كورس التخطيط لإدارة المشروعات

م. طارق دياب

المحاضرة الأولى

علم الابتكار

- ما معنى كلمة ابتكار (من وجهة نظرك)؟
- هل يوجد لديك فكرة مبتكرة تبدأ بها عملك الحر؟
- هل يوجد لديك فكرة ذات جدوى لتنفذها بطريقة مبتكرة؟
- ما الذي تتوقع معرفته من هذا التدريب؟

ما هو الابتكار؟

الابتكار: هو تطبيق حلول أفضل لتلبية متطلبات جديدة أو احتياجات سوقية حالية

(ويكيبيديا)

الابتكار: هو عملية ترجمة فكرة إلى سلعة أو خدمة جديدة يدفع المشترون للانتفاع بها

(قاموس الأعمال)

ما هو الابتكار؟

الابتكار: هو التغيير للحصول على قيمة جديدة

(جيمي نوتر)

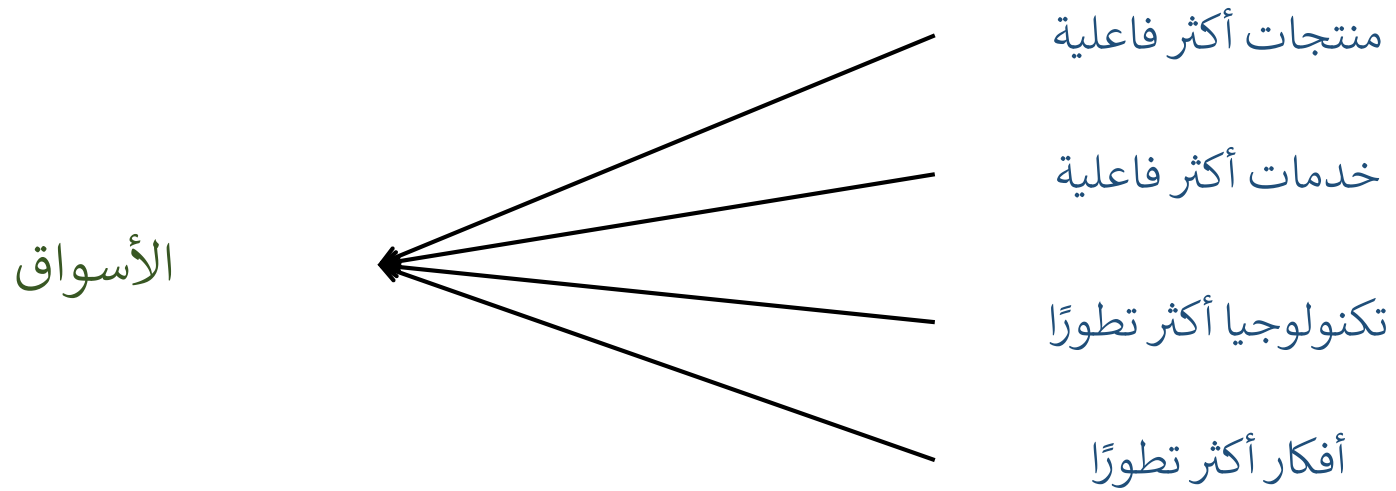
الابتكار: هو التفكير بطريقة جديدة لخلق قيمة مضافة

(ريتشارد ليون)

الابتكار: هو الحصول على القيمة بطريقة جديدة

(رفيق جندي)

أين يظهر الابتكار؟



الاكتشاف – الاختراع - الابتكار

الاكتشاف: هو الوصول إلى شيء موجود بالفعل، والمكتشف تسبب في إظهاره

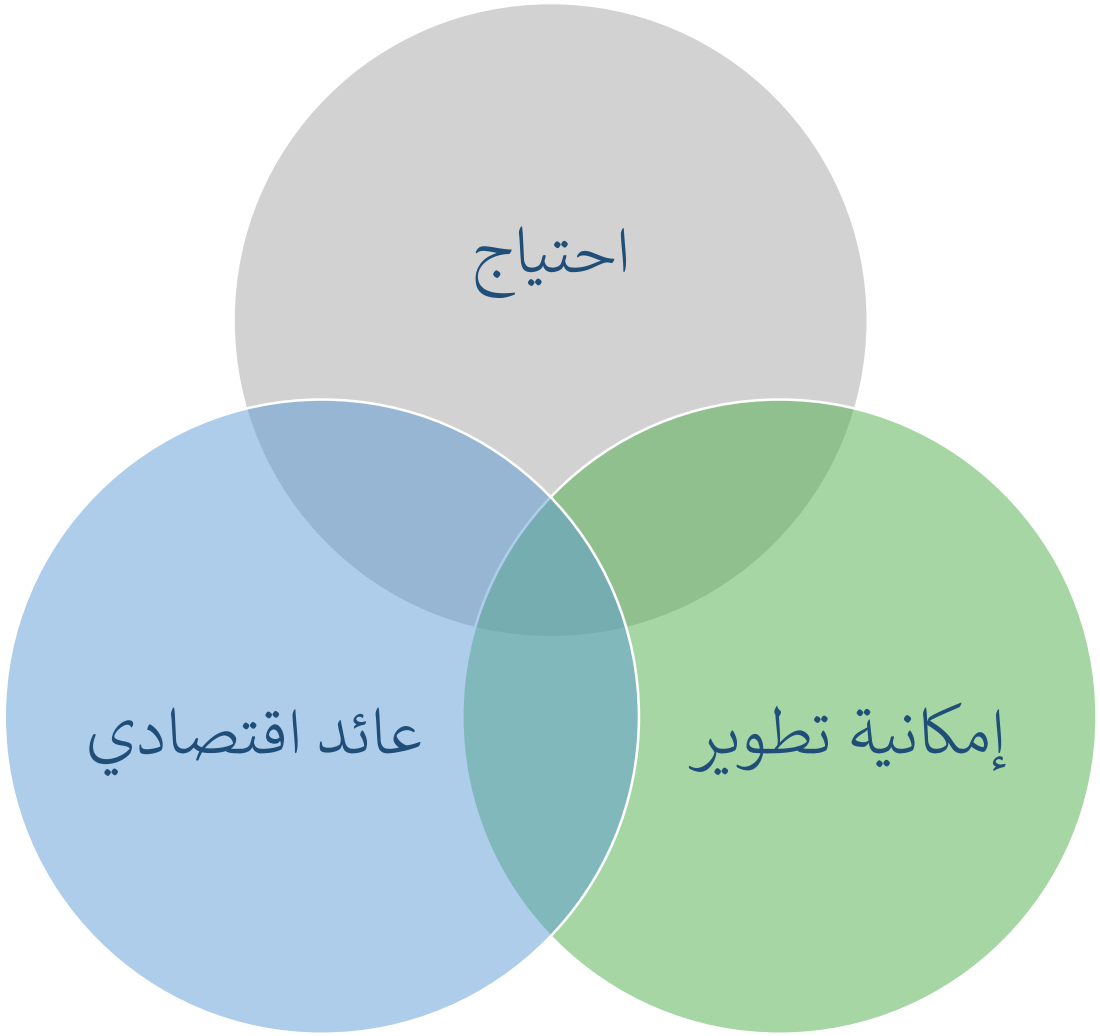
الاختراع: هو التوصل إلى إيجاد شيء لم يكن موجوداً من قبل

الابتكار: هو التعديل والتطوير على شيء موجود فعلاً للحصول على منتج جديد أو الحصول على نفس المنتج بمزايا جديدة

ما هو الابتكار؟

لتكون مبتكراً لا بد أن تمتلك حلولاً إبداعية

العوامل الجاذبة للحلول المبتكرة



أمثلة على حلول مبتكرة

أمثلة على حلول مبتكرة

أمثلة على حلول مبتكرة

محاور الابتكار

ابتكار في المنتج

محاور الابتكار

ابتكار في عمليات التشغيل

محاور الابتكار

ابتكار في طرق التسويق

محاور الابتكار

ابتكار في طرق الإدارة

عملية الحصول على حلول مبتكرة

تقليد الآخرين ليس هو الحل الأمثل

حتى وإن كان بإمكانك تقليدهم

عملية الحصول على حلول مبتكرة

الإبداع هو القائد الرئيسي للحلول المبتكرة

الأفكار الهدامة

- كل ما يمكن ابتكاره تم ابتكاره بالفعل
- ليس في الإمكان أبدع مما كان
- لا يوجد وقت للحصول على ما هو أفضل
- مستحيل

الأفكار الهدامة

- لا يوجد ميزانية للحصول على ما هو أفضل
- أنا لست مبدعًا
- السوق غير مستعد لما هو جديد
- فكرة جيدة لكنها لا تصلح هنا

- الابتكار لا يعني اختراع منتجات جديدة، ولكن الابتكار هو تطوير ما هو موجود للحصول على ما هو أفضل.
- لتبدأ عملك الحر، فأنت لا تحتاج إلى فكرة مبتكرة، بل تحتاج إلى حل مبتكر تقدمه إلى عملائك.
- اجعل هدفك الأساسي هو البحث عن القيمة المضافة التي تقدمها لعملائك.

- الابتكارات لا تقتصر على خصائص ووظائف المنتجات أو الخدمات التي تقدمها، بل تمتد إلى طريقة تسويقك لمنتجك أو فكرتك، وتمتد إلى طريقة إدارتك لشركتك وموظفيك وعملائك.
- أفضل الطرق للحصول على حلول مبتكرة هو وجود العديد من الحلول لديك، شارك كل من حولك في فكرتك واخرج جميع الأفكار الهدامة من عقلك، وابدأ التطوير لتصل إلى شيء مبتكر وله قيمة.

ما هو المشروع؟

المشروع هو مسعى مؤقت يتخذ من أجل إنشاء منتج منفرد أو خدمة أو نتيجة متفردة. وتشير الطبيعة المؤقتة للمشروعات إلى أن المشروع يكون له بداية ونهاية محددة. يتم الوصول إلى النهاية عندما تتحقق أهداف المشروع أو عندما يتم إنهاء المشروع لأن أهدافه لن يتم تحقيقها أو لا يمكن تحقيقها، أو عندما تكون الحاجة إلى المشروع لم تعد قائمة. ويمكن أيضا أن يتم إنهاء مشروع إذا كان العميل (زبون، أو راعي، أو نصير) يرغب في إنهاء المشروع. وكلمة «مؤقت» لا تعني بالضرورة أن مدة المشروع قصيرة، فهي تشير إلى المشاركة في المشروع وطول عمره. ولا تنطبق كلمة «مؤقت/ مؤقتة» عادة على المنتج أو الخدمة أو النتيجة التي أنشأها المشروع.

كل مشروع ينشئ منتج متفرد أو خدمة أو نتيجة متفردة. وقد تكون نتائج المشروع مادية أو معنوية. على الرغم من أن العناصر المتكررة قد تكون موجودة في بعض تسليمات المشروع الفعلية وأنشطته، فإن هذا التكرار لا يغير الخصائص الأساسية والفريدة لعمل هذا للمشروع.

على سبيل المثال: يمكن بناء مبانٍ مكتبية بنفس المواد أو مواد مشابهة وبنفس الفرق أو بفروق مختلفة. ومع ذلك، لا يزال كل مشروع بناء فريدًا ذا موقع مختلف، وتصميم مختلف، وظروف وحالات مختلفة، ومعنيين بالمشروع مختلفين، وهكذا.

فيما يلي أمثلة على المشروعات تشمل -على سبيل المثال لا الحصر- ما يلي:

- تطوير منتج جديد أو خدمة أو نتيجة جديدة.
- إحداث تغيير في هيكل إحدى المنظمات أو عملياتها أو موظفيها أو أسلوبها.
- تطوير نظام معلومات جديد أو معدل (أجهزة أو برامج) أو الحصول عليه.
- إجراء جهود بحثية يتم تسجيل نتيجتها بصورة ملائمة.
- تشييد مبنى أو منشأة صناعية أو بنية تحتية.
- تنفيذ عمليات وإجراءات تجارية قائمة أو تحسينها أو تعزيزها.

تعريف المشروع؟

ما هو المشروع

- What is a Project?

A project is a temporary endeavor undertaken to create a unique product, service, or result.

- Temporary مؤقت

  (define beginning and definite end) له بداية ونهاية

- Unique فريد

  (different location, different design, different circumstances, different contractors etc.)

فريد في أحد أوجهه: الوقت أو التكلفة

- Progressive Elaboration متنامي المعرفة

المحاضرة الثانية

مجموعة من التطبيقات والمهارات والتكتيكات التي تتيح بتطبيقها تحقيق المستهدف من المشروع

ثلاثية المخاطر
The Triple Constraints

- Time: الانتهاء خلال الوقت المطلوب
- Cost: الانتهاء خلال الميزانية المتفق عليها
- Quality: مطابقة المنتج النهائي لمعايير الجودة
- Scope: تحقيق كل المستهدف

أوجه المعرفة في إدارة المشروعات

- إدارة تكامل المشروع
- إدارة نطاق المشروع
- إدارة وقت المشروع
- إدارة تكاليف المشروع
- إدارة جودة المشروع
- إدارة الموارد البشرية للمشروع
- إدارة الاتصالات داخل المشروع
- إدارة المخاطر داخل المشروع
- إدارة مستلزمات المشروع
- إدارة العلاقات مع المتأثرين بالمشروع

مجموعات العمليات داخل المشروع

- مجموعة عمليات البدء لمشروع

بدء مشروع جديد أو مرحلة جديدة في مشروع قائم.

- مجموعة عمليات التخطيط للمشروع

عمليات تحديد المستهدف من المشروع والتخطيط لتنفيذه من حيث الوقت والميزانية والموارد والجودة والمخاطر لضمان الحصول على المستهدف.

- مجموعة عمليات تنفيذ المشروع

عمليات تنفيذ خطط المشروع للحصول على المستهدف.

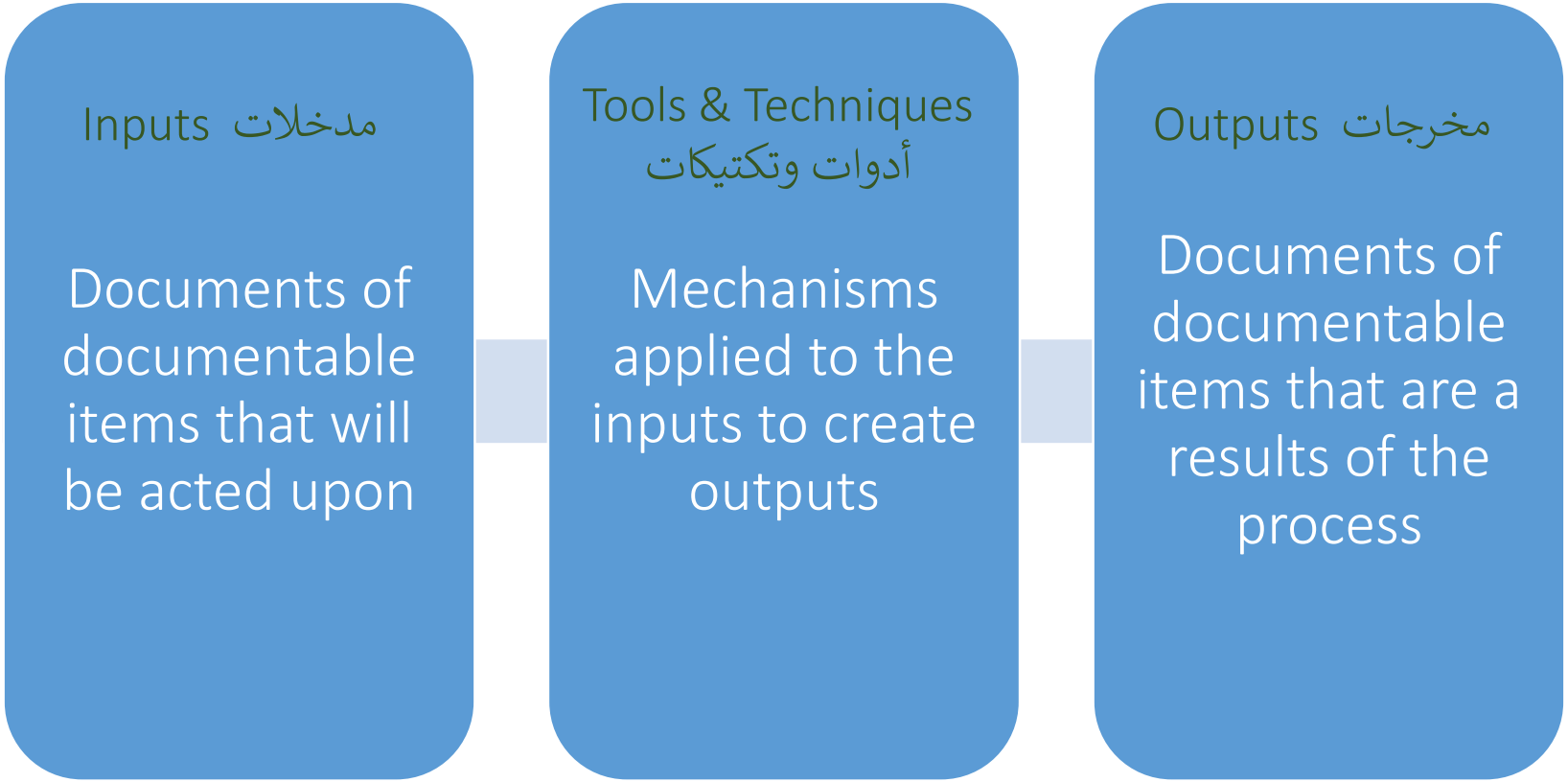
- مجموعة عمليات المراقبة والتحكم في المشروع

عمليات مراقبة التنفيذ ومطابقتها للخطط واتخاذ القرارات المناسبة لتعديل الأوضاع طبقاً للحاجة

- مجموعة عمليات إنهاء المشروع

عمليات إنهاء المشروع والتسليم واستكمال الإجراءات أو الأوراق اللازمة لذلك.

تعريف العملية (Process)



مكتب إدارة المشروعات

مكتب إدارة المشروعات (PMO) هو هيكل إداري يوجد عمليات الحوكمة ذات الصلة بالمشروع ويسهل تقاسم الموارد والمنهجيات والأدوات والأساليب.. يمكن أن تتراوح مسؤوليات مكتب إدارة المشروعات من توفير وظائف الدعم لإدارة المشروعات إلى المسؤولية الفعلية عن الإدارة المباشرة لمشروع واحد أو أكثر.

وهناك عدة أنواع من هياكل مكاتب إدارة المشروعات (PMO) في المنظمات، ويختلف كل منها في درجة التحكم والتأثير الذي يتمتع به على المشروعات داخل المنظمة، مثل:

3.4.1 المشروعات والتخطيط الاستراتيجي

غالباً ما تستخدم المشروعات كوسيلة لتحقيق أهداف مباشرة أو غير مباشرة ضمن الخطة الاستراتيجية للمنظمة. وعادة ما يتم الترخيص للمشروعات كنتيجة واحدة أو أكثر للاعتبارات الاستراتيجية التالية:

- الطلب في السوق (على سبيل المثال: شركة سيارات تجيز مشروعاً لبناء سيارات أكثر كفاءة في استهلاك الوقود استجابة لأزمة نقص البنزين).
- الفرصة الاستراتيجية/ الحاجة إلى الأعمال (على سبيل المثال: شركة تدريب تجيز مشروعاً لإعداد دورة تدريبية جديدة لزيادة إيراداتها).
- الحاجة الاجتماعية (على سبيل المثال: منظمة غير حكومية في بلد نامٍ تجيز مشروعاً لتوفير أنظمة المياه الصالحة للشرب ودورات المياة والتوعية الصحية للمجتمعات التي تعاني ارتفاع معدلات الأمراض المعدية).

7.1 دور مدير المشروع

مدير المشروع هو الشخص المكلف من قبل الشركة المنفذة لقيادة الفريق المسؤول عن تحقيق أهداف المشروع. ودور مدير المشروع يختلف عن المدير الوظيفي أو مدير العمليات. وعادة ما يكون المدير الوظيفي مركزًا على توفير الرقابة الإدارية للوحدة الوظيفية أو وحدة العمال، ومديرو العمليات هم المسؤولون عن التأكد من أن العمليات التجارية فعالة.

- المعرفة: تشير إلى ما يعرفه مدير المشروع حول إدارة المشروعات.
- الأداء: يشير إلى ما يستطيع مدير المشروع القيام بعمله أو إنجازه أثناء تطبيق معرفته الخاصة بإدارة المشروعات.
- الكفاءات الشخصية: تشير إلى الطريقة التي يتصرف بها مدير المشروع عند تنفيذ المشروع أو النشاط ذا الصلة، والفعالية الشخصية تشمل المواقف والصفات الشخصية الأساسية، والقيادة، والتي توفر القدرة على توجيه فريق المشروع أثناء تحقيق أهداف المشروع وتحقيق التوازن بين قيود المشروع.

سمات مدير المشروع

- القيادة.
- بناء فريق العمل.
- الدافع.
- التواصل.
- التأثير.
- صنع القرار.
- الوعي السياسي والثقافي.
- التفاوض.
- بناء الثقة.
- إدارة النزاع.
- التدريب.

2.1.5.1 المعنيون بالعمليات في إدارة المشروعات

بينما تختلف إدارة العمليات عن إدارة المشروعات (انظر البند 1.5.1.1)، فإن احتياجات المعنيين بالمشروع الذين يؤدون وينفذون العمليات التجارية من الاعتبارات الهامة في المشروعات التي من شأنها أن تؤثر على عملهم ومحاولاتهم المستقبلية.

مديرو المشروعات الذين يراعون ويشركون المعنيين بالعمليات بشكل مناسب في جميع مراحل المشروعات، يكتسبون المعرفة ويتجنبون المشاكل غير الضرورية التي غالباً ما تنشأ عندما يتم تجاهل مساهماتهم.

ينبغي إشراك المعنيين بالعمليات وأن تحدد احتياجاتهم كجزء من سجل المعنيين، وينبغي التعامل مع تأثيرهم (إيجابي أو سلبي) كجزء من خطة إدارة المخاطر.

2.1.5.1 المعنيون بالعمليات في إدارة المشروعات

تتضمن القائمة التالية أمثلة للمعنيين (تبعًا للأعمال):

- مشغلو المصانع.
- مشرفو خط التصنيع.
- موظفو مكتب المساعدة.
- محللو دعم نظام الإنتاج.
- ممثل خدمة العملاء.
- موظفو المبيعات.
- عمال الصيانة.
- موظفو المبيعات الهاتفية.
- موظفو مركز الاتصالات.
- عمال البيع بالتجزئة.
- مديرو خطوط الإنتاج.
- موظفو التدريب.

5.1.2 العوامل البيئية المؤثرة في المشروع

تشير العوامل البيئية المؤثرة في المشروع إلى الظروف التي خارج سيطرة فريق المشروع وتؤثر على المشروع أو تقيده أو توجهه. وتعد العوامل البيئية المؤثرة في المشروع مدخلات تستخدم في أغلب عمليات التخطيط، وقد تعمل على تحسين أو تقييد خيارات إدارة المشروعات، وقد يكون لها تأثير إيجابي أو سلبي على النتائج.

5.1.2 العوامل البيئية المؤثرة في المشروع

تتفاوت العوامل البيئية المؤثرة في المشروع بشكل كبير من حيث النوع أو الطبيعة. وتشمل العوامل المؤثرة في المشروع على سبيل المثال وليس الحصر:

- تقافة وهيكل وحوكمة المنظمة.
- التوزيع الجغرافي للمرافق والموارد.
- معايير الحوكمة أو الصناعة (مثلاً لوائح الهيئات الرقابية، ومدونات السلوك، ومعايير المنتج، ومعايير الجودة، ومعايير الجودة، وتنفيذ العمل).
- البنية التحتية (مثلاً المرافق الموجودة والتجهيزات الرأسمالية).

5.1.2 العوامل البيئية المؤثرة في المشروع

- الموارد البشرية الموجودة (مثلاً المهارات، والتخصصات، والمعرفة، مثل: التصميم، والتطوير، والنواحي القانونية، والتعاقد، والشراء).
- إدارة شؤون العاملين (مثلاً المبادئ التوجيهية للتوظيف والاستبقاء، ومراجعة أداء الموظفين، وسجلات التدريب، وسياسة المكافآت والوقت الإضافي، وتتبع ساعات العمل).
- أنظمة تصريحات الأعمال بالشركة.
- أحوال السوق.
- درجات تحمل المخاطر الخاصة بالمعنيين.
- المناخ السياسي

الفارق بين إدارة المشروعات والتشغيل

التشغيل

- مستمر ومتكرر
- نفس الناتج
- نفس العمالة

المشروعات

- مؤقت
- الناتج مختلف
- العمالة مؤقتة وتختلف حسب الحاجة

صفات مشتركة

- تتم عبر مجموعة من الخطوات الواجب التخطيط لها
- يجب تخطيط حجم العمالة المناسبة
- لها منتج نهائي

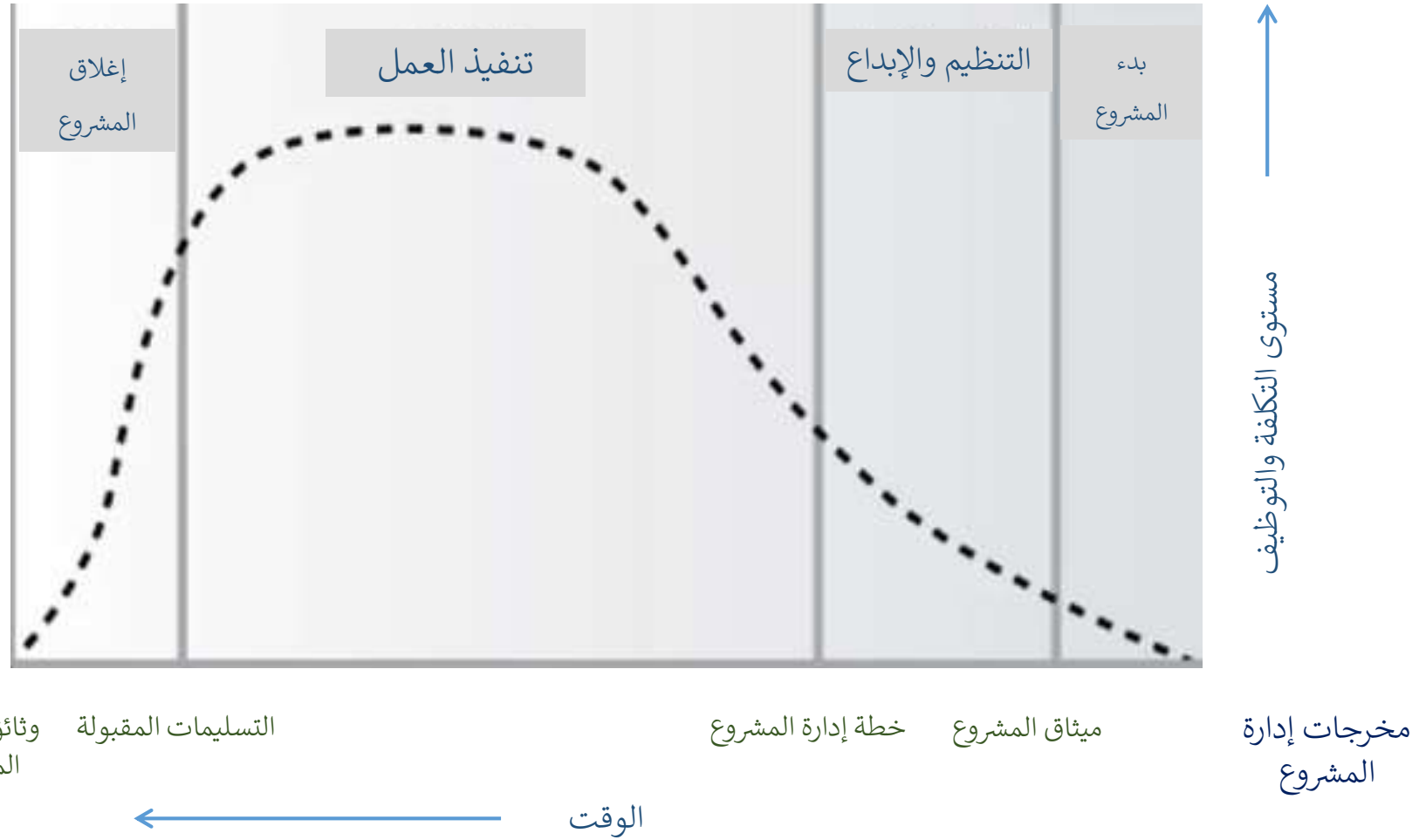
4.2 دورة حياة المشروع

دورة حياة المشروع عبارة عن سلسلة من المراحل التي يمر بها المشروع من بدايته إلى إنهائه، وتكون المراحل بصفة عامة تسلسلية، وتتحدد أسماؤها وأرقامها حسب احتياجات الإدارة والضبط للمنظمة أو المنظمات المشتركة في المشروع، وطبيعة المشروع نفسه، ومجال تطبيقه.

يمكن تجزئة المراحل حسب الأهداف الوظيفية أو الجزئية، أو النتائج أو التسليمات الوسيطة، أو المعالم المحددة داخل نطاق العمل بشكل عام، أو توافر الموارد المالية.

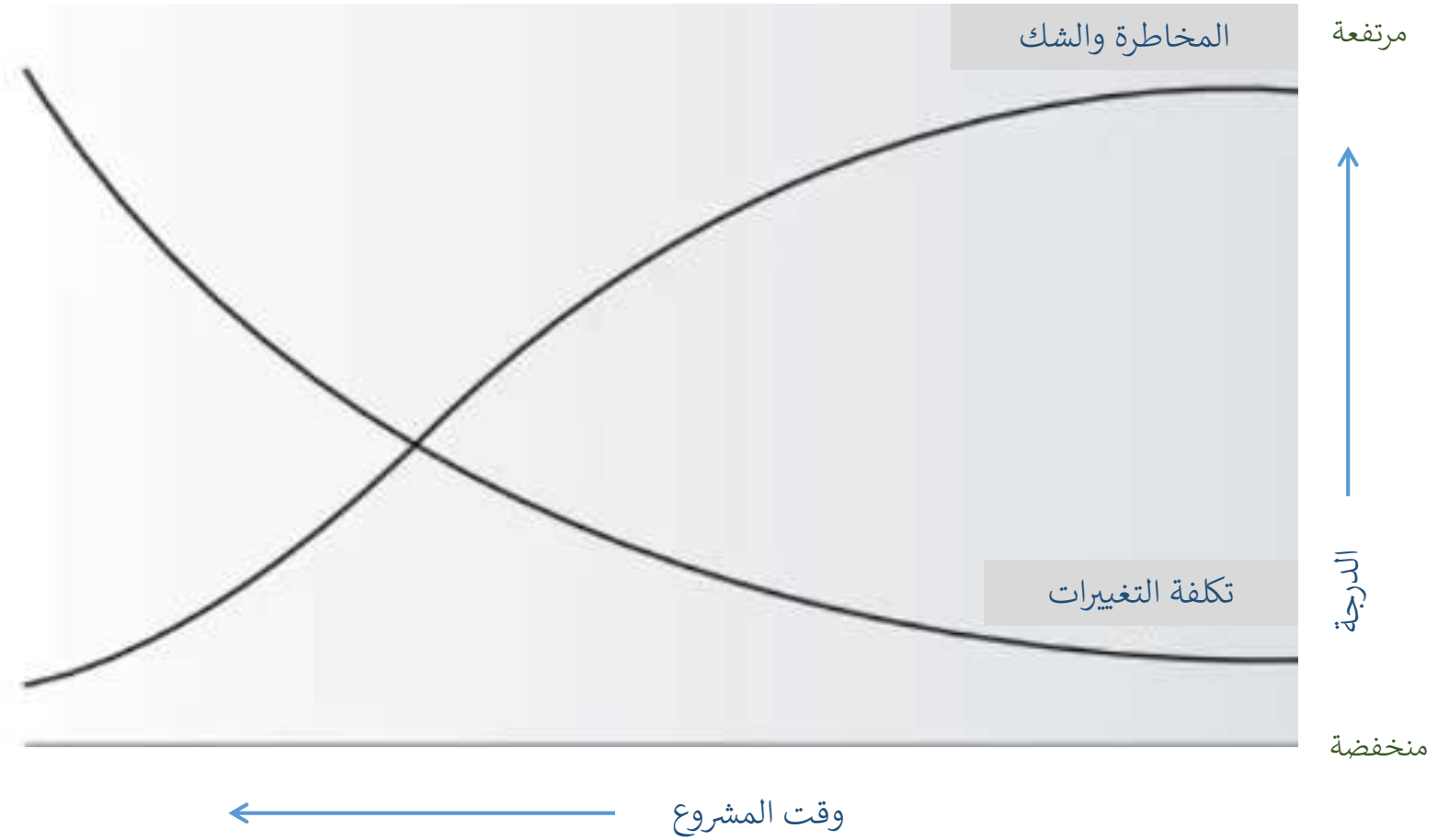
وبصفة عامة تكون المراحل محددة بالوقت، وذات بداية ونهاية أو نقطة تحكم.

سمات دورة حياة المشروع



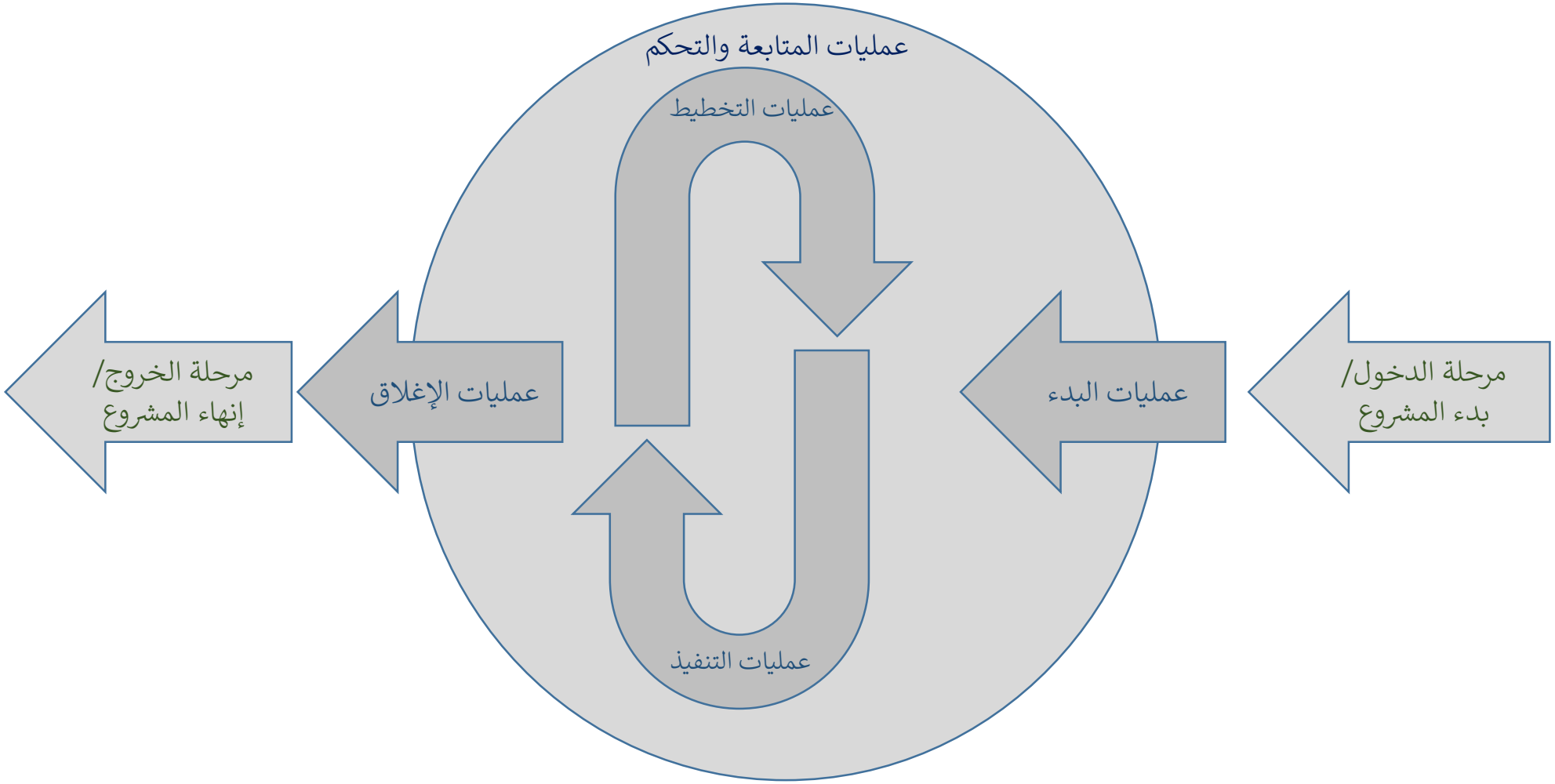
الشكل 2-8: مستويات التكلفة والتوظيف النموذجية عبر هيكل عام لدورة حياة المشروع

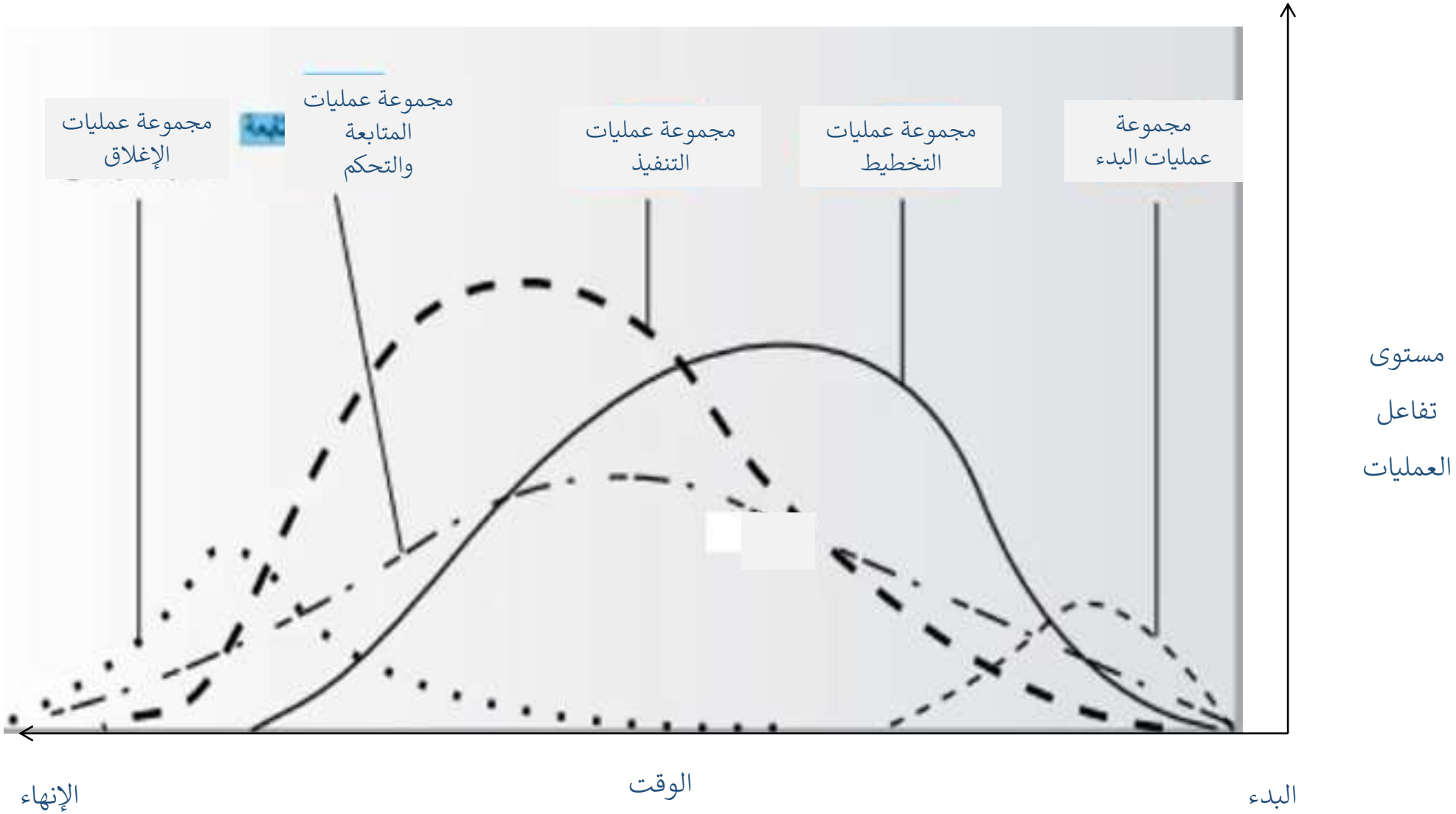
سمات دورة حياة المشروع



الشكل 2-9: أثر المتغير حسب وقت المشروع

تداخل مجموعات العمليات داخل المشروع
Plan-Do-Check-Act Cycle





الشكل 3-2: تفاعل مجموعات العمليات في مرحلة أو مشروع

وثيقة إعلان بدء المشروع أو اتفاقيات الشراكة والتعاون

وثيقة بدء المشروع

- يتم تقديمها بواسطة المستثمر أو العميل
- تحدد وجهة نظر العميل في المستهدف من المشروع
- تقوم بالتعريف وإقرار مدير المشروع وصلاحياته

نموذج لمحتويات وثيقة بدء المشروع

- الهدف من عمل المشروع.
- المستهدف وتعريف شروط النجاح.
- تعريف مبدئي بالنتائج المستهدفة من المشروع وتوصيف عام لها.
- اسم مدير المشروع واختصاصاته وسلطاته.
- جدول تنفيذ ابتدائي.
- ميزانية تقديرية ابتدائية.
- اسم الجهة القائمة بالتمويل.
- الجهة المختصة باستلام ناتج المشروع والتوقيع بالاستلام.
- أي عوامل بيئية قد تؤثر في المشروع.

المدخلات:

نطاق المشروع

دراسة جدوى

الاتفاقيات

الظروف البيئية ونظام العمل داخل المؤسسة

الأدوات:

تقييم الخبراء

النماذج

المخرجات:

وثيقة بدء المشروع

أسئلة

دور مدير المشروع أثناء عمليات التنفيذ يمكن تعريفه بأنه:

a. مدير
b. مطور
c. مساعد
d. قائد

أحد أعضاء فريق العمل أخبرك بأنه لا يستطيع معرفة أي من النشاطات المفروض القيام بها هو الأكثر أهمية، من هو الشخص أو الجهة المختصة بتحديد أولويات المشروعات بالنسبة للشركة؟

a. مدير المشروع
b. الممول
c. إدارة المشروعات
d. فريق العمل

أي من الإجابات التالية تحدد أولويات المشروعات؟

a. نطاق العمل، عدد العاملين، التكلفة

b. نطاق العمل، التكلفة، جدول التنفيذ

c. نطاق العمل، جدول التنفيذ، التكلفة، الجودة، المخاطر، الموارد

d. جدول التنفيذ، التكلفة، عدد التغييرات في المشروع

ورشة عمل

وثيقة بدء المشروع

المحاضرة الثالثة

PROJECT SCOPE MANAGEMENT
UNIT 5

Unit Objectives

After completing this unit, you should be able to:

- ❑ Have an increased understanding of Project Scope Management processes and how they relate to the overall project

- ❑ Understand the five Project Scope Management processes
  - Plan Scope Management
  - Collect Requirements
  - Define Scope
  - Create WBS
  - Verify Scope
  - Control Scope

Project Scope Management

Project Scope Management: includes the processes required to ensure that the project includes **all** the work required, and **only** the work required, to complete the project successfully.

- Primarily concerned with defining and controlling what is or is not in the project.

- **In the project context the term scope can refer to:**

  - **Product scope** – The Features and functions that characterize a product, service or result.
  - **Project scope** – The work that needs be accomplished to deliver a product, service, or result within the specified features and functions.

- Completion of project scope is measured against the project management plan, the project scope statement, and the associated WBS

- Completion of the product scope is measured against the product requirements

5.1 Plan Scope Management (inputs)

- **Project Management Plan**
- **Project Charter**
- **Enterprise Environmental Factors**

  The enterprise environmental factors that can influence the Plan Scope Management process include, but are not limited to:
  - Organization's culture,
  - Infrastructure,
  - Personnel administration, and
  - Marketplace conditions.

- **Organizational Process Assets**

Plan Scope Management: Tools and Techniques

Expert Judgment

Expert judgment refers to input received from knowledgeable and experienced parties. Expertise may be provided by any group or person with specialized education, knowledge, skill, experience, or training in developing scope management plans.

Meetings

Project teams may attend project meetings to develop the scope management plan. Attendees at these meetings may include the project manager, the project sponsor, selected project team members, selected stakeholders, anyone with responsibility for any of the scope management processes, and others as needed.

Plan Scope Management: Outputs

Scope Management Plan

- Process for preparing a detailed project scope statement;
- Process that enables the creation of the WBS from the detailed project scope statement;
- Process that establishes how the WBS will be maintained and approved;
- Process that specifies how formal acceptance of the completed project deliverables will be obtained; and
- Process to control how requests for changes to the detailed project scope statement will be processed.

COLLECT REQUIREMENTS (5.2)

- The process of defining and documenting stakeholders' needs to meet the project objectives.
- The project's success is directly influenced by the care taken in capturing and managing project and product requirements.
- Requirements become the foundation of the **WBS**.
- Cost, schedule, and quality planning are all built upon these requirements.

COLLECT REQUIREMENTS (5.2)

- **Project Charter (Inputs)**
  The project charter is used to provide the high-level project requirements and high-level product description of the project.

- **Stakeholder Register (Inputs)**
  The stakeholder register is used to identify stakeholders that can provide information on detailed project and product requirements

COLLECT REQUIREMENTS (5.2)

Interviews (Tools & Techniques)

Focus groups (Tools & Techniques)

bring together prequalified stakeholders and experts to learn about their expectations.

Facilitated Workshops (Tools & Techniques)

Requirements workshops are sessions that bring key cross-functional stakeholders together to define product requirements.

Collect Requirements (5.2)

GROUP CREATIVITY TECHNIQUES (TOOLS & TECHNIQUES)

- **Brainstorming.**
- **Nominal group technique.**
- **The Delphi technique.**
- **Idea/ mind mapping.**

Questionnaires and Surveys (Tools & Techniques)

Observations (Tools & Techniques)

Collect Requirements (5.2)

GROUP DECISION MAKING TECHNIQUES (TOOLS & TECHNIQUES)

- **Unanimity.**
  - Everyone agrees on a single course of action.
- **Majority.**
  - Support from more than 50% of the members of the group.
- **Plurality.**
  - The largest block in a group decides even if a majority is not achieved.
- **Dictatorship.**
  - One individual makes the decision for the group.

COLLECT REQUIREMENTS (5.2)

- **Requirements Management Plan (Output)**
  - How requirements will be, analyzed, documented and managed throughout the project.
  - Requirements prioritization process
  - Product metrics that will be used

DEFINE SCOPE (5.3)

- The process of developing a detailed description of the project and product.

- Preparation of a detailed project scope statement is critical to the success of the project and builds on the major deliverables, assumptions, and constraints documented during project initiation

DEFINE SCOPE (5.3)

Project Charter (Inputs)

Requirements Documentation (Inputs)

Organizational Process Assets (Inputs)

Examples of organizational process assets that can influence the Define Scope process include, but are not limited to:

- Policies, procedures, and templates for a project scope statement,
- Project files from previous projects, and
- Lessons learned from previous phases or projects.

DEFINE SCOPE (5.3)

Expert judgment (Tools & Techniques)

Product Analysis (Tools & Techniques)

- For projects that have a product as a deliverable, as opposed to a service or result, product analysis can be an effective tool.
- Product analysis includes techniques such as product breakdown, systems analysis, systems engineering.

Alternatives Identification (Tools & Techniques)

- Identifying alternatives is a technique used to generate different approaches to execute and perform the work of the project.

DEFINE SCOPE (5.3)

Project Scope Statement (Outputs)

The project scope statement describes, in detail, the project's deliverables and the work required to create those deliverables

- **Product scope description** : Progressively elaborates the characteristics of the product, service, or result that as described in the project charter
- **Project deliverables :** Deliverables include both the outputs that comprise the product or service of the project, The deliverables may be described at a summary level or in great detail
- **Project boundaries :** Generally identifies what is included within the project. It states explicitly what is out of scope for the project.
- **Product acceptance criteria :** Defines the process and criteria for accepting completed products
- **Project constraints and Assumptions** :Lists and describes the specific project constraints and assumptions associated with the project scope that limits the team's options

CREATE WBS (5.4)

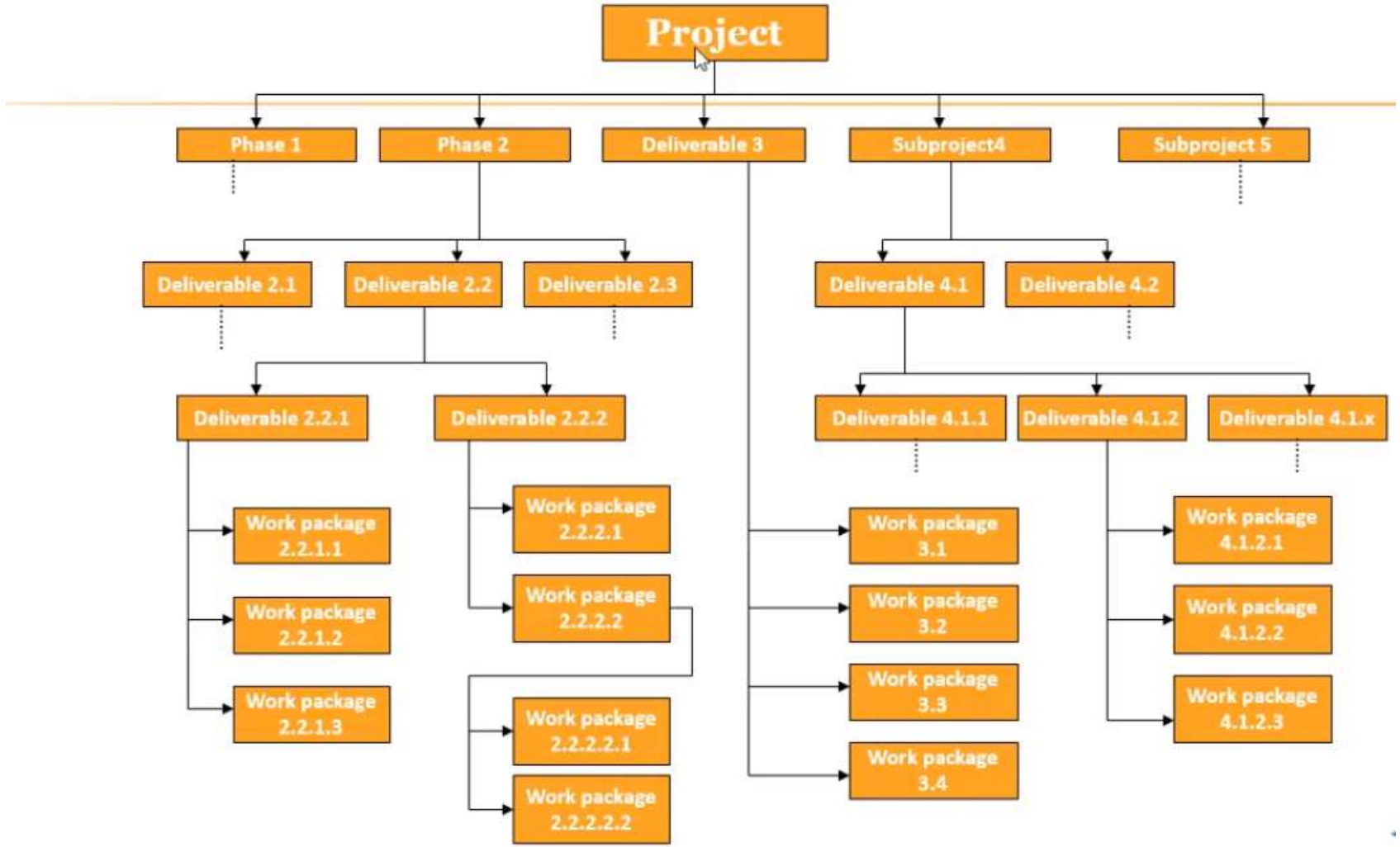
- Process of subdividing the major project deliverables and project work into smaller, more manageable components
- A deliverable-oriented hierarchical decomposition of the work to be executed by the project team to accomplish the project objectives and create the required deliverables
- Organizes and defines the total scope of the project
- WBS represents the work specified in the current approved project scope statement

CREATE WBS (5.4)

Project Scope Statement (Inputs)

Requirements Documentation (Inputs)

Organizational Process Assets (Inputs)

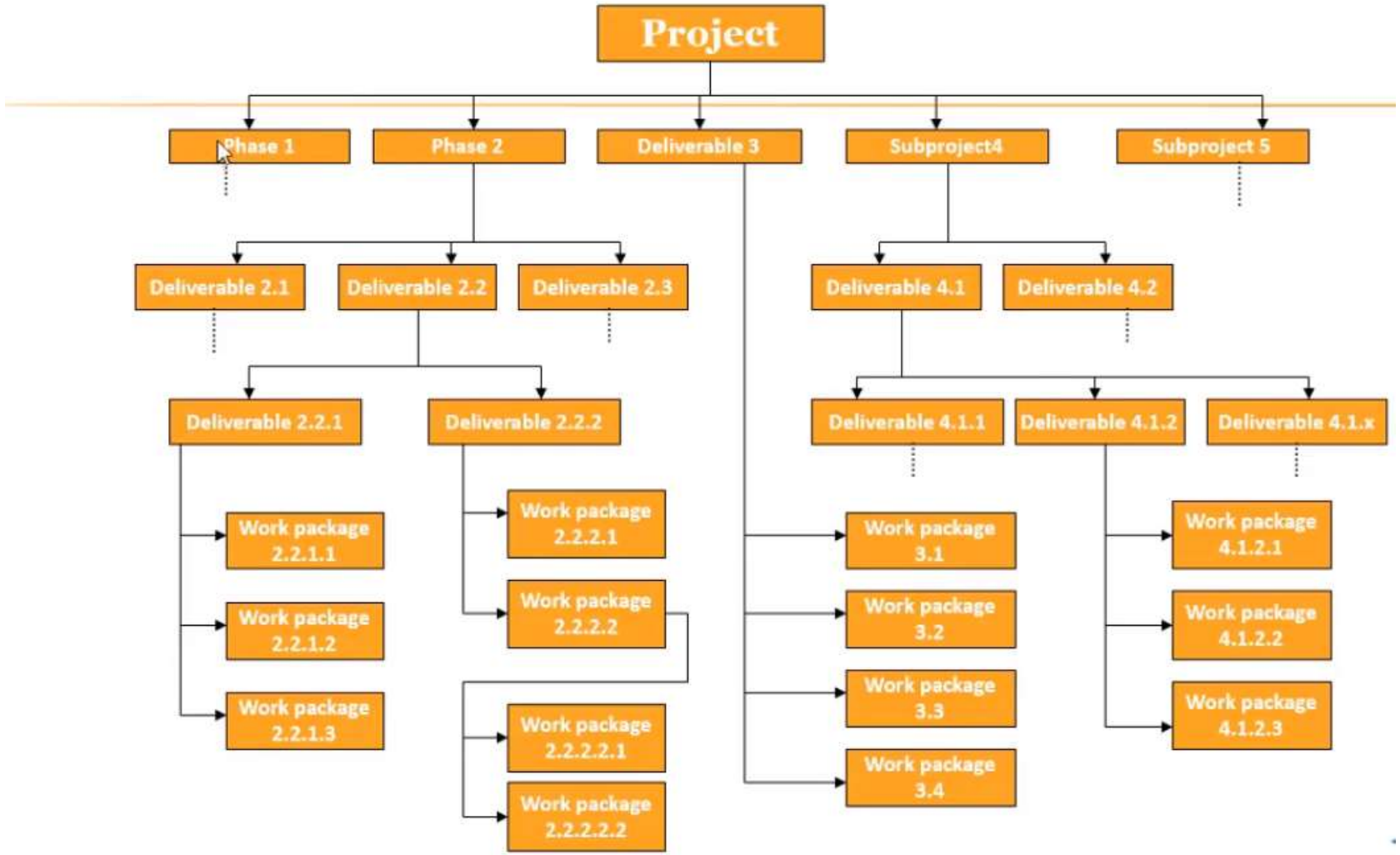


CREATE WBS (5.4)

Scope Baseline (Output)

The scope baseline is a component of the project management plan.
Components of the scope; baseline include:

- **Project scope statement**. The project scope statement includes the product scope description, and the project deliverables, and defines the product user acceptance criteria.
- **WBS.** The WBS defines each deliverable and the decomposition of the deliverables into work packages.
- **WBS Dictionary.** The WBS dictionary has a detailed description of work and technical documentation for each WBS element.



VERIFY SCOPE (5.5)

- The process of formalizing acceptance of the completed project deliverables.
- Requires reviewing deliverables and results to ensure that all were completed correctly and satisfactorily
- Differs from quality control in that it is primarily concerned with acceptance of the deliverables while quality control is primarily concerned with meeting the quality requirements specified for the deliverables

Verify Scope (5.5)

Inspection (Tools & Techniques)

Technique for examining or measuring to verify whether an activity, component, product, result or service conforms to specified requirements.

- Includes activities to determine whether results conform to requirements.
- Are often called product reviews, audits, and walkthroughs.
- Purpose is to specifically identify deficiencies, gaps and errors against the project documentation.
- The inspection activity should encompass the accuracy, completeness and acceptability of the object under review.

Control Scope (5.6)

- The process of monitoring the status of the project and product scope and managing changes to the scope baseline.
- Assure that all requested changes and recommended corrective actions are processed through the Integrated Change Control process
- Manage the actual changes when and if they occur
- Integrated with other control processes

1) A PROJECT MANAGER BELIEVES THAT MODIFYING THE PROJECT SCOPE MAY PROVIDE ADDED VALUE FOR THE CUSTOMER. WHAT SHOULD THE PROJECT MANAGER DO ?

A) Change the scope baseline.

B) Contact the customer to determine if the change adds value.

C) Call a meeting of the change control board.

D) Change the project objectives.

2) WHICH OF THE FOLLOWING BEST DESCRIBES SCOPE VERIFICATION ?

A) It provides assurances that the deliverables meets the specifications, is an input to the project management plan and output of perform quality control.

B) It ensures that the deliverable is completed on time, ensure customer acceptance, and shows that the deliverable meets specifications.

C) It ensures customer acceptance, shows that the deliverable meets specifications and provides a chance for differences of opinion to come to light.

D) It is an output of perform quality control, occurs before define scope and ensures customer acceptance.

3) DURING WHAT PART OF THE PROJECT MANAGEMENT PROCESS IS THE PROJECT SCOPE STATEMENT CREATED ?

A) Initiating.

B) Planning.

C) Executing.

D) Monitoring and controlling.

4) IF A PROJECT TEAM IS SUBDIVIDING PROJECT WORK PACKAGES INTO SMALLER, MORE MANAGEABLE COMPONENTS, THEY ARE :

A) Creating a WBS.

B) Decomposing.

C) Network diagramming.

D) Activity sequencing.

المحاضرة الرابعة

Project Time Management

Unit 6

PROJECT TIME MANAGEMENT

Includes the processes required to manage Timely completion of the project.

Planning

- 6.1 Plan Schedule management
- 6.2 Define Activities
- 6.3 Sequence Activities
- 6.4 Estimate Activity Resources
- 6.5 Estimate Activity Durations
- 6.6 Develop Schedule

Monitoring and controlling

- 6.7 Control Schedule

6.1 Plan Schedule management

- Plan Schedule Management is the process of establishing the policies, procedures, and documentation for planning, developing, managing, executing, and controlling the project schedule. The key benefit of this process is that it provides guidance and direction on how the project schedule will be managed throughout the project. The inputs, tools and techniques, and outputs of this process are depicted in Figure 6-3.

PLAN SCHEDULE MANAGEMENT: INPUTS

- • **Scope baseline**. The scope baseline includes the project scope statement and the work breakdown structure (WBS) details used for defining activities, duration estimation, and schedule management; and **Other information**. Other scheduling related cost, risk, and communications decisions from the project management plan are used to develop the schedule.
- **Project Charter** Described in Section 4.1.3.1. The project charter defines the summary milestone schedule and project approval requirements that will influence the management of the project schedule.
- **Enterprise Environmental Factors**
  - Organizational culture and structure can all influence schedule management;
  - Resource availability and skills that may influence schedule planning;
  - Project management software provides the scheduling tool and alternative possibilities for managing the schedule;
  - Published commercial information, such as resource productivity information, is often available from commercial databases that track; and Organizational work authorization systems.
- **Organizational Process Assets**

6.2 DEFINE ACTIVITIES

- Identifying the specific actions to be performed to produce the project deliverables

- Project work packages are typically decomposed into smaller component called activities that represent the work necessary to complete the work package.

- Activities provide a basis for estimating, scheduling, executing, and monitoring and controlling the project work

6.2 DEFINE ACTIVITIES (INPUTS)

Scope Baseline

Enterprise Environmental Factors

- Project management information system (PMIS).

Organizational Process Assets

- Existing formal and informal activity planning-related policies, procedures, and guidelines,
- Lessons-learned knowledge base

6.2 DEFINE ACTIVITIES
(TOOLS & TECHNIQUES)

Decomposition

- Involves subdividing the project work packages into smaller ,more manageable components called activities.
- Activities represent the effort needed to complete a work package.
- Defines the final outputs as activities rather than deliverables.
- The activity list, WBS, WBS dictionary can be developed either sequentially or concurrently as the basis for development of the final activity list.

Rolling Wave Planning

Is a form of progressive elaboration planning where the work to be accomplished in the near term is planned in detail and future work is planned at a higher level of the WBS

6.2 DEFINE ACTIVITIES
(OUTPUTS)

Activity List

The activity list includes the activity identifier and the scope of work description for each activity in sufficient detail to ensure that the project team members understand what work is required to be completed.

Activity Attributes

Activity attributes extend the description of the activity by identifying the multiple components associated with each activity.

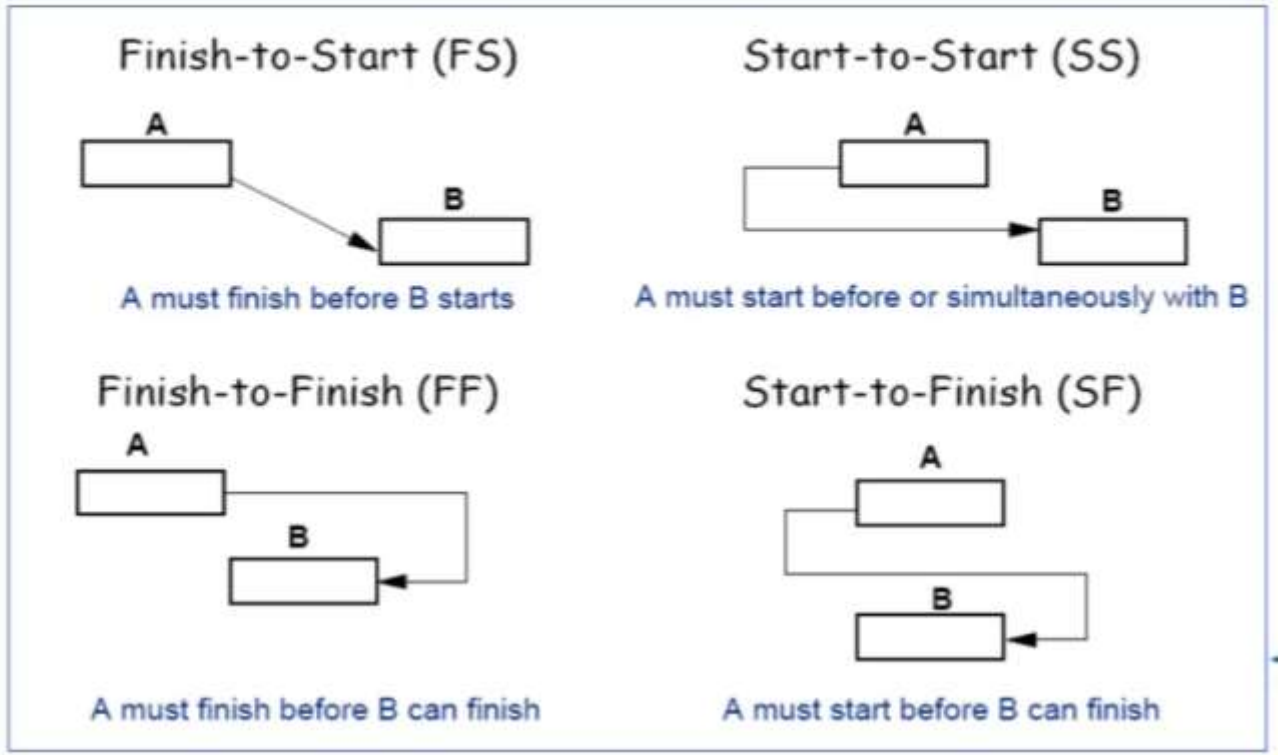
Milestone List

A milestone list identifies all milestones and indicates whether the milestone is mandatory, or optional.

6.3 SEQUENCE ACTIVITIES

- Sequence activities is the process of identifying and documenting relationships among the project activities.
- It may be necessary to use lead or lag time between activities to support a realistic and achievable project schedule.

Dependency Relationships in the Precedence Diagramming Method (PDM)



Dependency Determination

Three types of dependencies are used to define the sequence among the activities

- **Mandatory dependencies**
  - Those that are contractually required or inherent in the nature of the work.
  - Are also sometimes referred to as hard logic
- **Discretionary dependencies (optional)**
  - Discretionary dependencies are sometimes referred to as preferred, or soft logic.
  - Should be fully documented since they can create arbitrary total float values and can Limit later scheduling options.
- **External dependencies**
  - Involve a relationship between project activities and non-project activities.

Applying Leads and Lags

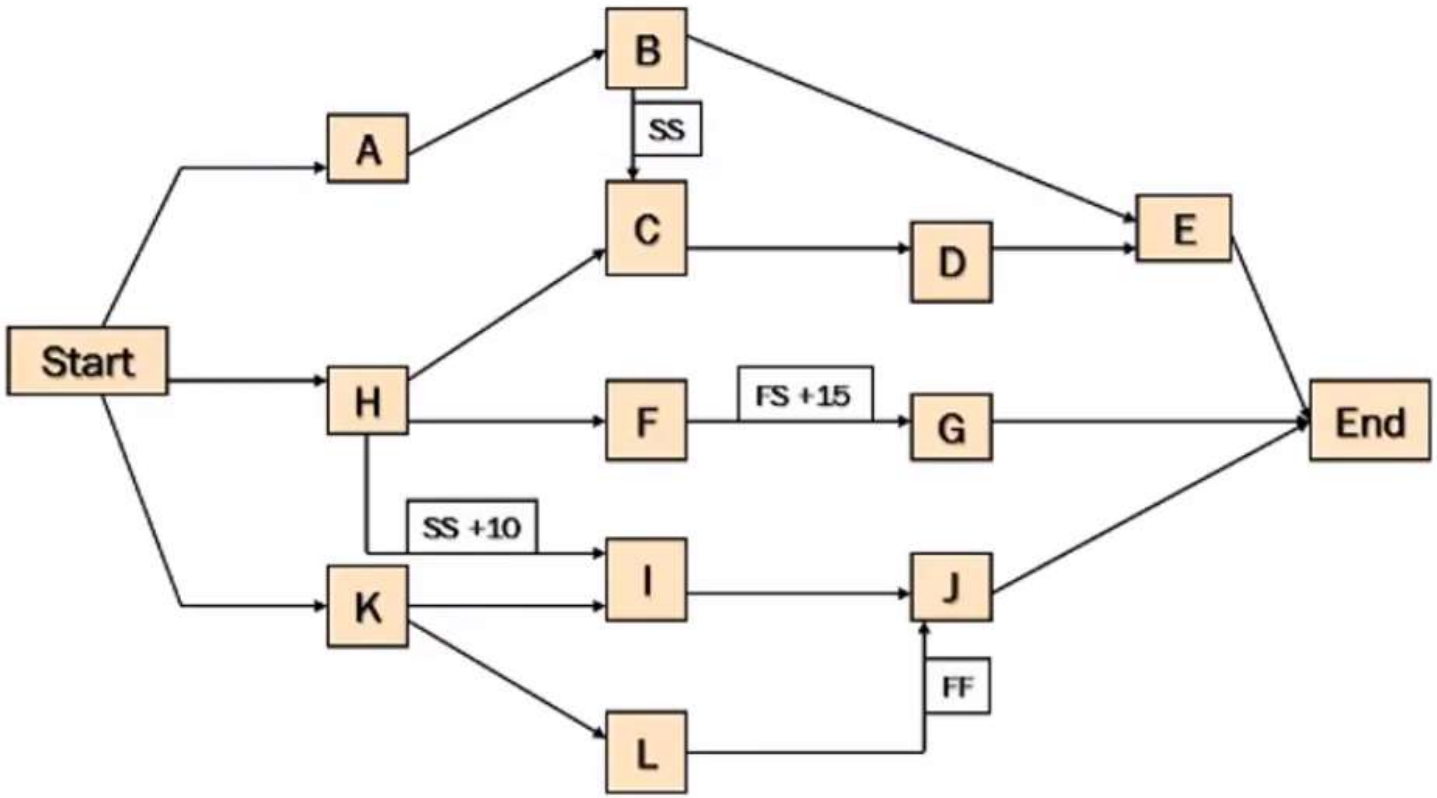
A Lead

Allows an acceleration of the successor activity.

A Lag

Directs a delay in the successor activity

PRECEDENCE DIAGRAMMING METHOD



6.4 ESTIMATE ACTIVITY RESOURCES
(INPUTS)

Schedule Management Plan

Activity List

Activity Attributes

Resource Calendars

- Specify when and how long identified project resources will be available during the project.

Enterprise Environmental Factors

- Resource availability and skills.

Organizational Process Assets

- Policies and procedures regarding staffing,
- Policies and procedures relating to rental and purchase of supplies and equipment, and
- Historical information regarding types of resources used for similar work on previous projects.

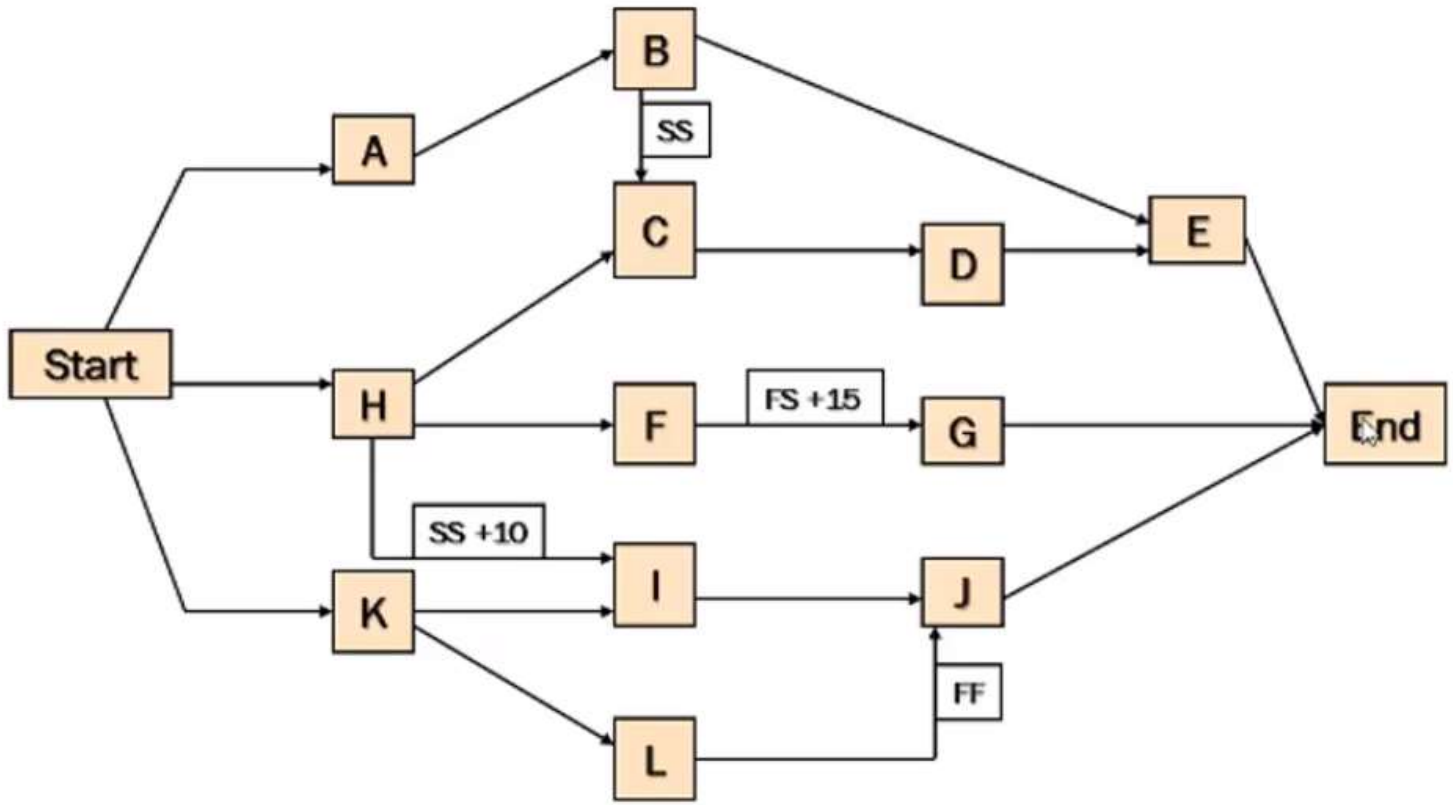
6.3 SEQUENCE ACTIVITIES (OUTPUT)

- **Project schedule network diagram**
  - Are schematic displays of the project's schedule activities and the logical relationships among them.
  - Can be produced manually or by using project management software.

- **Project document updates**

  Project documents that may be updated include:
  - Activity lists,
  - Activity attributes,
  - Risk register

PRECEDENCE DIAGRAMMING METHOD



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6.4 ESTIMATE ACTIVITY RESOURCES
(TOOLS & TECHNIQUES)

Expert Judgment

Any group or person with specialized knowledge in resource planning and estimating can provide such expertise.

Alternatives Analysis

Include using various levels of resources capability or skills, different size or type of machines, different tools, and make-or-buy decisions regarding the resources.

Published Estimating Data

Several companies routinely publish updated production rates and unit costs of resources, and equipment for different countries, and geographical locations within countries.

6.4 ESTIMATE ACTIVITY RESOURCES
(TOOLS & TECHNIQUES)

Bottom-Up Estimating

When an activity cannot be estimated with a reasonable degree of confidence, the work within the activity is decomposed into more detail. The resource needs are estimated. These estimates are then aggregated into a total quantity for each of the activity's resources.

Project Management Software

Project management software has the capability to help plan, organize, and manage resources pools and develop resources estimates

Activity Resource Requirements

Identifies the types and quantities of resources required for each activity in a work package

Resource Breakdown Structure

The resource breakdown structure is a hierarchical structure of the identified resources by resource category and resource type.

Project Document Updates

- Activity list,
- Activity attributes, and
- Resource calendars

6.5 ESTIMATE ACTIVITY DURATIONS (INPUTS)

Schedule Management Plan

Activity List

Activity Attributes

Activity Resource Requirements

Resource Calendars

Project Scope Statement

Constraints and assumptions .

6.4 ESTIMATE ACTIVITY RESOURCES
(TOOLS & TECHNIQUES)

Bottom-Up Estimating

When an activity cannot be estimated with a reasonable degree of confidence, the work within the activity is decomposed into more detail. The resource needs are estimated. These estimates are then aggregated into a total quantity for each of the activity's resources.

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- Activity attributes, and
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6.5 ESTIMATE ACTIVITY DURATIONS (INPUTS)

Schedule Management Plan

Activity List

Activity Attributes

Activity Resource Requirements

Resource Calendars

Project Scope Statement

Constraints and assumptions .

6.5 ESTIMATE ACTIVITY DURATIONS
(INPUTS)

Enterprise Environmental Factors

- Duration estimating databases and other reference data,
- Productivity metrics, and
- Published commercial information.

Organizational Process Assets

- Historical duration information,
- Scheduling methodology, and
- Lessons learned.

6.5 ESTIMATE ACTIVITY DURATIONS
(TOOLS & TECHNIQUES)

Expert Judgment

Expert judgment can provide duration estimate information or recommend maximum activity duration from prior similar projects.

Analogous Estimating

- This technique relies on the actual duration of previous similar projects as the basis for estimating the duration of the current project.
- Generally less costly and time consuming than other techniques, but it is also generally less accurate.

Reserve Analysis

Duration estimates may include contingency reserve, (time reserve or buffers) into the overall project schedule to account for schedule uncertainty.

6.6 DEVELOP SCHEDULE

- Develop schedule is the process of analyzing activity sequences, durations, resource requirements, and schedule constraints to create the project schedule.

- Developing an acceptable project schedule is often an iterative process.

6.6 DEVELOP SCHEDULE
(INPUTS)

- **Schedule Management Plan**
- **Activity List**
- **Activity Attributes**
- **Project Schedule network Diagrams**
- **Activity Resource Requirements**
- **Resource Calendars**
- **Activity Duration Estimates**
- **Project Scope Statement**
- **Enterprise Environmental Factors**
- **Organizational Process Assets**

6.5 DEVELOP SCHEDULE
(TOOLS & TECHNIQUES)

Schedule Compression

Shortens the project schedule without changing the project scope, to meet schedule constraints, imposed dates, or other schedule objectives.

Crashing:

Approving overtime, bringing in additional resources, or paying to expedite delivery to activities on the critical path.

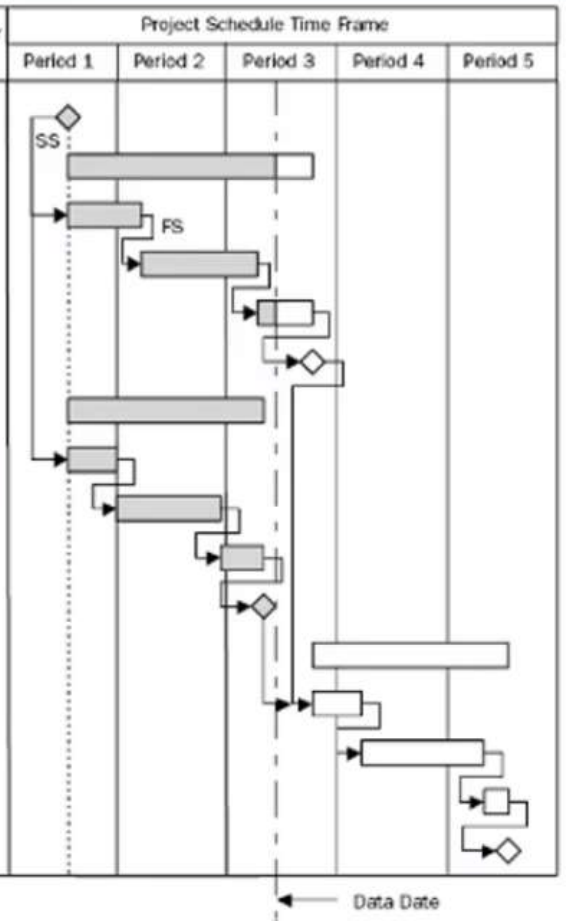
Fast tracking:

Doing activities in parallel that would normally be done in sequence.

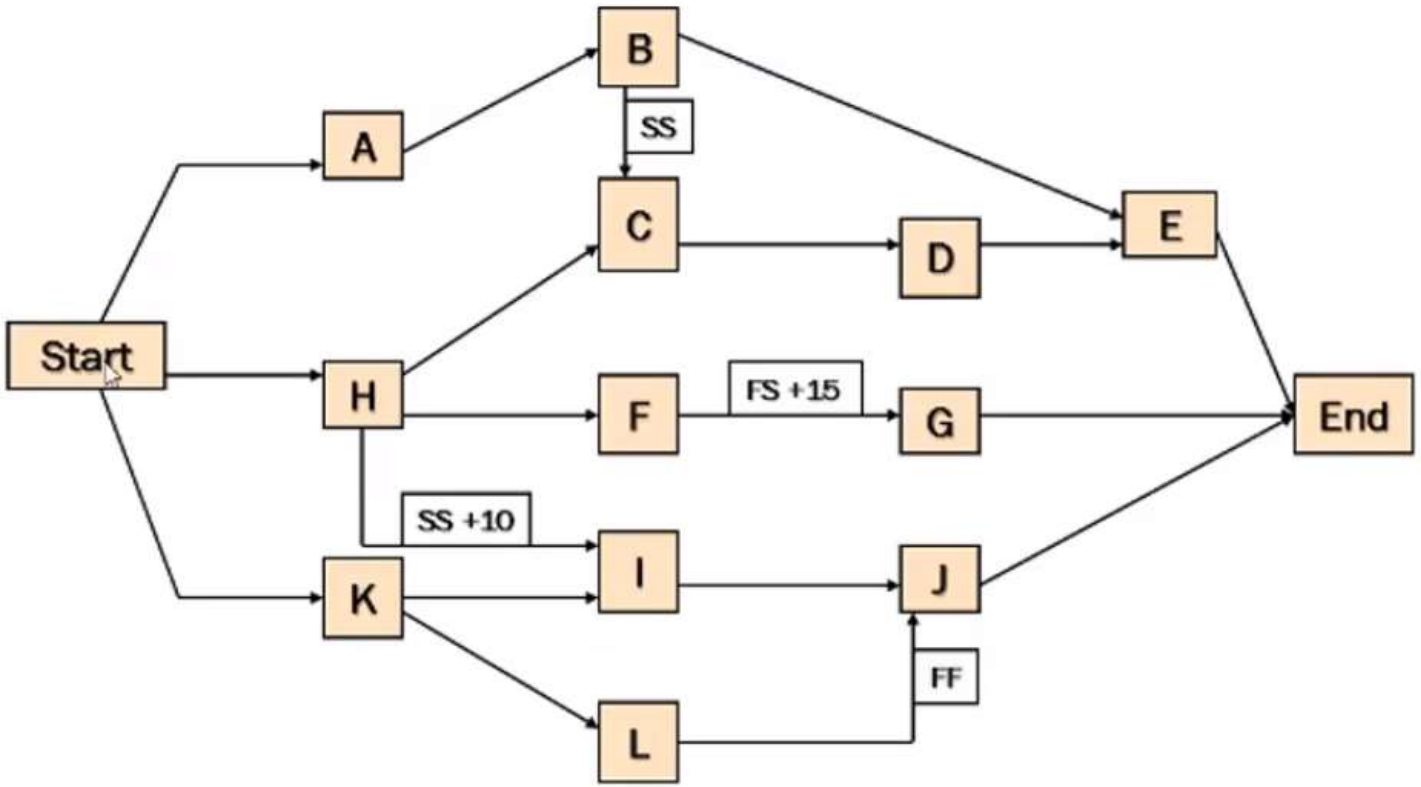
Fast tracking often results in rework and usually increases risk

6.5 DEVELOP SCHEDULE
(OUTPUTS)

Activity Identifier	Activity Description	Calendar units
1.1.MB	Provide New Product Z Deliverable - Begun	0
1.1.1	Work Package 1 - Develop Component 1	67
1.1.1.D	Design Component 1	20
1.1.1.B	Build Component 1	33
1.1.1.T	Test Component 1	14
1.1.1.M1	Component 1 - Completed	0
1.1.2	Work Package 2 - Develop Component 2	53
1.1.2.D	Design Component 2	14
1.1.2.B	Build Component 2	28
1.1.2.T	Test Component 2	11
1.1.2.M1	Component 2 - Completed	0
1.1.3	Work Package 3 - Integrate Components	53
1.1.3.G	Integrate Components 1 & 2	14
1.1.3.T	Test Integrated Product Z	32
1.1.3.P	Deliver Product Z	7
1.1.MF	Provide New Product Z Deliverable - Finished	0



PRECEDENCE DIAGRAMMING METHOD



6.7 CONTROL SCHEDULE
(TOOLS & TECHNIQUES)

Performance Reviews

Measure, compare, and analyze schedule performance such as actual start and finish dates, percent complete, and remaining duration for work in progress.

Variance analysis

- Schedule performance measurements (SV, SPI) are used to assess the magnitude of variation to the original schedule baseline.

- The total float variance is an essential planning component to evaluate project time performance.

6.7 CONTROL SCHEDULE (OUTPUTS)

- **Work Performance measurements**
- **Organizational Process Assets Updates**
- **Change Requests**
- **Project management Plan Updates**
  - Schedule baseline
  - Cost baseline
- **Project Document Updates**
  - Project Schedule

1- WHICH OF THE FOLLOWING IS THE BEST TO DO TO TRY TO COMPLETE YOUR PROJECT TWO MONTHS EARLIER?

A) Tell senior management that the project's critical path does not allow the project to be finished earlier.

B) Tell your boss.

C) Meet with the team and look for options for crashing or fast tracking the critical path.

D) Work hard and see what the project status is next month.

2- A PROBLEM OCCURS ON AN ACTIVITY WITH FREE FLOAT AND THE PROJECT MANAGER HAS EXTENDED ITS DURATION. WHAT IS MOST LIKELY TO BE AFFECTED?

A) Project duration

B) Resource schedules

C) Project scope management plan

D) The latest start for the successor activity

6- TOTAL FLOAT IS THE AMOUNT OF TIME AN ACTIVITY CAN BE DELAYED WITHOUT DELAYING THE :

A) project.

B) completion date required by the customer.

C) early start of its successor.

D) project completion date.

7- YOUR BOSS TELLS YOU THAT ONE OF YOUR RESOURCES IS NEEDED ON ANOTHER PROJECT. ALL THE ACTIVITIES IN THE CHART ARE OCCURRING AT THE SAME TIME. ASSUMING THAT ALL THE RESOURCES WORKING ON WHICH ACTIVITY WOULD YOU PICK TO MOVE TO THE OTHER PROJECT?

A) Activity D

B) Activity C

C) Activity H

D) Activity B

activity	Float (month)
Start	
B	2
C	1
D	0
F	1
G	0
H	4
I	0
E	3
End	

8- MANAGEMENT HAS DECIDED TO "CRASH" A PROJECT TO AVOID PENALTY PAYMENTS FOR LATE DELIVERIES. ADDITIONAL COSTS ARE EXPECTED. TO CRASH THE PROJECT, EITHER OVERTIME OR ADDITIONAL RESOURCES SHOULD BE ASSIGNED TO:

A) all activities

B) only those activities with the longest time durations

C) those activities on the critical path beginning with the lowest additional cost activities

D) those activities with the greatest degree of risk

المحاضرة الخامسة

Project Cost Management

Unit 7

PROJECT COST MANAGEMENT

- Project cost management includes the processes involved in estimating, budgeting, and controlling costs so that the project can be completed within the approved budget
- It is primarily concerned with the cost of the resources needed to complete schedule activities
- Should consider the information needs of the project stakeholders
- With proper planning, you can:
  - Adjust the project plan to conform to the budget
  - Track and manage cost once the project execution begins
  - Compare actual cost to the original planned cost and analyze any variances between the two

7.1 PLAN COST MANAGEMENT

- Plan Cost Management is the process that establishes the policies, procedures, and documentation for planning,
- managing, expending, and controlling project costs. The key benefit of this process is that it provides guidance and direction on how the project costs will be managed throughout the project.
- (Cost management plan can establish the following)
  - **Precision level** - The prescribed precision for rounding data related to schedule activity cost estimates
  - **Units of measure** - Define units of measurement for each of the resources
  - **Organizational procedure links** - The WBS component used for the project cost accounting is called a control account (CA); each CA is assigned a code or account number
  - **Control thresholds** - Variance thresholds for cost at designated time points in the project to indicate the agreed to amount allowable variance

PLAN COST MANAGEMENT: INPUTS

- Project Management Plan :
  - **Scope baseline.** The scope baseline includes the project scope statement and WBS detail for cost estimation and management.
  - • **Schedule baseline.** The schedule baseline defines when the project costs will be incurred.
  - • **Other information.** Other cost-related scheduling, risk, and communications decisions from the project management plan.
- Project Charter
- Enterprise Environmental Factors
- Organizational Process Assets

PLAN COST MANAGEMENT: TOOLS AND TECHNIQUES

- Expert Judgment
- **Analytical Techniques** : Developing the cost management plan may involve choosing strategic options to fund the project such as: self-funding, funding with equity, or funding with debt. The cost management plan may also detail ways to finance project resources such as making, purchasing, renting, or leasing. These decisions, like other financial decisions affecting the project, may affect project schedule and/or risks.
- **Meetings** : Attendees at these meetings may include the project manager, the project sponsor, selected project team members, selected stakeholders, anyone with responsibility for project costs, and others as needed.

PLAN COST MANAGEMENT: OUTPUTS

- Cost Management Plan
  - Units of measure
  - Level of precision
  - Level of accuracy
  - Organizational procedures links
  - Control thresholds
  - Rules of performance measurement
  - Reporting formats
  - Process descriptions

7.2 Estimate Costs

(Inputs)

Scope Baseline

Project Schedule

The type and quantity of resources and the amount of time which those resources are applied to complete the work of the project are major factors in determining the project cost.

Human Resource Plan

Project staffing attributes, personnel rates, and related rewards/recognition

7.2 Estimate Costs

(Inputs)

Risk Register

The risk register should be reviewed to consider risk mitigation costs.

Enterprise Environmental Factors

- Market conditions.
- Published commercial information.

Organizational Process Assets

- Cost estimating policies,
- Cost estimating templates,
- Historical information, and
- Lessons learned.

7.2 Estimate Costs

(Tools & Techniques)

- **Expert judgment**
- **Analogous Estimating**
- **Parametric Estimating**
- **Bottom-Up Estimating**
- **Three-Point Estimates**
- **Reserve Analysis**
- **Cost of Quality (COQ)**
- **Project Management Estimating software**
- **Vendor Bid Analysis**

7.2 Estimate Costs

(Outputs)

- **Activity Cost Estimates**
- **Basis of Estimates**
- **Project Document Updates**

7.3 Determine Budget

Activity Cost Estimates (Inputs)

Basis of Estimates (Inputs)

Scope Baseline (Inputs)

Project schedule (Inputs)

Resource Calendars (Inputs)

Contracts (Inputs)

Organizational Process Assets (Inputs)

- Existing formal and informal cost budgeting-related policies, procedures
- Cost budgeting tools,

7.3 Determine Budget

PLAN COST MANAGEMENT: TOOLS AND TECHNIQUES

- Expert Judgment
- Analytical Techniques : Developing the cost management plan may involve choosing strategic options to fund the project such as: self-funding, funding with equity, or funding with debt. The cost management plan may also detail ways to finance project resources such as making, purchasing, renting, or leasing. These decisions, like other financial decisions affecting the project, may affect project schedule and/or risks.
- Meetings : Attendees at these meetings may include the project manager, the project sponsor, selected project team members, selected stakeholders, anyone with responsibility for project costs, and others as needed.

PLAN COST MANAGEMENT: INPUTS

- Project Management Plan :
  - Scope baseline. The scope baseline includes the project scope statement and WBS detail for cost estimation and management.
  - • Schedule baseline. The schedule baseline defines when the project costs will be incurred.
  - • Other information. Other cost-related scheduling, risk, and communications decisions from the project management plan.
- Project Charter
- Enterprise Environmental Factors
- Organizational Process Assets

7.4 Control Costs

Project Management Plan (Input)

The project management plan contains the following information that is used to control cost:

- Cost Performance Baseline.
- Cost Management Plan.

Organizational Process Assets (Input)

- Existing formal and informal cost control-related policies, procedures,
- Cost control tools; and
- Monitoring and reporting methods to be used

Project Funding Requirements (Input)

Work Performance Information (Input)

7.4 Control Costs

- **Earned Value Management (Tools)**
- **Forecasting (Tools)**
- **To-Complete Performance Index (TCPI) (Tools)**
- **Performance Reviews (Tools)**
- **Variance Analysis (Tools)**

1- HALF WAY THROUGH THE EXECUTING PROCESSES OF YOUR PROJECT, A TEAM MEMBER ALERTS YOU TO A POTENTIAL COST OVERRUN FOR A SPECIFIC DELIVERABLE. WHAT DO YOU DO FIRST?

A) Determine the projected actual cost.

B) Implement a change control process to track the change

C) Inform the customer.

D) Determine the cause of the overage

2 - WHICH TYPE OF COSTS IS TEAM TRAINING?

A) Direct

B) E V

C) Indirect

D) fixed

3- A PROJECT MANAGER HAS COMPLETED A DETAILED WBS AND COST ESTIMATES FOR EACH WORK PACKAGE. TO CREATE A COST BASELINE FROM THIS DATA, THE PROJECT MANAGER WOULD :

A) Use the highest level of the WBS to estimate analogously

B) Sum up the work package and risk contingency reserve estimates.

C) Roll up work package estimates into a project total and add managements reserves.

D) Gain expert opinions of the project costs.

4- YOU ARE HAVING DIFFICULTY ESTIMATING THE COST OF YOUR PROJECT. WHICH OF THE FOLLOWING BEST DESCRIBES THE MOST PROBABLE CAUSE OF YOUR DIFFICULTY?

A) Inadequate scope definition

B) Unavailability of desired resources

C) Lack of historical records from previous projects

D) Lack of company processes

6- WHILE COMPLETING YOUR PROJECT, YOU REALIZED THAT YOU NEED TO DECREASE THE PROJECT COSTS. AFTER RESEARCHING YOUR OPTIONS, YOU CAME UP WITH THE FOLLOWING CHOICES. WHICH CHOICE WOULD DECREASE PROJECT COSTS?

A) Change to component A from component B. component A costs more to purchase, but has a lower life cycle cost than B.

B) Change activity A to be completed by resource B instead of resource c. resource B is more experienced worker.

C) Move activities B and H to occur concurrently, and accept a 30 percent increase in the risk that five more resources will be needed later.

D) Remove a test from the project management plan.

المحاضرة السادسة

Project Quality Management

Unit 8

PROJECT QUALITY MANAGEMENT

- Includes the processes and activities of the performing organization that determine quality **policies, objectives, and responsibilities** so that the project will satisfy the needs for which it was undertaken.
- It implements the quality management system through policy and procedures with **continuous process improvement** activities conducted throughout, as appropriate.

- Plan Quality
  - Identifying quality requirements and/or standards for the project and product.
- Perform Quality Assurance
  - Auditing the quality requirements and the results from quality control measurements to ensure appropriate quality standards
- Perform Quality Control
  - Monitoring and recording results of executing the quality activities to assess performance and recommend necessary changes.

QUALITY VS. GRADE

- **Quality**

  Quality is the degree to which a set of inherent characteristics fulfill requirements

- **Grade**

  Grade is a category assigned to products or services having the same functional use but different technical characteristics

(while failing to meet quality requirements is always a problem, low grade may not be)

- Project manager and project management team are responsible for determining and delivering the required level of both quality and grade

MODERN QUALITY

- Customer satisfaction
  - Understanding, evaluating, defining, and managing expectations so that customer requirements are met

    (conformance to requirements & fitness for use)
- Prevention over inspection
  - The cost of preventing mistakes is generally much less than the cost of correcting them

    (quality is planned, designed, and built in not inspected in)
- Continuous improvement (Kaizen)
  - alter **(Kai)** and improve **(Zen)**
  - TQM and Six Sigma, should improve the quality of the project's management as well as the quality of the project's product.

PLAN QUALITY(8.1)

Cost-Benefit Analysis (Tools & Techniques)

- A business case for each quality activity compares the cost of the quality step to the expected benefit.

- The primary benefits of meeting quality requirements can include

  - Less rework,
  - Higher productivity,
  - Lower costs, and
  - increased stakeholder satisfaction.

PLAN QUALITY(8.1)

Cost of Quality (Tools & Techniques)

- All costs incurred in preventing nonconformance to requirements, and failing to meet requirements (rework).

- Failure costs are often categorized into
  - Internal (found by the project) and
  - External (found by th customer).

- Failure costs are also called cost of poor quality.

PLAN QUALITY(8.1)

Benchmarking (Tools & Techniques)

Involves comparing actual or planned project practices to those of other projects in order to:

- **Generate ideas for improvement**
- **Provide a standard by which to measure performance**
- **Can be done within the organization or with other organizations which have similar processes**

PLAN QUALITY(8.1)

Design of Experiments (Tools & Techniques)

Statistical method for identifying which factors may influence specific variables of a product or process under development or in production.

For example,

Automotive designers use this technique to determine which combination of suspension and tires will produce the most desirable ride characteristics at a reasonable cost.

PLAN QUALITY(8.1)

- Statistical Sampling
- **Meetings :** Project teams may hold planning meetings to develop the quality management plan. Attendees at these meetings may include the project manager; the project sponsor; selected project team members; selected stakeholders; anyone with responsibility for Project Quality Management activities namely Plan Quality Management, Perform Quality Assurance, or Control Quality; and others as needed

PLAN QUALITY(8.1)

Quality Management Plan (Outputs)

- Describes how the project management team implements the performing organization's quality policy
- Provides input to the overall project management plan and must address quality control (QC), quality assurance (QA), and continuous process improvement for the project

PERFORM QUALITY ASSURANCE (8.2)

- The process of **auditing** the quality requirements and the results from quality control measurements to ensure appropriate quality standards and operational definitions are used.
- A quality assurance department, or similar organization, often oversees quality assurance activities.
- Quality Assurance provides an umbrella for continuous process improvement, which is an iterative means for improving the quality of all processes.

PERFORM QUALITY ASSURANCE (8.2)

- Project Management Plan (Input)
- Quality Metrics (Input)
- Work Performance information (Input)
- Quality Control Measurements (Input)

PERFORM QUALITY ASSURANCE (8.2)

Quality Audits (Tool)

- A Q***uality Audit*** is a structured, **independent review** to determine whether project activities comply with the organizational and project policies, processes, and procedures.
- The objective of a quality audit is to identify inefficient and ineffective policies, processes, and procedures in use on the project
- Quality audits confirm the implementation of approved change requests, corrective actions, defect repairs, and preventive action

PERFORM QUALITY ASSURANCE (8.2)

Process Analysis (Tool)

- Follows the steps outlined in the process improvement plan to identify needed improvements from an organizational and technical standpoint

- Examines problems experienced, constraints experienced, and non-value added activities identified during process operation

- Includes **root cause analysis**, a specific technique used to
  - Analyze a problem/situation
  - Determine the underlying causes that lead to it
  - Create preventive actions for similar problems

PERFORM QUALITY CONTROL (8.3)

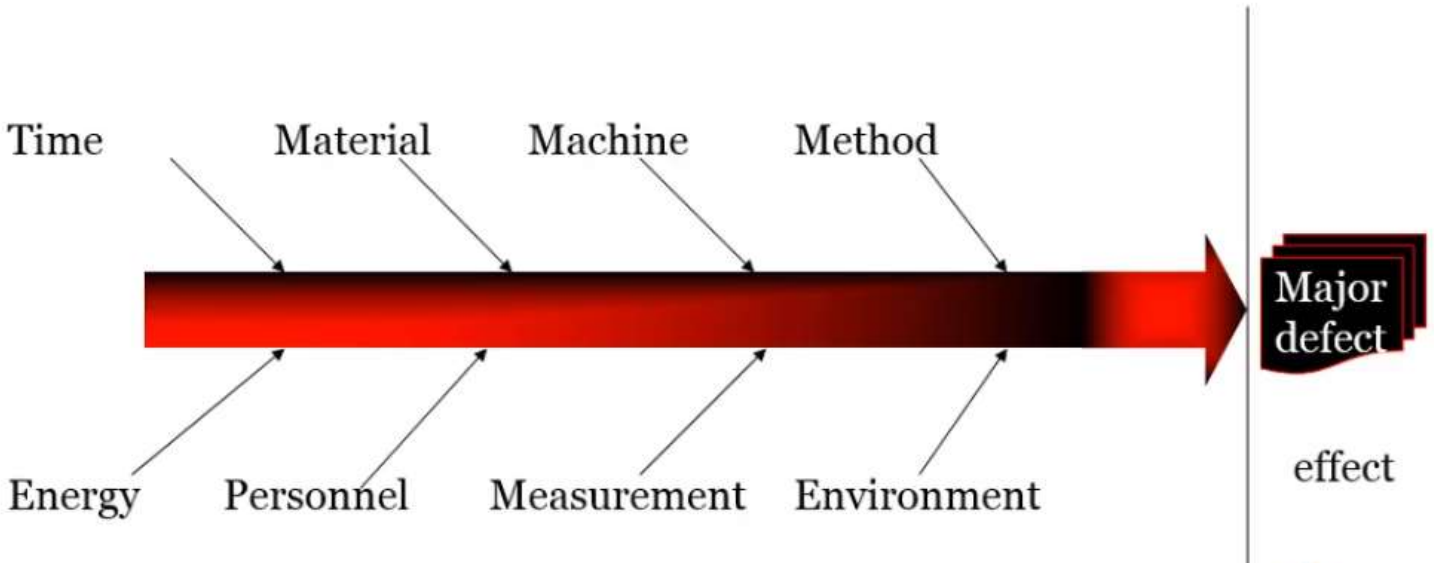
- The process of monitoring and controlling results of executing the quality activities to assess performance and recommend necessary changes

- Quality control is performed throughout the project

PERFORM QUALITY CONTROL (8.3)

Cause-and-Effect Diagram (Tools & Techniques)

The Fishbone or Ishikawa diagram can also contain probabilities

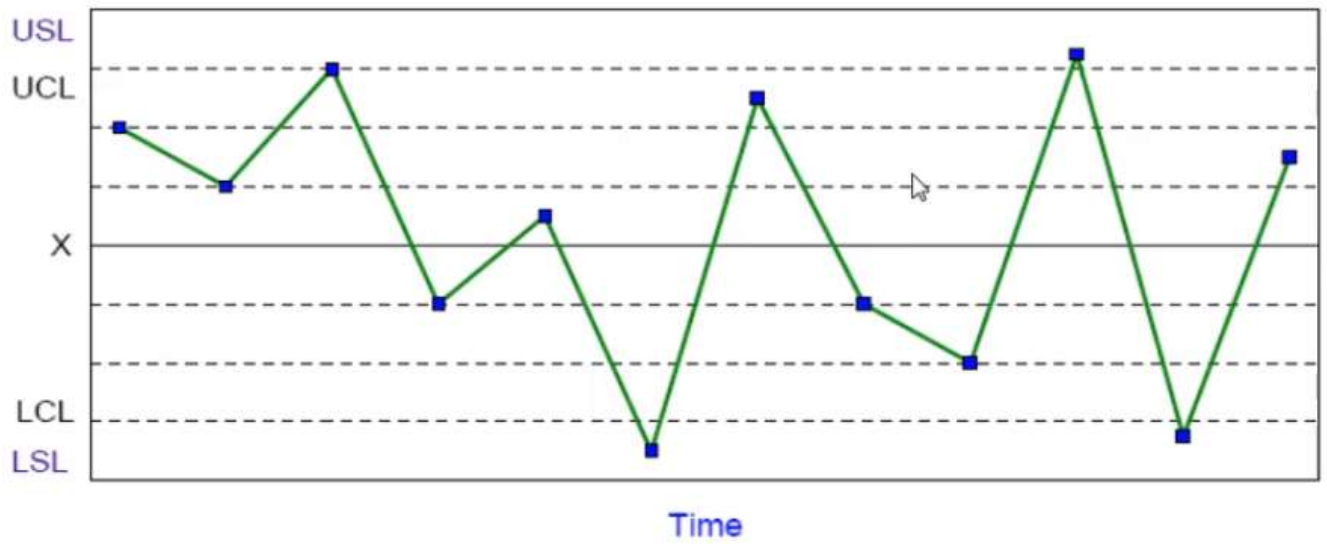


Potential causes

PLAN QUALITY(8.1)

Control Charts (Tools & Techniques)

Graphic display of results over a period of time to determine if a process is in control



UCL - Upper Control Limit
LCL - Lower Control Limit
X - Mean or expected value

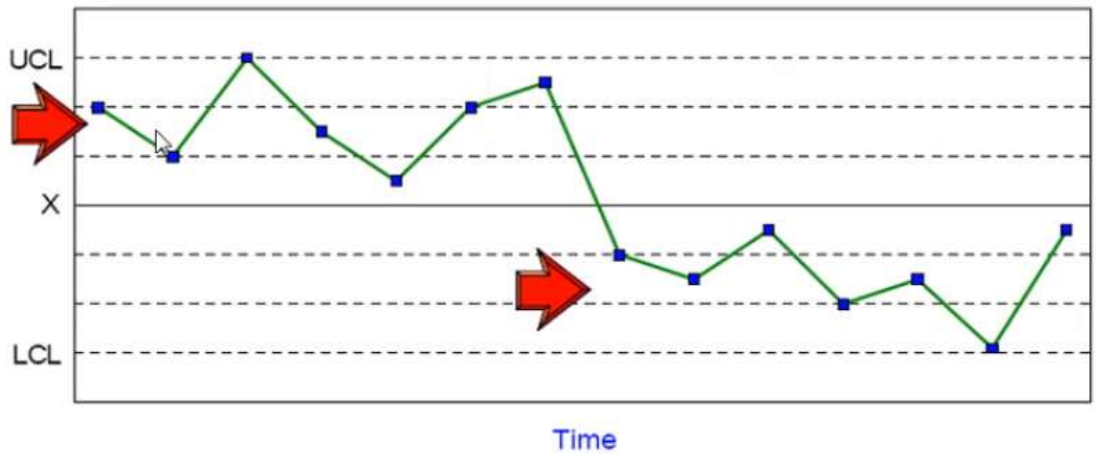
USL - Upper Specification Limit
LSL - Lower Specification Limit

PLAN QUALITY(8.1)

Control Charts (Tools & Techniques)

Rule of 7

Seven or more consecutive points on the same side of the Mean indicates a need to investigate, regardless if they fall within the control limits

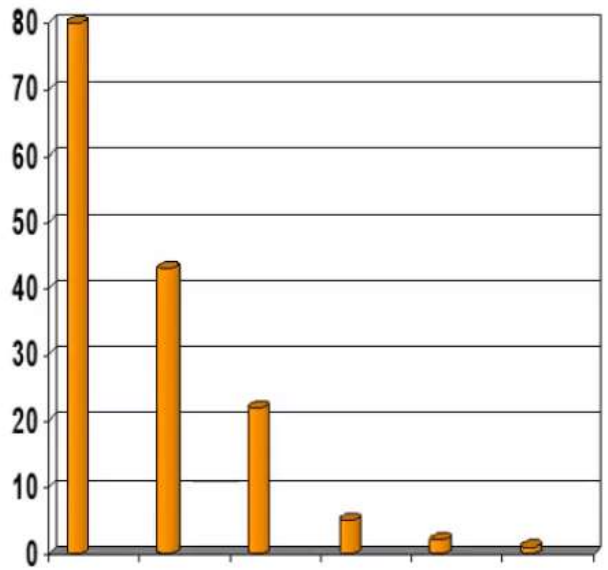


UCL - Upper Control Limit
LCL - Lower Control Limit
X - Mean or expected value

PERFORM QUALITY CONTROL (8.3)

Pareto Chart (Tools & Techniques)

- Histogram that shows how many results were generated by type or category
- Plots the number of defects (or other results) by the order of their frequency
- Used to identify the important defects that need to be followed up



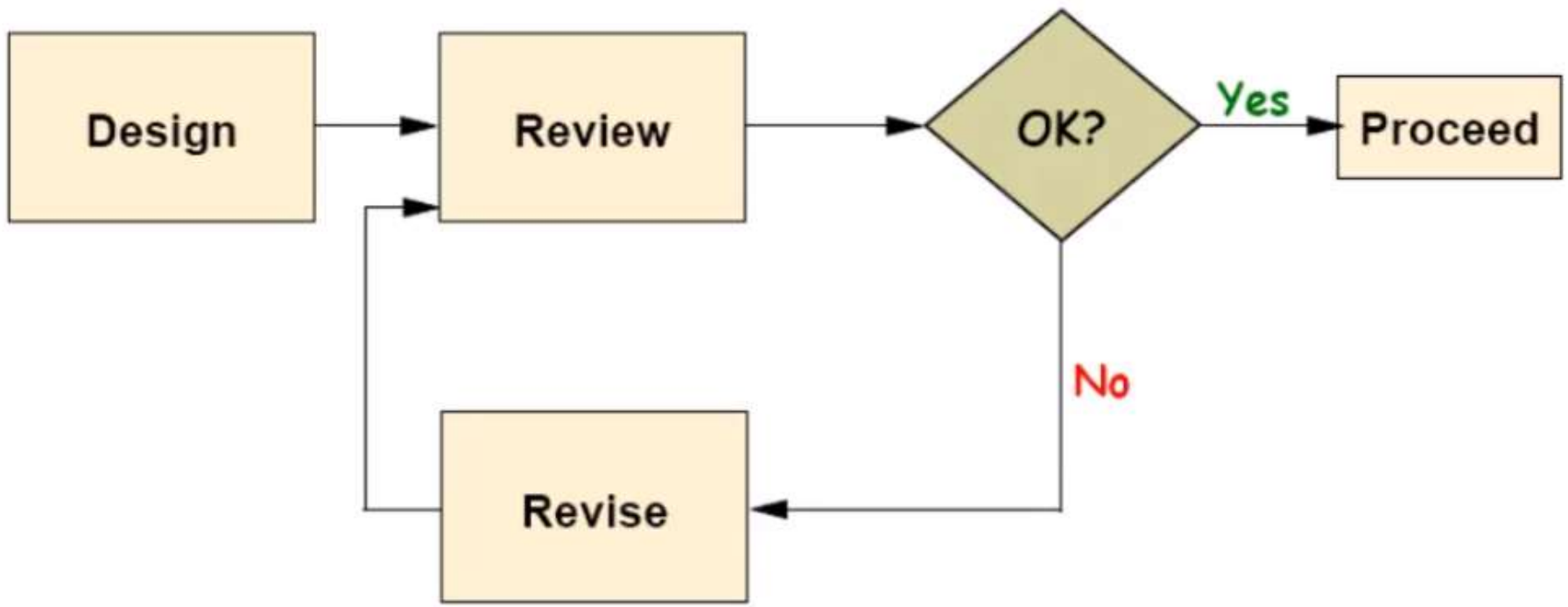
Pareto's Law

(20%) of defect types represent (80%) of defects

PLAN QUALITY(8.1)

Flowcharting (Tools & Techniques)

Sample Process Flowchart



PERFORM QUALITY CONTROL (8.3)

Run Chart (Tools & Techniques)

Similar to a control chart without displayed limits, a run chart shows the history and pattern of variation.

Used in Trend analysis to monitor.

- **Technical performance.**
  How many errors or defects have been identified, and how many remain uncorrected?

- **Cost and schedule performance.**
  How many activities per period were completed with significant variances?

1) A PROJECT MANAGER IS USING A CAUSE AND EFFECT DIAGRAM WITH THE TEAM TO DETERMINE HOW VARIOUS FACTORS MIGHT BE LINKED TO POTENTIAL PROBLEMS. IN WHAT PART OF THE QUALITY MANAGEMENT PROCESS IS THE PROJECT MANAGER INVOLVED?

A) Quality analysis.

B) Perform quality assurance.

C) Perform quality control.

D) Plan quality.

2) PARETO CHARTS HELPS THE PROJECT MANAGER:

A) Focus on the most critical issues to improve quality.

B) Focus on stimulating thinking.

C) Explore a desired future outcome.

D) Determine if a process is out of control.

3) A CONTROL CHART SHOWS THAT THE LAST EIGHT PIPES PRODUCED WERE ALL LESS THAN AVERAGE WEIGHT. YOU NEED TO INFORM MANAGEMENT THAT THERE IS A PROBLEM BECAUSE THE SITUATION VIOLATES THE :

A) Rule of seven.

B) Rule of eight .

C) 50/50 rule.

D) 3 sigma rule.

4) WHICH OF THE FOLLOWING HELPS A PROJECT MANAGER DETERMINE POSSIBLE CAUSES OF POTENTIAL PROBLEMS AND ACTUAL PROBLEMS?

A) The 50/50 rule.

B) A fishbone diagram.

C) A control chart.

D) A Pareto chart .

5) WHEN A PRODUCT OR SERVICE COMPLETELY MEETS A CUSTOMER'S REQUIREMENTS :

A) Quality is achieved.

B) The cost of quality is high.

C) The cost of quality is low.

D) The customer pays the minimum price.

المحاضرة السابعة

Project Human Resource Management

Unit 9

Human Resource Management

9.1 PLAN HUMAN RESOURCE MANAGEMENT

Activity Resource Requirements (Inputs)

Enterprise Environmental Factors (Inputs)

- Organizational culture and structure,
- Existing human resources,
- Personnel administration policies, and
- Marketplace conditions.

Organizational Process Assets (Inputs)

- Organizational standard processes and policies and standardized role descriptions,
- Templates for organizational charts and position descriptions, and
- Historical information on organizational structures that have worked in previous projects.

9.1 PLAN HUMAN RESOURCE MANAGEMENT

Organizational Charts and Position Descriptions (Tools & Techniques)

Objective is to ensure that each work package has an unambiguous owner and that all team members have a clear understanding of their roles and responsibilities;

Three most common types:

1. **Hierarchical-type charts**

   The traditional organization chart structure can be used to show positions and relationships in a graphic, top-down format; can be work breakdown structure (WBS), organizational breakdown structure (OBS), and resource breakdown structure (RBS)

2. **Text-oriented formats**

   Used for team member responsibilities that require detailed descriptions; usually in outline form, provides information on: responsibilities, authority, competencies, and qualifications

9.1 PLAN HUMAN RESOURCE MANAGEMENT

Organizational Charts and Position Descriptions (Tools & Techniques)

Objective is to ensure that each work package has an unambiguous owner and that all team members have a clear understanding of their roles and responsibilities;

Three most common types:

3. **Matrix-Based Charts**

   A responsibility assignment matrix (RAM) is used to illustrate the connections between work packages or activities and project team members

RACI Chart	Person				
Activity	Ann	Ben	Carlos	Dina	Ed
Define	A	R	I	I	I
Design	I	A	R	C	C
Develop	I	A	R	C	C
Test	A	I	I	R	I

R = Responsible A = Accountable C = Consult I = Inform

9.1 PLAN HUMAN RESOURCE MANAGEMENT

Human Resource Plan (Outputs)

Provides guidance on how project human resources should be defined, staffed, managed, controlled, and eventually released.

Roles and responsibilities.

Defines the positions, skills, and competencies that the project demands;

Project organization charts.

A project organization chart is a graphic display of project team members and their reporting relationships.

Staffing Management Plan

A part of the human resources plan within the project management plan, describes when and how human resource requirements will be met.

9.2 ACQUIRE PROJECT TEAM

Pre-Assignment (Tools & Techniques)

Project team members selected in advance

- Specific people were promised as part of a competitive bid
- Expertise of particular people is required by the project
- Staff assignment are defined within the project charter

Negotiation (Tools & Techniques)

The project management team may need to negotiate with:

- Functional managers to ensure that the project receives appropriately competent staff in the required time frame.
- Other project management teams within the performing organization to appropriately assign scarce or specialized human resources.
- External organizations, vendors, suppliers, contractors, etc., for appropriate, scarce, specialized, qualified, certified resources.

9.2 ACQUIRE PROJECT TEAM

Acquisition (Tools & Techniques)

When the performing organization lacks the in-house staff needed to complete the project, the required skills can be acquired from outside sources

Virtual Teams (Tools & Techniques)

Groups of people with a shared goal who fulfill their roles with little or no time spent meeting face to face.

- Add special expertise to a project team even though the expert is not in the same geographic area,
- Incorporate employees who work from home offices,
- Form teams of people who work different shifts or hours,
- Include people with mobility limitations or disabilities, and
- Move forward with projects that would have been ignored due to travel expenses.

9.3 DEVELOP PROJECT TEAM

The process of improving the competencies and interaction of team members to enhance project performance;

- Improve knowledge and skills of team members in order to increase their ability to complete project deliverables, while lowering costs, reducing schedules, and improving quality;
- Improve feelings of trust and agreement among team members in order to raise morale, lower conflict, and increase team work; and
- Create a dynamic and cohesive team culture to improve both individual and team productivity, team spirit, and cooperation, and to allow cross-training and mentoring between team members to share knowledge and expertise.

9.3 DEVELOP PROJECT TEAM

Interpersonal skills **(Tools & Techniques)**

Are particularly important to team development

The project management team can greatly reduce problems and increase cooperation of project team members by:

- Understanding their sentiments
- Anticipating their actions
- Acknowledging their concerns
- Following up on their issues

Training

Training includes all activities designed to enhance the competencies of the project team members. Training can be formal or informal. Examples of training methods include classroom, online, computer-based, on-the-job training from another project team member, mentoring, and coaching.

9.4 MANAGE PROJECT TEAM

- The process of tracking team member performance, providing feedback, resolving issues, and coordinating changes to enhance project performance
- Project management team observes team behavior, manages conflict, resolves issues, and appraises team member performance
- Complicated when team members are accountable to both a functional manager and the project manager within a matrix organization
- Effective management of this dual reporting relationship is often a critical success factor for the project and is generally the responsibility of the project manager

9.4 MANAGE PROJECT TEAM

Conflict Management (Tools & Techniques)

Successful conflict management results in greater productivity and positive working relationships

Sources of conflict include:

- Scarce resources, Scheduling priorities, Personal work styles

To reduce conflict, the project management team should establish:

- Team ground rules,
- Group norms
- Solid project management practices, like communications planning and role definition

Project team members are initially responsible for resolving their own conflicts

Project manager should facilitate a satisfactory resolution of conflict before it escalates

9.4 MANAGE PROJECT TEAM

Conflict Management (Tools & Techniques)

There are six general techniques for resolving conflict. As each one has its place and use, these are not given in any particular order:

1. Withdrawing/Avoiding.
   Retreating from an actual or potential conflict situation.
2. Smoothing/Accommodating.
   Emphasizing areas of agreement rather than areas of difference.
3. Compromising.
   Searching for solutions that bring some degree of satisfaction to all parties.
4. Forcing.
   Pushing one's viewpoint at the expense of others; offers only win-lose solutions.
5. Collaborating.
   Incorporating multiple viewpoints and insights from differing perspectives; leads to consensus and commitment.
6. Confronting/Problem solving.
   Treating conflict as a problem to be solved by examining alternatives.

1) CONFLICT ON PROJECTS IS USUALLY CAUSED BY:

A) Schedule, project priorities, resources, and technical opinions.

B) schedules, personalities, priorities, and resources.

C) schedules, personalities, priorities, and technical opinions

D) schedules, cost, priorities, and resources

2) WHICH OF THE FOLLOWING IS THE BEST WAY TO RESOLVE CONFLICT?

A) Compromising

B) Forcing

C) Smoothing

D) Withdrawal

3) A PROJECT MANAGER IS MEETING WITH A TEAM MEMBER AND SAYS" I KNOW YOU WANT TO BECOME INVOLVED IN MEETINGS WITH THE CUSTOMER. BECAUSE OF YOUR PERFORMANCE ON THE PROJECT SO FAR, I HAVE REARRANGED THINGS SO YOU CAN BECOME INVOLVED WITH THE CUSTOMER" THIS IS AN EXAMPLE OF:

A) Team performance assessment

B) Reward power

C) Team building

D) Project performance appraisals

4) TWO TEAM MEMBERS ARE HAVING A BIG DISAGREEMENT OVER THE TYPE OF COMPUTER HARDWARE TO USE ON THE PROJECT. WHO SHOULD RESOLVE THIS DISPUTE?

A) Two members and their project manager

B) project manager

C) Management

D) System supervisor

5) YOU HAVE JUST LEARNED THAT ONE OF YOUR TEAM MEMBERS HAS NOT BEEN ADEQUATELY TRAINED TO COMPLETE PROJECT ACTIVITIES AS ASSIGNED TO HIM. HOW WILL YOU HANDLE THIS SITUATION?

A) Replace this team member with someone more qualified.

B) request proper training be provided and paid for by the functional manager.

C) revise the schedule to account for the decreased effectiveness of this resource.

D) Mentor this resource during the remainder of project duration

9.4 MANAGE PROJECT TEAM

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   Incorporating multiple viewpoints and insights from differing perspectives; leads to consensus and commitment.
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   Treating conflict as a problem to be solved by examining alternatives.

المحاضرة الثامنة

Project Communications Management

Unit 10

Project Communication Management

- Includes the processes required to insure timely and appropriate generation, collection, distribution, storage, retrieval, and ultimate disposition of project information. Project managers spend most of their time communicating with team members and other project stakeholders, whether they are internal (at all organizational levels) or external to the organization. Effective communication creates a bridge between diverse stakeholders who may have different cultural and organizational backgrounds, different levels of expertise, and different perspectives and interests, which impact or have an influence upon the project execution or outcome.

10.1 Plan Communications Management

The process of developing an appropriate approach and plan for project communications based on stakeholder's information needs and requirements, and available organizational assets.

10.2 Manage Communications

- The process of creating, collecting, distributing, storing, retrieving and the ultimate disposition of project information in accordance with the communications management plan..

10.3 Control Communications

The process of monitoring and controlling communications throughout the entire project life cycle to ensure the information needs of the project stakeholders are met..

What is Project Communication Management?

- Project communications management processes provide the critical links among people and information that are necessary for successful communications.
- Everyone involved in the project should understand how communications affect the project as a whole.
- 90% of a Project Manager's job is spent acquiring and communicating information.
- Project Manager must keep the customer and top management informed of project status.

On most projects, communication planning is performed very early, such as during project management plan development. This allows appropriate resources, such as time and budget, to be allocated to communication activities. Effective communication means that the information is provided in the right format, at the right time, to the right audience, and with the right impact. Efficient communication means providing only the information that is needed.

While all projects share the need to communicate project information, the information needs and methods of distribution may vary widely. In addition, the methods of storage, retrieval, and ultimate disposition of the project information need to be considered and appropriately documented during this process. Important considerations that may need to be taken into account include, but are not limited to:

- Who needs what information, and who is authorized to access that information;
- When they will need the information;
- Where the information should be stored;
- What format the information should be stored in;
- How the information can be retrieved; and Whether time zone, language barriers, and cross-cultural considerations need to be taken into account.

The results of the Plan Communications Management process should be reviewed regularly throughout the project and revised as needed to ensure continued applicability.

Plan Communications Management: Tools and Techniques

Communication Requirements Analysis :
The analysis of the communication requirements determines the information needs of the project stakeholders. These requirements are defined by combining the type and format of information needed with an analysis of the value of that information. Project resources should be expended only on communicating information that contributes to the success of the project or where a lack of communication can lead to failure.

The project manager should also consider the number of potential communication channels or paths as an indicator of the complexity of a project's communications.

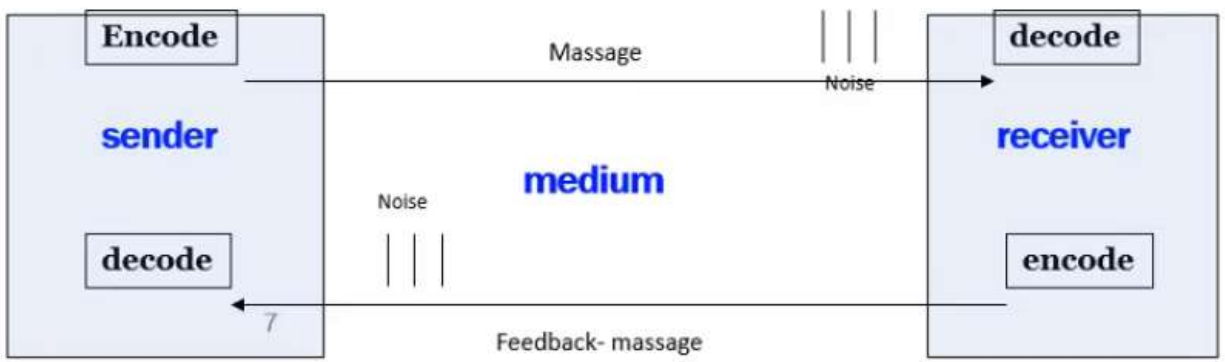
The total number of potential communication channels is $n(n-1)/2$, where n represents the number of stakeholders.

Communication Technology

- Urgency of the need for information
- Availability of technology
- Ease of Use
- Project environment.
- Sensitivity and confidentiality of the information

Basic Model of Communication

- **Key components of a basic model of communication include:**
  - **Encode** - to translate thoughts or ideas into a language that is understood by others
  - **Message** - output of encoding
  - **Medium** - method used to convey the message
  - **Noise** - anything that interferes with the transmission and understanding of the message
  - **Decode** - translate the message back into meaningful thoughts or ideas



Plan Communications Management: Tools and Techniques

Communication Methods
There are several communication methods that are used to share information among project stakeholders.
These methods are broadly classified as follows:

Interactive communication. Between two or more parties performing a multidirectional exchange of information. It is the most efficient way to ensure a common understanding by all participants on specified topics, and includes meetings, phone calls, instant messaging, video conferencing, etc.

• **Push communication.** Sent to specific recipients who need to receive the information. This ensures that the information is distributed but does not ensure that it actually reached or was understood by the intended audience. Push communications include letters, memos, reports, emails, faxes, voice mails, blogs, press releases, etc.

• **Pull communication.** Used for very large volumes of information, or for very large audiences, and requires the recipients to access the communication content at their own discretion. These methods include intranet sites, e-learning, lessons learned databases, knowledge repositories, etc.

Manage Communications (10.2)

- Manage Communications is the process of creating, collecting, distributing, storing, retrieving, and the ultimate disposition of project information in accordance to the communications management plan.

- The key benefit of this process is that it enables an efficient and effective communications flow between project stakeholders. The inputs, tools and techniques, and outputs of this process are depicted in Figure 10-5. Figure 10-6 depicts the data flow diagram of the Manage Communications process.

Manage Communications (10.2)

Techniques and considerations for effective communications management include, but are not limited to, the following:

- **Sender-receiver models.** Incorporating feedback loops to provide opportunities for interaction/ participation and remove barriers to communication.

- **Choice of media.** Situation specifics as to when to communicate in writing versus orally, when to prepare an informal memo versus a formal report, and when to communicate face to face versus by e-mail.

- **Writing style.** Appropriate use of active versus passive voice, sentence structure, and word choice.

- **Meeting management techniques.** Preparing an agenda and dealing with conflicts

- **Presentation techniques.** Awareness of the impact of body language and design c visual aids.

- **Listening techniques.** Listening actively (acknowledging, clarifying, and confirming understanding) and removal of barriers that adversely affect comprehension.

Manage Communications

Tools and Techniques (10.2)

- **Communication Methods** (Tools & Techniques)
- **Communication Technology**
- **Communication Models**
- **Information Management Systems**

  Project information is managed and distributed using a variety of tools, including:

  • Hard-copy document management: letters, memos, reports, and press releases;

  • Electronic communications management: e-mail, fax, voice mail, telephone, video and web conferencing, websites, and web publishing; and

  • Electronic project management tools: web interfaces to scheduling and project management software, meeting and virtual office support software, portals, and collaborative work management tools.

- **Performance Reporting**

Control Communications (10.3)

- Control Communications is the process of monitoring and controlling communications throughout the entire project life cycle to ensure the information needs of the project stakeholders are met.
- The key benefit of this process is that it ensures an optimal information flow among all communication participants, at any moment in time.
- The inputs, tools and techniques, and outputs of this process are depicted in Figure 10-7. depicts the data flow diagram of the Control Communications process.

Control Communications: Tools and Techniques

- Information Management Systems
- Expert Judgment
- Meetings

Report Performance (10.5)

Tabular Performance Report sample

	values			Variance		Performance Index	
WBS Element	Planned Value (PV)	Earned Value (EV)	Actual Cost (AC)	Schedule EV-PV	Cost EV-AC	Schedule EV/PV	Cost EV/AC
1. Pre-pilot Plan	63000	58000	62500	5000-	4500-	0.92	0.93
2. checklists	64000	48000	46800	16000-	1200	0.75	1.03
3. curriculum	23000	20000	23500	3000-	5300-	0.87	0.85
4. Med-term Evaluation	68000	68000	72500	0	4500-	1	0.94
5. Implementation	12000	10000	10000	2000-	0	0.83	1
6. practice Manual	7000	6200	6000	800-	200-	0.89	1.03
7.Roll-out Plan	20000	13500	18100	6500-	4600-	0.68	0.75
Totals	257000	223700	239400	33300-	15700-	0.87	0.93

المحاضرة التاسعة

Project Risk Management

Unit 11

PROJECT RISK MANAGEMENT

- Project risk management includes the processes of conducting risk management planning, identifications, analysis, response planning, and monitoring and control on a project.

- The objectives of project risk management are to increase the probability and the impact of positive events (opportunity), and decrease the probability and impact of negative events (threats) in the project.

characteristics of risk management

(continuous - iterative – ongoing)

RISK SOURCES

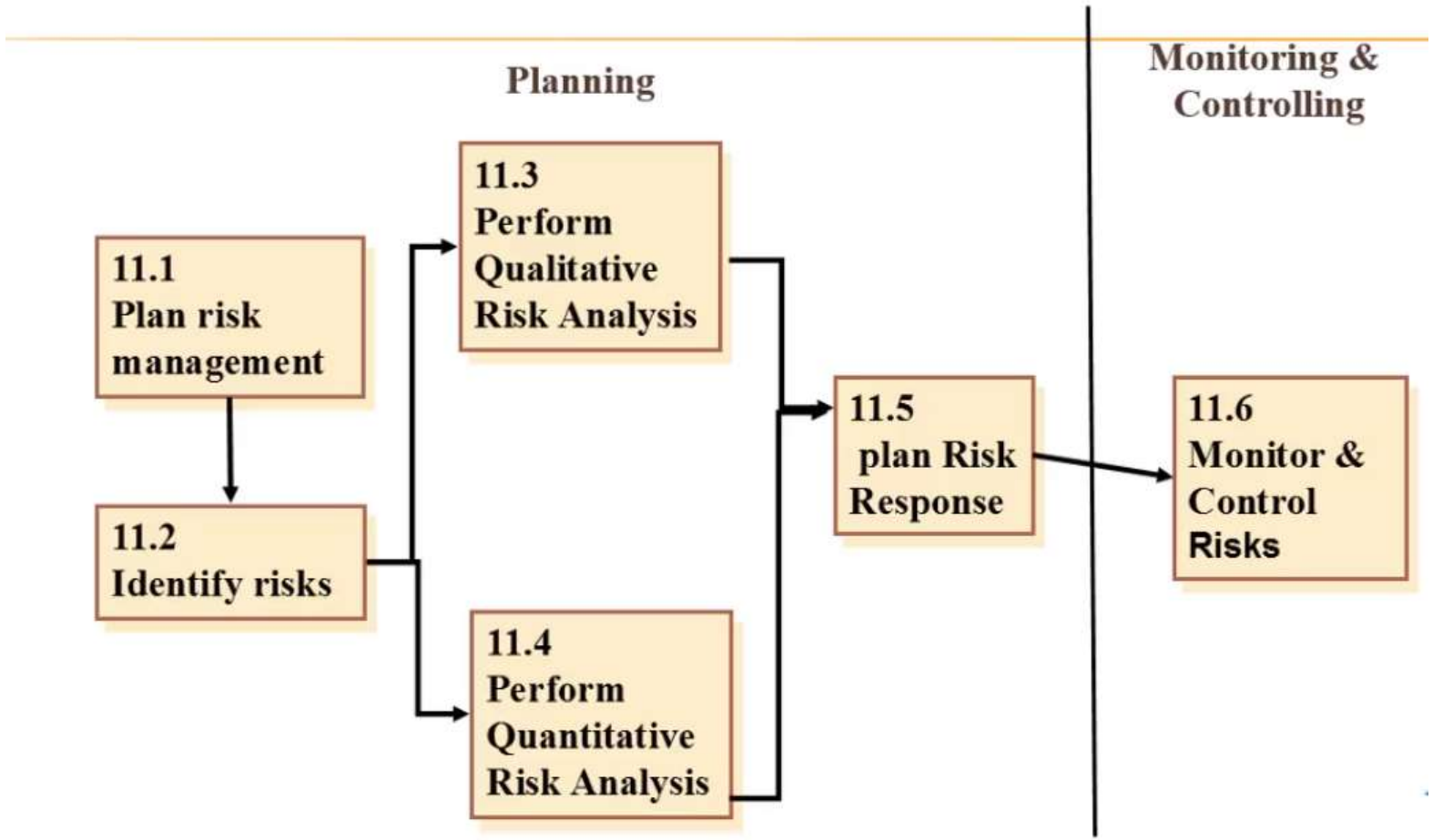
Internal sources

- Financial
- Production
- Human Resources
- Administrative
- Strategic Preference

External sources

- Economical
- Competition
- Social/Cultural
- Regulatory
- Political

Project Risk Management



11.1 PLAN RISK MANAGEMENT

- Plan risk management is the process of defining how to conduct risk management activities for a project

- Why do we have to plan risk management?

  - Planning is so important to provide sufficient resources and time for risk management.

  - Risk management planning should be performed as early in the project as possible

Plan the Work and Work the Plan

11.1 PLAN RISK MANAGEMENT

- Planning Meetings and Analysis (Tools & Techniques)
  - Project teams hold planning meetings to develop the risk management plan.
  - High-level plans for conducting the risk management activities and Cost elements are defined in these meetings.
  - Risk contingency reserve application approaches may be established or reviewed.
  - Risk management responsibilities will be assigned.

11.1 PLAN RISK MANAGEMENT

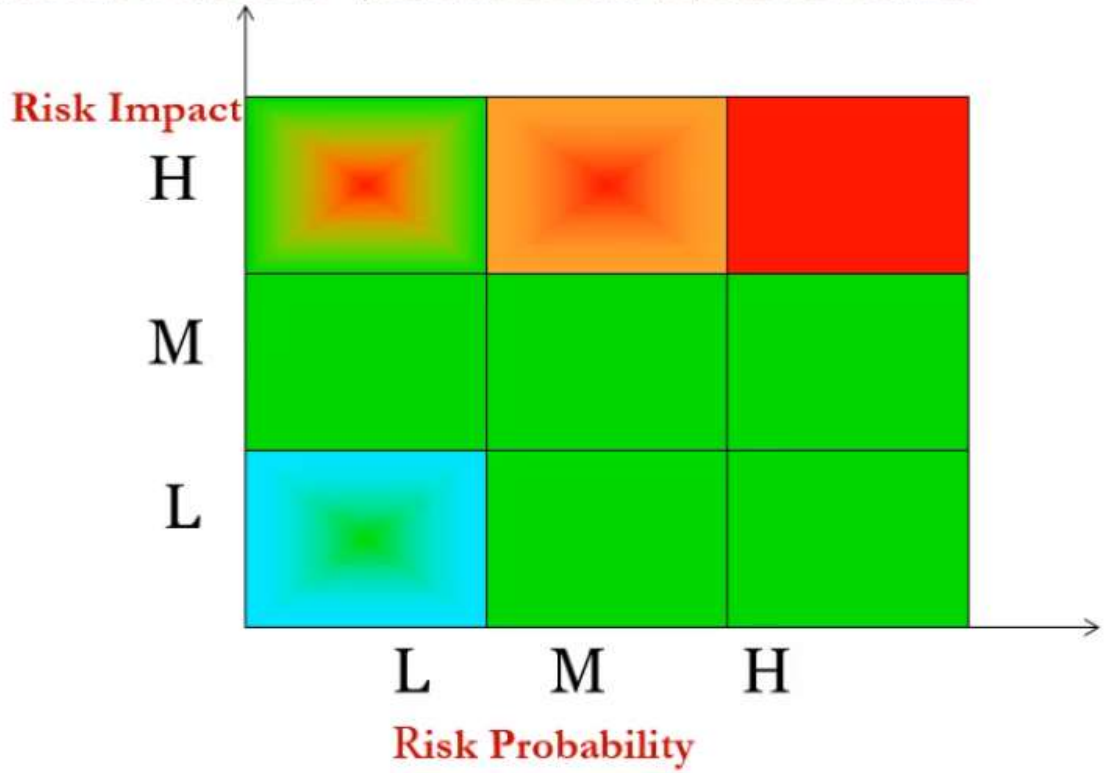
Risk Management Plan (Output)

- Roles and responsibilities :
  - Defines the risk management team members for each type of activity in the risk management plan, and clarifies their responsibilities.
- Budgeting :
  - Assign resources, estimates funds needed for risk management.
- Timing :
  - Define when and how often the risk management processes will be performed ,
  - Establishes schedule contingency reserves, and
  - Establishes risk management activities to be included in the project schedule

11.1 PLAN RISK MANAGEMENT

Risk Management Plan (Output)

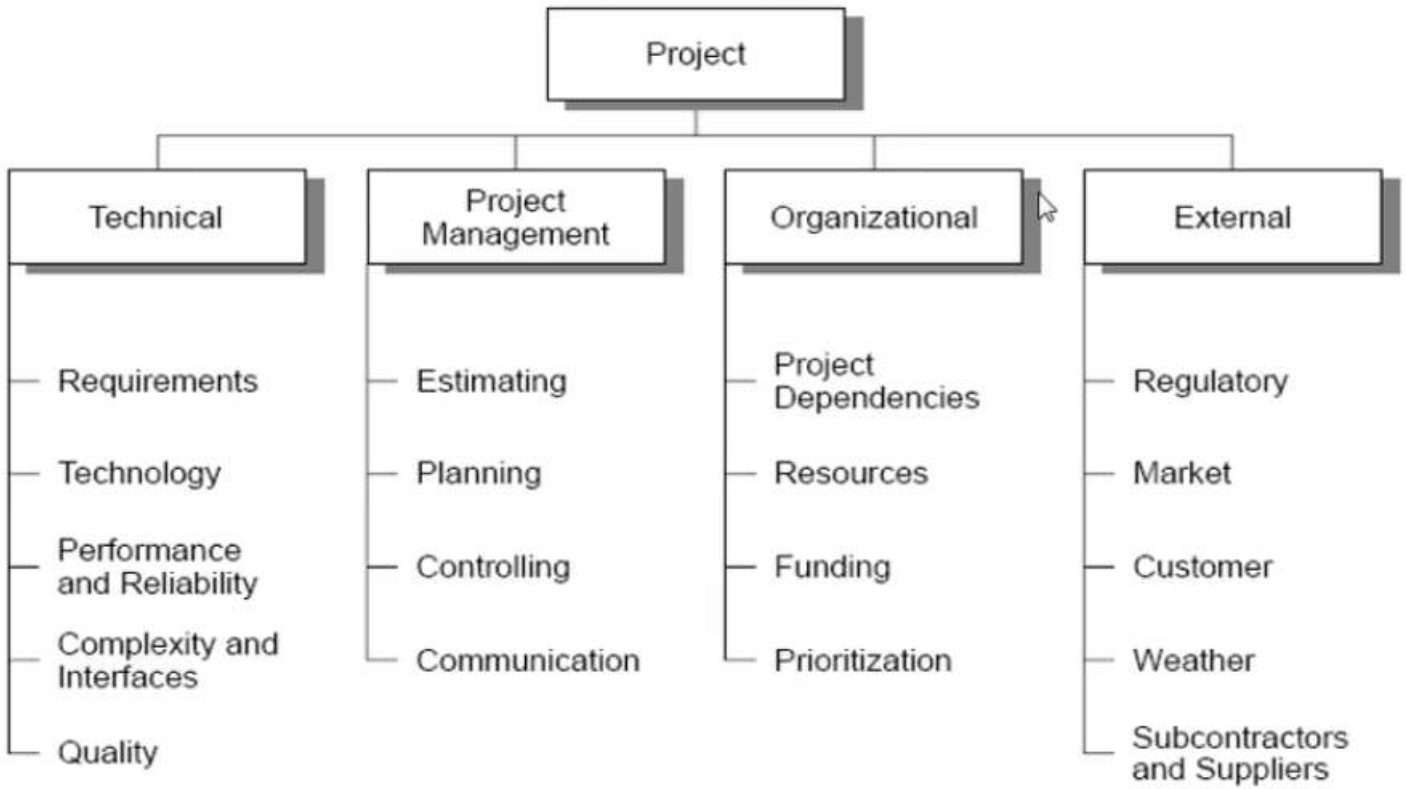
- Definitions of risk probability and impact :
  - The quality and credibility of the perform qualitative risk analysis process requires that different levels of the risks " probabilities and impacts be defined



11.1 PLAN RISK MANAGEMENT

Risk Management Plan (Output)

- Risk categories :
  - Provides a structure for identifying risk categories.



11.2 IDENTIFY RISKS

- Determining which risks may affect the project and documenting their characteristics

Who should be involved in the identify risks process?

- (project manager – project team members –subject matter experts –other project managers – risk management team (if assigned) –stakeholders – end users) (all project personnel should be encouraged to identify risks)

- Identify risks is an iterative process throughout the project life cycle.

11.2 IDENTIFY RISKS

- Risk Management Plan (Inputs)
- Cost management plan (inputs)
- Time management plan (Inputs)
- Quality management Plan (inputs)
- HR management Plan (Inputs)
- Activity cost estimate
- Scope Baseline (Inputs)
- Procurement documents
- Stakeholder Register (Inputs)
- Enterprise environmental factors
- Organizational Process Assets (Inputs)

11.2 IDENTIFY RISKS

- **Documentation Reviews** (Tools & Techniques)
- **Information gathering Techniques** (Tools & Techniques)
  - Brainstorming.
  - Delphi technique.
  - Interviewing.
- **Checklist Analysis** (Tools & Techniques)
- **Assumptions Analysis** (Tools & Techniques)
- **Diagramming Techniques** (Tools & Techniques)
  - Cause and effect diagrams
  - System or process flow charts.
- **SWOT Analysis** (Tools & Techniques)
- **Expert judgment** (Tools & Techniques)

11.2 IDENTIFY RISKS

Risk Register (Output)

Will ultimately contain the outcomes of the other risk management processes:

- List of identified risk
  - EVENT may occur, causing IMPACT.
  - If CAUSE, EVENT may occur, leading to EFFECT.
- List of identified potential risk responses

Risk Register Sample

Risk	Prob.	Impact	Severity	Reponses	owner	time	cost	Status
Risk 1	50%	20%						
Risk 2	45%	15%						
Risk 3	–	–						
Risk 4	–	–						
Risk 5	–	–						
Risk 6	–	–						
Risk 7	–	–						

11.5 PLAN RISK RESPONSES

- The process of developing options and actions to enhance opportunities and to reduce threats to project objectives.
- Includes the identification and assignment of one person (the “risk response owner”) to take responsibility for each agreed-to and funded risk response.
- Addresses the risks by their priority, inserting resources and activities into the budget, schedule, and project management plan as needed.

11.5 PLAN RISK RESPONSES

- Strategies for negative Risks or Threats (Tools)

Avoid

- Changing the project management plan to eliminate the threat entirely.
- The project manager may change the objective that is in jeopardy.

Transfer

- Transferring the risk simply gives another party responsibility for its management. (Assurance, Warranties, ...)

Mitigate

- Implies a reduction an the probability and/or impact of an adverse risk event to be within acceptable threshold limits.

Accept

- This strategy is adopted because it is seldom possible to eliminate all the threats from a project

11.5 PLAN RISK RESPONSES

- **Strategies for Positive Risks or Opportunities** (Tools)

  Exploit

  This strategy may be selected for risks with positive impacts where the organization wishes to ensure that the opportunity is realized.

  Share

  Sharing a positive risk involves allocating some or all of the ownership of the opportunity to a third party who is best able to capture the opportunity for the benefit of the project.

  Enhance

  This strategy is used to increase the probability and/or the positive impacts of an opportunity.

  Accept

  Accepting an opportunity is being willing to take advantage of it if it comes along, but not actively pursuing it.

11.6 Monitor and Control Risks

The process of implementing risk response plans, tracking identified risks, monitoring residual risks, identifying new risks, and evaluating risk process effectiveness throughout the project

Can involve:

- Choosing alternative strategies.
- Executing a contingency plan.
- Tracking corrective action.
- Modifying the project management plan.
- Updating the organizational process assets.

1) A PROJECT TEAM IS TRYING TO DECREASE RISKS ON THE PROJECT. MANAGEMENT HAS A GOOD RELATIONSHIP WITH A SELLER WHO IS EXPERIENCED IN AREAS THAT YOUR COMPANY IS NOT EXPERIENCED IN. MANAGEMENT WANTS ALL ACTIVITIES WITH A U.S.$50000 OR HIGHER RISKS TO BE TRANSFERRED TO THAT SELLER. MANAGEMENT BELIEVES THAT THIS WILL REMOVE THE IMPACT OF THOSE HIGHER RISKS FROM THE PROJECT. WHY WOULD THIS NOT BE EFFECTIVE?

A) working with sellers add more than the $50000 of risk to the project

B) You would have to go through the contracting process.

C) the transference of a risk does not remove all impacts of the risk.

D) Management's association with the seller is a conflict of interest for the project.

2) A PROJECT MANAGER IS WORKING ON A MAJOR NEW PRODUCT DEVELOPMENT PROJECT WHEN A RISK OCCURS THAT DOES NOT HAVE A RISK RESPONSE PLAN. WHAT SHOULD THE PROJECT MANAGER DO?

A) Hold a risk reassessment, and plan a workaround.

b) Inform management, and communicate the new risk to the team.

C) communicate the planned response to the stakeholders.

D) Use some of the reserves to accommodate the risk.

3) ONE OF THE RISKS YOUR TEAM HAS DISCOVERED IS A HIGH PROBABILITY THAT THE EQUIPMENT YOU ARE DEVELOPING WILL NOT PERFORM UNDER THE PRESSURE IT NEEDS TO IN THE WORK PLACE. IN ORDER TO HANDLE THIS RISK, YOU HAVE CHOSEN TO PROTOTYPE THE EQUIPMENT. THIS IS AN EXAMPLE OF RISK:

A) Mitigation.

B) Avoidance.

C) Transference.

D) acceptance.

4) RESIDUAL RISKS ARE RISKS THAT REMAIN AFTER RISK RESPONSE PLANNING. SECONDARY RISKS ARE :

A) Planning risks that are no longer a factor during project executing

B) Discovered during risk identification.

C) New risks created by the risk response strategies selected.

D) Lower priority risks not requiring mitigation efforts.

5) A PROJECT MANAGER THAT YOU HAVE BEEN MENTORING HAS COMPLETED RISK RESPONSE PLANNING AND HAS A RISK RESPONSE PLAN. WHAT IS THE NEXT THING THE PROJECT MANAGER SHOULD DO ?

A) Revise the project management plan.

B) Recommend corrective action.

C) Update the risk identification checklist.

D) Create risk response strategies.

Risk Register Sample

Risk	Prob.	Impact	Severity	Reponses	owner	time	cost	Status
Risk 1	50%	20%						
Risk 2	45%	15%						
Risk 3	–	–						
Risk 4	–	–						
Risk 5	–	–						
Risk 6	–	–						
Risk 7	–	–						

5) A PROJECT MANAGER THAT YOU HAVE BEEN MENTORING HAS COMPLETED RISK RESPONSE PLANNING AND HAS A RISK RESPONSE PLAN. WHAT IS THE NEXT THING THE PROJECT MANAGER SHOULD DO ?

A) Revise the project management plan.

B) Recommend corrective action.

C) Update the risk identification checklist.

D) Create risk response strategies.

المحاضرة العاشرة

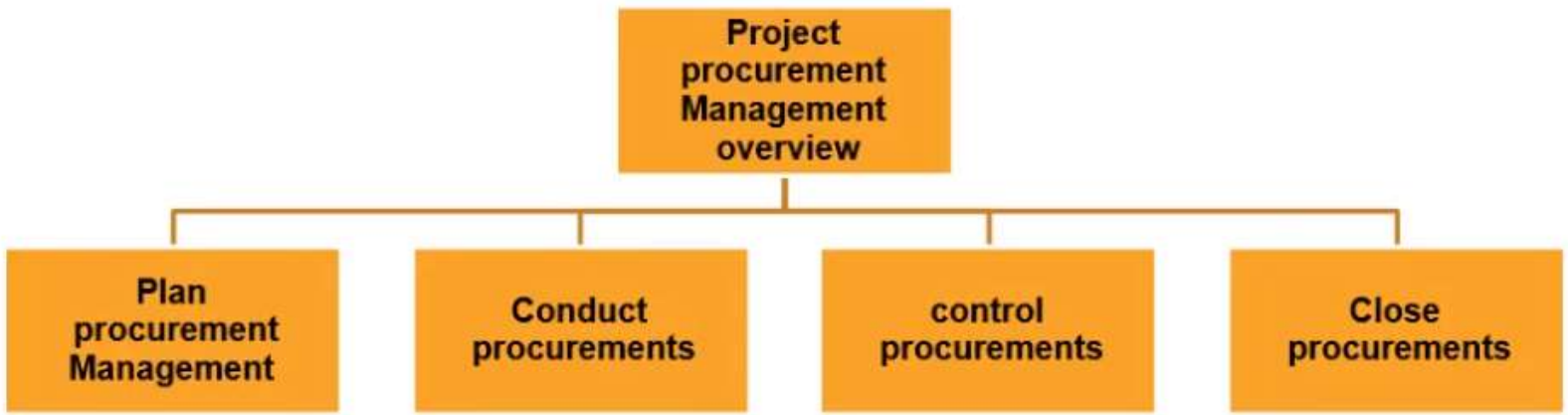
Project Procurement Management

Unit 12

PROJECT PROCUREMENT MANAGEMENT

- The seller can be called
  A contractor, subcontractor, vendor, service provider, or supplier.
- The buyer can be called
  A client, customer, prime contractor, contractor, acquiring organization, service requestor, or purchaser.
- The seller can be viewed during the contract life cycle first as
  A bidder, then as the selected source, and then as the contracted supplier or vendor.
- Terms and conditions of the contract become key inputs to many of the seller's management processes.

PROJECT PROCUREMENT MANAGEMENT



12.1 PLAN PROCUREMENTS

The process of documenting project purchasing decisions, specifying the approach, and identifying potential sellers.

What to acquire, How to acquire it, How much is needed, and When to acquire

Includes consideration of potential sellers

Includes consideration of the risks involved with each make-or-buy decision.

12.1 PLAN PROCUREMENTS

Make-or-buy analysis (Tools & Techniques)

A make-or-buy analysis is a general management technique used to determine whether particular work can be best accomplished by the project team or must be purchased from outside sources.

- Budget constraints may influence make-or-buy decisions.
- If a buy decision is to be made, then a further decision of whether to purchase or lease is also made.
- A make-or-buy analysis should consider all related costs; both direct costs as well as indirect support costs.

12.1 PLAN PROCUREMENTS

Make-or-buy analysis (Tools & Techniques)

Example

Purchase investment cost is $2000, Daily cost is $40 and Daily Lease cost $240. How long will it take for the lease cost to be the same as the purchase cost?

- $2000 + 40 * X = 240 * X$
- $2000=240*x-40*x$
- $2000=(240-40)x$
- $X = 2000 / 200 = 10\ days$

12.1 PLAN PROCUREMENTS

Contract Types (Tools & Techniques)

1. **Fixed Price Contracts**
   - Involves setting a fixed total price for a defined product or service to be provided.
   - May incorporate financial incentives for achieving or exceeding project objectives.
   - Sellers under fixed-price contracts are legally obligated to complete such contracts, with possible financial damages if they do not.
   - Changes in scope can be accommodated, but generally at an increase in contract price.

12.1 PLAN PROCUREMENTS

Contract Types (Tools & Techniques)

1. Fixed Price Contracts
   - Firm fixed price contracts (FFP)
     - The most commonly used contract type is the FFP.
     - Any cost increase is the responsibility of the seller.
   - Fixed price incentive fee contracts (FPIF)
     - Gives the buyer and the seller some flexibility in that it allows for deviation from performance, with financial incentives tied to achieving agreed to metrics.
     - Under FPIF contracts, a price ceiling is set, and all costs above the price ceiling are the responsibility of the seller.
   - Fixed Price with Economic Price Adjustment contracts (FB-EPA)
     - Used whenever the sellers performance period spans a considerable period of years, as is desired with many long-term relationships

12.1 PLAN PROCUREMENTS

Contract Types (Tools & Techniques)

2. Cost-reimbursable contracts
   - Cost plus fixed fee contracts (CPFF)
     - The seller is reimbursed for all allowable costs for performing the contract work, and receive a fixed fee payment calculated as a percentage of the initial estimated project costs.
   - Cost plus incentive fee contracts (CPIF)
     - The seller is reimbursed for all allowable costs for performing the contract work and receives a predetermined incentive fee based upon achieving certain performance objectives as set forth in the contract
   - Cost plus award fee contracts (CPAF)
     - The seller is reimbursed for all legitimate costs, but the majority of the fee is only earned based on the satisfaction of certain broad subjective performance criteria defined and incorporated into the contract

12.2 CONDUCT PROCUREMENTS

The process of obtaining seller responses, selecting a seller, and awarding a contract.

A weighting system can be used to:

+ Select a single seller that will be asked to sign a standard contract
+ Establish a negotiating sequence by ranking all proposals by the weighed evaluation scores assigned to each proposal.

12.2 CONDUCT PROCUREMENTS

- **Bidder Conferences** (Tools & Techniques)
  - Bidder Conferences are meetings with prospective sellers prior to preparation of a proposal.
  - They are used to ensure that all prospective sellers have a clear, common understanding of the procurement.
  - Responses to questions may be incorporated into the procurement documents
- **Proposal Evaluation Techniques** (Tools & Techniques)
- **Independent Estimates** (Tools & Techniques)
  - Estimate of costs prepared by an outside professional estimator
- **Expert judgment** (Tools & Techniques)
- **Advertising** (Tools & Techniques)
- **Procurement negotiations** (Tools & Techniques)

12.2 CONDUCT PROCUREMENTS

- **Selected Sellers** (Output)
- **Procurement Agreements** (Output)
  - The contract can be in the form of simple purchase order or a complex document
  - The major components in a contract document
    - Schedule baseline,
    - Pricing,
    - Payment terms,
    - Place of delivery,
    - Inspection and acceptance criteria,
    - Product support,
    - Penalties,
    - Incentives,
    - Change request handling

12.3 CONTROL PROCUREMENT

The process of managing procurement relationships, monitoring contract performance, and making changes and corrections as needed.

12.3 CONTROL PROCUREMENT

Contract Change Control System (Tools & Techniques)

- Defines the process by which the procurement can be modified.
- The contract change control system is integrated with the integrated change control system.

Procurement Performance Reviews (Tools & Techniques)

Inspections and Audits (Tools & Techniques)

Performance Reporting (Tools & Techniques)

- Provides management with information about how effectively the seller

Payment Systems (Tools & Techniques)

- All payments should be made and documented in strict accordance with the terms of the contract.

12.4 CLOSE PROCUREMENTS

The process of completing each project procurement and finalizing open claims, updating records to reflect final results and archiving such information for future use.

12.4 CLOSE PROCUREMENTS TOOLS AND TECHNIQUES

- **Procurement Audits**

  procurement audit is a structured review of the procurement process originating from the Plan Procurement Management process through Control Procurements. The objective of a procurement audit is to identify successes and failures that warrant recognition in the preparation or administration of other procurement contracts on the project, or on other projects within the performing organization.

- **Procurement Negotiations**

  To close the contract, all procurement documentation is collected, indexed, and filed. Information on contract schedule, scope, quality, and cost performance along with all contract change documentation, payment records, and inspection results are cataloged.

- **Records Management System**

  A records management system is used by the project manager to manage contract and procurement documentation and records. Contract documents and correspondence are archived through the records management system as part of the Close Procurements process.

12.4 CLOSE PROCUREMENTS OUTPUTS

- **Closed Procurements**
- **Organizational Process Assets Updates**
  - **Procurement file.** A complete set of indexed contract documentation, including the closed contract, is prepared for inclusion with the final project files.
  - **Deliverable acceptance.** Documentation of formal acceptance of seller-provided deliverables may be required to be retained by the organization. The Close Procurement process ensures this documentation requirement is satisfied. Requirements for formal deliverable acceptance and how to address nonconforming deliverables are usually defined in the agreement.
  - **Lessons learned documentation.** Lessons learned, what has been experienced, and process improvement recommendations, should be developed for the project file to improve future procurements.

1) WHAT IS THE BEST WAY TO DESCRIBE HOW THE CONTRACT'S TERMS AND CONDITIONS ARE CREATED?

A) they are based on risk analysis.

B) They are created by the contracting officer assigned to the project.

C) They use only the company's existing standard terms and conditions.

D) They are based on the needs of the seller.

2) WHICH TYPE OF CONTRACT IS THE SELLER MOST CONCERNED ABOUT PROJECT SCOPE ?

A) Fixed price.

B) Cost plus fixed fee.

C) Time and material.

D) purchase order.

3) YOU RECEIVE 25 NEW COMPUTERS FROM THE SELLER, BUT WERE EXPECTING ONLY 20. IN LOOKING AT THE CONTRACT, YOU SEE THAT IT SAYS" SELLER TO PROVIDE TWENTY (25) COMPUTERS. WHAT SHOULD YOU DO FRIST?

A) Issue a change order through the contract manager.

B) Return the five extra computers.

C) Make payment for the 25 computers.

D) Call the seller and ask for clarification.

4) COMPANY PROCEDURES REQUIRE THE CREATION OF A LESSONS LEARNED DOCUMENT. WHICH OF THE FOLLOWING IS THE BEST USE OF LESSONS LEARNED?

A) Historical records for future projects.

B) Planning record for the current project.

C) Informing the team about what the project manager has done.

D) informing the team about the project management plan

Thank You