project report prepared by project manager and distribute to customer and documented for project filling management.



USING SOFTWARE TO ASSIST IN PROJECT INTEGRATION MANAGEMENT

- Several types of software can be used to assist in project integration management
 - Documents can be created with word-processing software
 - Presentations are created with presentation software
 - Tracking can be done with spreadsheets or databases
 - Communication software like e-mail and Web authoring tools facilitate communications
 - Project management software can pull everything together and show detailed and summarized information
 - Business Service Management (BSM) tools track the execution of business process flows
 - Can help improve alignment between IT projects (network upgrade) and business goals (reduce cost by processing customer order more quickly)



SUMMARY

- Project is categorized as basic, major or macro projects. The project type is determined by number and variety of task required for project completion.
- A project has one project manager and one project management team that is made up of task leaders.
- A major project needs more than 30 or less task leaders who works within one technology or more. Each project manager leads the planning and execution of the basic project. Each basic project works to a specification that was developed by the co-project manager for the major project manager.
- The major project manager acts as the sponsor and the coordinator of the several basic projects within the major project.
- The WBS for the macro project identifies several different effort areas, which important for project execution.
- To achieve success, macro projects require project management teams to define their specifications at each level and to coordinate efforts of the leaders of subordinate projects. Major and macro projects cannot rely on project feasibility, cost, and duration until the planning work on each of the component basic projects is completed.



**“No one can whistle a symphony.
It takes a whole orchestra.”**

— H. E. Luccock—

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