

# Notes

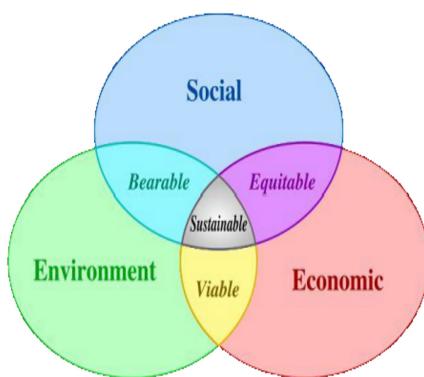
Wednesday, 24 May 2023 9:16 PM

## PROJECT MANAGEMENT

### SUSTAINABILITY

#### Definitions

- Project Management Body of Knowledge (PMBOK)
  - Sum of knowledge within profession of project management
  - Includes knowledge of **proven, traditional practices** which are **widely applied**
  - And knowledge of **innovative and advanced practices**
  - Formulated approximately 30 years ago and updated regularly by PMI (Project Management Institute of America)
  - Neither comprehensive nor all-inclusive, has become international mark of project management **best practice** - global standard for industry
- Project
  - **Temporary endeavour** undertaken to **create unique product, service or result**
  - Collection of **activities** and **tasks** designed to achieve specific but temporary goal of organisation with specific performance or quality requirements, whilst subject to **time and cost constraints**
  - **Problem to solve, opportunity to pursue**
- Project management
  - Application of **skills, tools** and **techniques** to project activities to **meet project requirements**
  - Accomplished through application and integration of project management processes of:
    - Initiating
    - Planning
    - Executing
    - Monitoring and **controlling**
    - Closing
  - Management of project activities that lead to successful completion and output of a project
  - Through key management principles - planning, organising, leading and controlling
  - Project manager is responsible and continually under pressure to accomplish best possible project results
- Project management competencies
  1. Project **stakeholder** management
  2. Project **scope** management
  3. Project **time** management
  4. Project **cost** management
  5. Project **quality** management
  6. Project **human resource** management
  7. Project **communications** management
  8. Project **risk** management
  9. Project **procurement** management
  10. Project **integration** management
- Sustainability
  - Meeting the needs of people today **without compromising ability of future generations** to meet their own needs
- Triple bottom line (TBL) approach
  - Company's ability to achieve its business goals and increase long-term shareholder value by integrating **economic, environmental** and **social** opportunities into its business strategies

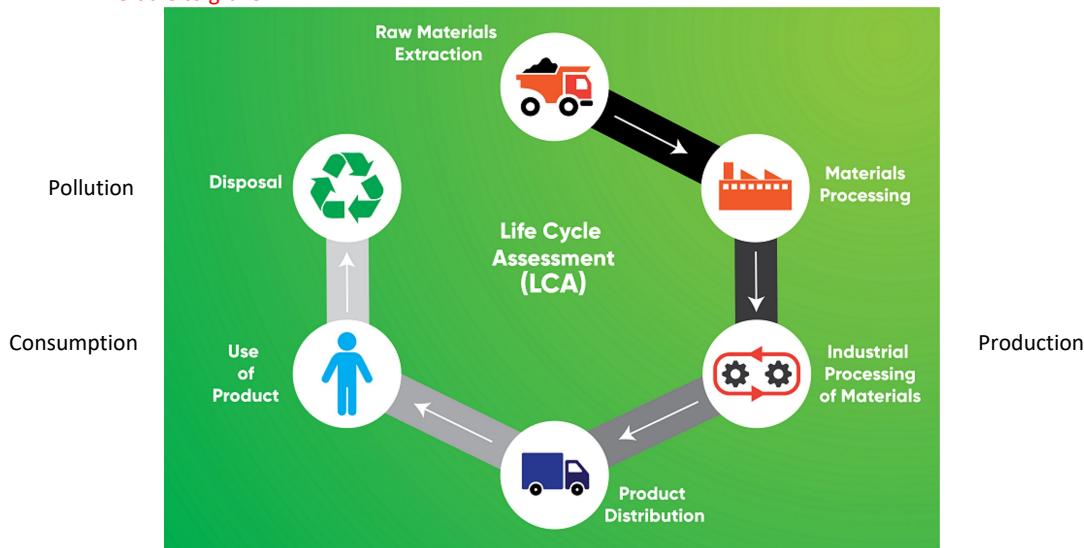


- Sustainable enterprise is organic, mutually emergent system that is connected economically, environmentally and socially to the world
- **Long-term financial interests** of a company are **not mutually exclusive** with acting fairly in interests of wider stakeholders (other than shareholders)

- Possible indicators for measuring sustainability
  - Economic sustainability - financial health, economic performance, return on investment (ROI), return on assets (ROA), etc.
  - Environmental sustainability - mineral and energy resources, air, water and land resources, etc.
  - Social sustainability - internal HR, external population, stakeholder participation

#### Resource/product life cycle thinking

- Best project and project management practices and standards consistent with lifecycle thinking and TBL
- "Cradle to grave"



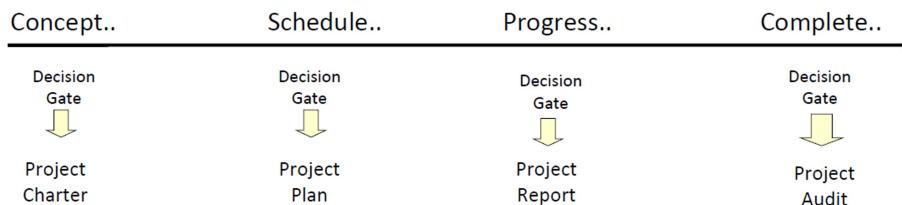
- Pollution rarely considered, but needs to change
- Product design (in planning stage) can extend product lifecycle by enhancing product:
  - Reliability and robustness
  - Reparability
  - Upgradability
  - Variability
  - Attachment
- Products should
  - Not be technologically complex
  - Compatible with existing beliefs
  - Highly visible and communicable
  - Offer recognisable advantages
- New sources of advantage through new markets and opportunities (marketing) are needed
- Importance of product design
  - 70% total product costs can be saved during design stage
  - Design decisions have significant impact on quantity of resource used and of waste produced during life cycle
  - Major source of innovation and potential competitive advantage
  - Pressure to adhere from multiple sources (governments, lobby groups, etc.)
- Other potential benefits of life cycle thinking
  - Savings in labour, resources and energy
  - Positive image - also potential competitive advantage if marketed
  - Intellectual property (IP) and long-term returns
  - In line with TBL
- Life cycle impact assessment
  - Can be positive or negative on social, economic and environmental consequences
  - Negative impacts can affect
    - Ecosystem and natural resources
    - Human health
    - Safety
    - Quality of life
    - Economics
    - Society as a whole
  - Example of impact identification for automobile

Stage	Step	Processes	Impact
1	Raw material extraction	Metal ore	Energy use, habitat loss, erosion

		Petroleum	Spills, liquid waste, footprint
1	Raw material refining	Metal Chemical	Safety, CO2, energy use Liquid waste, emissions, accidents
2	Materials fabrication	Steel Aluminium Plastics	Emissions, energy CO2, electricity Emissions, scrap
2	Parts fabrication	Cutting Stamping Machining Cleaning	Fluids, supplies Energy, safety Fluids, energy Waste water, residues
3	Production	Engines Transmission Wiring	Energy, accidents Energy, accidents Copper, insulation
3	Assembly	Welding Painting Adhesives Carpeting	Fumes, electrodes Wash water, solid waste Fumes, solid waste Off gassing, solid waste
4	Use and reuse	Drive/use Repair Reuse	Safety, energy, emissions Solid waste, emissions Upgrade, refurbish
5	Retirement, recycling and disposal	Dismantle Recycle Disposal	Fluids, used parts Energy, logistics Treatment, solid waste

#### Project management life cycle

Stage	Also known as	Description
Concept stage	Initiation, feasibility or stage 1	- Idea stage where project conceived (usually at top level, e.g. Executives) - Discussion of preliminary goals, deliverables, strategic vision alignment, problems raised - Impact assessment in terms of TBL and life cycle - Potential benefits identified, alternative approaches researched, provisional costing determined
Planning stage	Schedule, preparation or stage 2	- All work required is planned and scheduled (decisions made in technical terms) - Objectives finalised, resources assigned, quality signed off on (include TBL and life cycle guidelines and standards), final costs approved, timing agreed and all other administrative matters determined
Execution (including monitoring and controlling) stage	Implementation, control or stage 3	- Project commenced and emphasis moved to tracking actual progress using schedules developed in stage 2 - All work (including TBL and life cycle thinking) is monitored, controlled and corrected where necessary with schedules being reviewed, revised and updated as required
Finalisation (and evaluation) stage	Completion, termination, handover or stage 4	- Project completed and deliverable handed over to client - Resources disposed of or reassigned - Project evaluated (expectations met or exceeded), reports written and presented - Administration arm of project closed



#### • Benefits of project management life cycle

- Communicates graphical framework of total project
- Details responsibility
- Prescribes manageable portions
- Identifies control gates
- Flags key decisions
- Nominates milestones and deliverables

#### • Benefits of successful project management

- Improved accountability (responsibility, visibility and authority assigned)
- Improved scope definition (clear to project and stakeholders)
- Improved efficiency and effectiveness (effective planning and use of resources, systems and processes)
- Improved performance management (measure achievements against plans)
- Improved consistency (use of common terminologies)
- Improved transparency of process

- Improved client/stakeholder satisfaction (deliverables achieve project objectives)

- Mapping project management competencies

	Concept	Planning	Execution	Finalisation/evaluation
1. Stakeholder	Stakeholder involvement/engagement	Stakeholder involvement/engagement	Stakeholder involvement/engagement	Project finalisation report
2. Scope	Scope identification	Scope refinement	Project change control	Project finalisation report
3. Time	Provisional forecasts	Schedule development	Schedule control and reporting	Project finalisation report
4. Cost	Provisional forecasts	Budget development	Cost control and reporting	Project finalisation report
5. Quality	Quality planning	Quality planning and assurance	Quality assurance, control and improvement	Project finalisation report
6. HR	Capability determined	Resource assigned	Performance monitored	Reassignment and project finalisation report
7. Procurement and contracts	Procurement planning	Procurement and solicitation planning	Solicitation, source selection, contract administration	Contract close-out and project finalisation report
8. Risk	Identification	Identification, assessment, analysis	Management	Evaluation and project finalisation report
9. Communication	Stakeholder identification	Strategy development	Project performance reports	Project finalisation report
10. Integration	Strategic alignment	Project plan	Performance report	Project finalisation report

- Project life cycle inputs and outputs

Concept inputs	Planning inputs	Execution inputs	Finalisation inputs
<ul style="list-style-type: none"> <li>- Project selection</li> <li>- Problem/opportunity trigger</li> <li>- Alternative solutions discussed</li> <li>- Consistent with organisational goals</li> <li>- Project benefits identified</li> <li>- Critical success factors identified</li> <li>- Risks identified/impact assessment</li> <li>- Expectations agreed</li> <li>- Sponsors located</li> <li>- Stakeholders confirmed</li> <li>- Explicit decision made to proceed to next stage (resources &amp; time commitment)</li> </ul>	<ul style="list-style-type: none"> <li>- Project variables reviewed &amp; redefined</li> <li>- Break down project into activities</li> <li>- Schedule developed, revised &amp; base lined</li> <li>- Estimate contingency factors</li> <li>- Critical path identified</li> <li>- Source &amp; assign resources</li> <li>- Quality measures in place</li> <li>- Procurement specifications finalised</li> <li>- Contracts formulated</li> <li>- Control measures identified</li> <li>- Explicit decision to proceed to next stage (resources &amp; time commitment)</li> </ul>	<ul style="list-style-type: none"> <li>- Ongoing progress review &amp; control</li> <li>- Progress status &amp; forecast reports</li> <li>- Manage change requests</li> <li>- Manage contracts</li> <li>- Deal with team issues</li> <li>- Corrective and/or reinforcement action</li> <li>- Manage escalation issues</li> <li>- Manage meetings</li> <li>- Control &amp; report progress</li> <li>- Explicit decision made to commit more time, resources and money in proceeding to next stage</li> </ul>	<ul style="list-style-type: none"> <li>- Document client acceptance</li> <li>- Document project outcome</li> <li>- Conduct project evaluation &amp; audit</li> <li>- Contract closeout</li> <li>- Team &amp; stakeholders debrief</li> <li>- Communicate lesson learnt</li> <li>- Resources reassigned</li> <li>- Retentions certificates &amp; warranties</li> <li>- Archiving &amp; recording</li> <li>- Celebrate team's success</li> <li>- Decision to close out</li> </ul>
Concept outputs	Planning outputs	Execution outputs	Finalisation outputs
<ul style="list-style-type: none"> <li>- Client brief</li> <li>- Business case</li> <li>- Feasibility study</li> <li>- Risk assessment</li> <li>- Scope documentation</li> <li>- Stakeholder analysis</li> <li>- Budget forecasts</li> <li>- Procedures &amp; policies</li> <li>- Meeting minutes</li> </ul> <p>Approvals</p>	<ul style="list-style-type: none"> <li>- Stage, task &amp; milestone detail including duration, sequencing &amp; resources</li> <li>- Revised timelines (PERT/Gantt)</li> <li>- Revised cash flows &amp; budgets</li> <li>- Resource matrix</li> <li>- Baseline project schedule</li> </ul> <p>Approvals</p>	<ul style="list-style-type: none"> <li>- Performance standards</li> <li>- Inspection &amp; monitoring/testing plan</li> <li>- Purchase orders</li> <li>- Performance reports</li> <li>- Change of scope request</li> <li>- Progress claims</li> <li>- Corrective action</li> <li>- Contracts</li> <li>- Revised schedules</li> </ul> <p>Approvals</p>	<ul style="list-style-type: none"> <li>- Handover</li> <li>- Acceptance testing</li> <li>- Project audit</li> <li>- Completion checklist</li> <li>- Feedback &amp; evaluation</li> </ul> <p>Approvals</p>

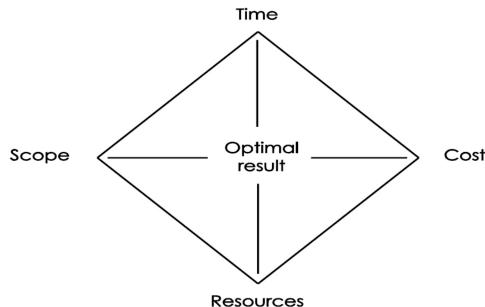
**[EXAM QUESTION]**

Review the inputs and outputs, reflect on HOW the implementation of a TBL approach could add more value to a new project and to its management life cycle

- Concept: Identify potential social and environmental impacts, align project objectives with sustainable development goals, and create value for society and the environment.
- Planning: Integrate sustainable practices into design, resource allocation, and risk assessment. Consider environmentally friendly materials, energy efficiency, waste reduction, and social impact mitigation.
- Execution Phase: Engage stakeholders, foster social inclusion, promote ethical practices, and monitor environmental impact.

- Implement responsible sourcing, fair labour practices, and reduce carbon emissions.
- Monitoring and Control: Assess project performance against sustainability indicators, track energy consumption, waste generation, social equity, and project contributions to local communities. Take corrective actions to achieve sustainable targets.
- Finalisation: Evaluate overall impact on people, planet, and profit. Assess sustainable outcomes, identify areas for improvement, and capture lessons learned. Focus on responsible waste disposal and project decommissioning.

- Project variables and constraints

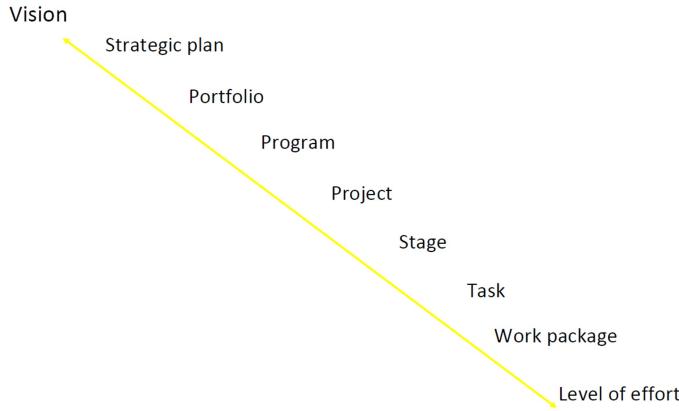


- Common causes of project failure

- Delivered over budget (perhaps even under budget)
- Delivered over time (& again, perhaps under time could be perceived by some as failure)
- Client refusal to accept delivery
- Lack of end user involvement
- Not supported by key stakeholders
- Poorly understood scope (requirement, specification, etc.)
- Too many scope variations (changes)
- Inability to identify, prioritise & manage organisational wide projects (project overload)
- Poorly lead & managed
- Lack of executive management mandate
- Lack of senior management support
- Lack of project management maturity
- Lack of coordinated approach
- Lack of formal methodology (process or framework)
- Lack of sufficient time, funding & skilled resources
- Inability to measure, report and adjust performance
- Lack of communicated, visible & demonstrated authority
- Functional conflicts between operational & project priorities
- Lack of honest, transparent accountability
- Resistance to modify (update, downgrade, delete) original estimates
- Over reliance and poor management of external parties
- Lack of momentum (commitment, energy, enthusiasm...)
- Reliance on reactive & remedial corrective action
- Unauthorised scope changes (variations)
- Lack of authority to actually stop the project
- Lack of commitment to the project plan (or worse, a lack of an actual plan)
- No contingency plans in place
- Lack of organisational capacity (processes, policies etc.)
- Poor management skills (misguided, misinformed & missing in action)
- Poorly defined & communicated roles & responsibilities
- Not in line with sustainable approaches (i.e. TBL and life cycle thinking)

- Indicators of project success

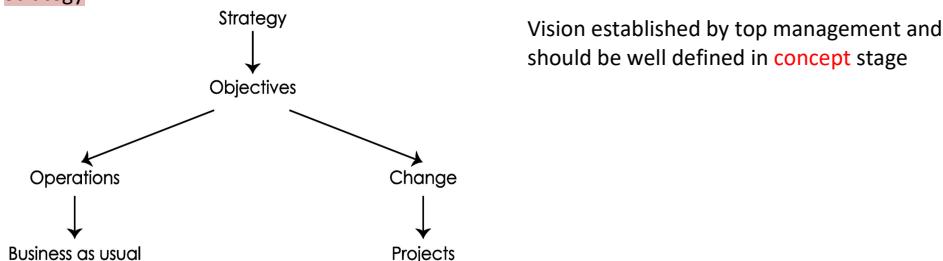
- All projects are aligned strategically to business operations & organisational vision
- On time, on budget, on quality specification
- Demonstrated visibility, authority & accountability (leaders, managers, project managers and project team)
- Client/stakeholders satisfaction
- Transparent approvals & decision making
- Skills inventory of all qualified project management personnel
- Endorsed, communicated & consistently applied methodology
- Acceptance of the iterative nature of projects (particularly estimates)
- Continued development & refinement of organisational maturity
- Appropriate and timely review gates
- 'Real time' performance measurement & reporting systems
- Evidence of both activity & achievement
- User friendly project management software (and the prerequisite training)
- Long term sustainability (in line with TBL and life cycle thinking)



- **Project vision**

- Organisational vision (i.e. Where they plan to be and why) should align with project vision
- Successful project vision should be
  - Understood (communicated)
  - Credible (achievable)
  - Motivational (inspirational)
  - Demanding and challenging
- Effective communication essential to achieve above, and project manager should be responsible

- **Strategy**

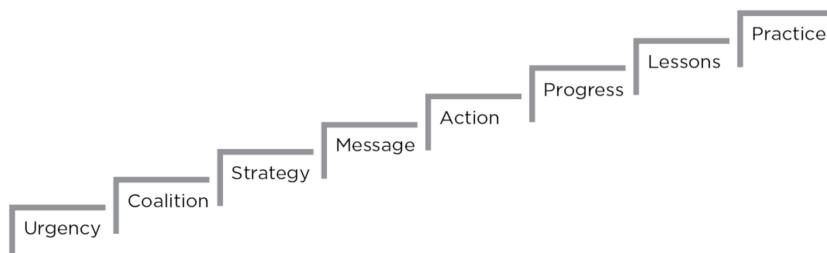


- Role of inspiring strategy

- Involves corporate management
- Identifies and exploits different strengths, weaknesses, opportunities and threats (SWOT); SW - internal, OT - external
- Future, value and results oriented
- Integrated organisation wide
- Provide coherence and momentum
- Be qualitative in design and adaptable to change
- Have relative long-term focus
- Target action-oriented, measurable activities

- **Managing project change**

- Vision before plans and programs - without sensible vision, any change initiative can easily dissolve into list of confusing and incompatible projects



**Figure 2.3** Change management process

- Wide range of factors can impact project (internal and external)
- Assumptions of future events necessary for every project
- Key stakeholders need to be communicated with and managed

- **Justification for projects**

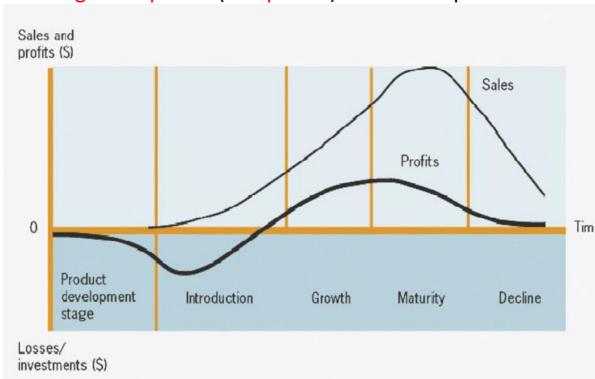
- Return on investment and profitability growth
- Cost efficiency
- Competitive advantage
- Sponsor/client advantage
- Product mix diversity

- Consistent with TBL and life cycle thinking

### Project selection methods

Non-numeric	Numeric
- Sacred cow	- Payback period
- Operating necessity	- Return on investment (ROI)
- Competitive necessity	- Net present value (NPV)
- Product extension	
- Comparative benefit	

- **Sacred cow**
  - Project selected/protected by senior executive
  - Priority status
  - Empire building
  - (potential) lack of organisational support
  - Very little planning stage, goes straight to execution
- **Operating necessity**
  - To maintain operation functionality even if low profitability or loss (e.g. During crisis - COVID)
  - Driven by situational events
  - Fast-tracked decision making
  - Limited budget provision
  - Reduced planning time
- **Competitive necessity**
  - Maintaining competitive advantage in marketplace to become market leaders and get more market share
  - Ability to match (or win) competitors
  - Danger of fierce competition
  - Insufficient industry analysis
  - Little competitor analysis
- **Comparative benefit**
  - Applies to companies seeking multiple projects with differing benefits (reduces risk) and want to select subset of projects
  - No valid selection criteria used and little planning
  - Highly subjective choice
  - Support for high profile projects (but who defines what high profile means?)
- **Product line extension**
  - Product/service repositioned favourably with customers
  - Taking advantage of market conditions and opportunities
  - Use both data analysis and intuition in decision making process
  - Increased market penetration
  - Possibility of gaining economy of scale (increased buying power)
  - No guarantee of market success
  - Risk of reducing current market share and/or profit
  - Extend growth period (and profits) as much as possible:



- **Payback period**
  - Time taken to earn back money invested in project
  - Payback period = cost of project / annual cash revenue
    - E.g. If project costs \$100 000 and expected to generate \$25 000 annually, payback period =  $100\ 000 / 25\ 000 = 4$  years
    - If revenues expected to vary from year to year, add revenues expected for each succeeding year until you reach total project cost
  - Simple to use, but does not account for time value of money
  - Any additional cash flow (after payback) are of no use with this model
- **Return on investment (ROI)**
  - Overall profit (or loss) of investment, calculated as % of total amount invested
  - ROI = net profit / total investment x 100
    - E.g. Net profit of \$40 000 over 6 years and total investment is \$100 000,  $ROI = 40\ 000 / 100\ 000 = 40\%$  return over 6 years
  - Takes into consideration entire cash-flow period of project (contrary to payback period), but not time value of money

- **Net present value (NPV)**

- Projected profitability of investment, based on future (anticipated) cash-flows and discounted (from year 2) at a stated interest rate
- **NPV = cash flow x discount factor**
- Discount factor =  $1 / (1+i)^n$  (derived from annuity table, e.g. In finance, data analysis, accounting texts)
  - E.g.

Year 1: (initial project cost) (\$100,000)

Cash flow (CF) year 2: \$30,000

CF year 3: \$40,000

CF year 4: \$40,000

CF year 5: \$35,000

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\$45,000

Cash flow	Table factor (9%)	Present value
CF Y 1 = \$100,000 x 1.00		(\$100,000)
CF Y 2 = \$30,000 x 0.9174		\$27,522
CF Y3= \$40,000 x 0.8417		\$33,667
CF Y4= \$40,000 x 0.7722		\$30,887
CF Y 5=\$35,000 x 0.7084		\$24,795
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NPV =		\$ 16,871

- According to this model, return on investment is much lower

- **Most exhaustive** and considers **time value of money**

- **Prioritising project**

- **Sponsor, client, customer** classifications
- **ROI** and **cost** savings
- Organisational **impact** and portfolio management (strategic impact)
- **Resource** capability and availability, time to implement
- Scale of **complexity** and **risk** exposure
- External compliance **regulations** e.g. Approvals by Environmental Protection Authority (EPA)
- Consistent with **TBL** and **life cycle** thinking

- L3 project classification guide - example of how to scale and classify projects

	<u>Classification</u>		
<u>Criteria</u>	1 - <b>Lean</b>	2 - <b>Lite</b>	3 - <b>Large</b>
Planning	No	Limited	Extensive
Budget forecast	No	<\$ 100 000	>\$100 000
Timeframe	No	<45 days	>45 days
Risk	Low	Low-moderate	High
Stakeholders concerned	Few	Many	Multiple
Scope revision	Minor	Moderate	Extensive
Benefits	No	Monitored	Evaluated
Project manager	Functional personnel	Full-time/part-time	Full-time
Organisational impact	Slight	Low	High
PM methodology	Reduce	Complete	Complete

## STAKEHOLDER MANAGEMENT

- **Project governance**

- To define **roles** and **responsibilities** of all project stakeholders and determine **decision making** structure for project
- Plan and manage project throughout its lifecycle by ensuring **accountability**, **transparency**, participation, predictability, traceability, validation and integrated change controls
- Internal audit capability and accountability to provide regular, timely, unambiguous and result driven **reports** on performance, deliverables and outcomes
- Expectations and benefits:
  - Clear assignment of roles and responsibilities
  - Develop organisation's project delivery capability
  - Accountability and transparency in decision making
  - Standardises processes and procedures
  - Identification, communication and management of all stakeholders
  - Process to review and evaluate documents and deliverables
  - Maximise return on project investment
  - Strategic project portfolio

- Ensuring consistency with TBL and project life cycle
  - **Challenge of stakeholder management**
- 
- Stakeholders**
- Two types:
    - Those that **contribute** to project output
    - Those that **benefit** from project output - usually clients, sponsors
  - Can either **support** or **hinder** project
  - Cannot be ignored (will impact ultimate success)
  - Must be **identified** prior to commencing and throughout project (concept stage)
  - Need to be **managed** (what are their information needs throughout the project?)
  - Ultimately crucial to engage with stakeholders
  - Examples
    - Members of board (sponsor)
    - Executive management
    - Senior and/or functional managers
    - Staff
    - Third party providers
    - External consultants
    - Federal, state and/or local government departments
    - Financial institutions
    - Contracting businesses
    - Regulatory agencies
    - Industry associations
    - Insurance companies
    - Manufacturers and commercial suppliers
    - Trade unions
    - Customers/clients
    - Media outlets
    - Lobby, community and special interest groups
    - Competitors
  - **Project clients**
    - Person or entity **project being carried out for**
    - In some projects, corporate clients and project sponsors may or may not be the same person
    - Ensures
      - Project aligned with strategic needs and goals of organisation
      - Outcomes meet needs of customer's organisation
      - Business benefits realised
      - Approves changes to project scope and deliverables
      - Provides resources to represent customer's interests
      - Monitors performance, compliance and outcomes
      - Provides funding to cover all progressive payments
  - **Project sponsor**
    - Top of project team pyramid, **middle person between client and project manager**
    - Has **ultimate accountability** and **responsibility** for project on behalf of **organisation undertaking project**
      - Determines overall business objective for project
      - Responsible for obtaining ongoing funding
      - Monitors costs, benefits, risks, and progress regularly
      - Maintains organisational capacity to resource project

- Approves changes to scope and deliverables
- Obtains organisational commitment to undertake project
- Recommends project completion and/or evaluation
- Provide high level support and visibility for project
- Provides leadership (inspire and empower)
- Oversees multiple reports
- Negotiates at higher level
- Undertakes financial analysis (e.g. ROI, NPV, etc.)
- Promotes project to investors

- **Steering group**

- **Senior management team** responsible for adoption, deployment and uniform application of **project management framework**
  - Ensures strategic alignment, robust justification and all portfolio management
  - Approves appointment, authority and visibility of project manager
  - Acts as coach, mentor and support for project manager
  - Provides guidance, support and monitoring of process and documentation
  - Authorise commencement and sign off at end of each phase
  - Advocate for project deliverables, outcomes and benefits
  - Balance competing priorities, resources, guidance and direction to project
  - Review all benefits delivered by project
  - Identify all emergent whole-of-business issues impacting project

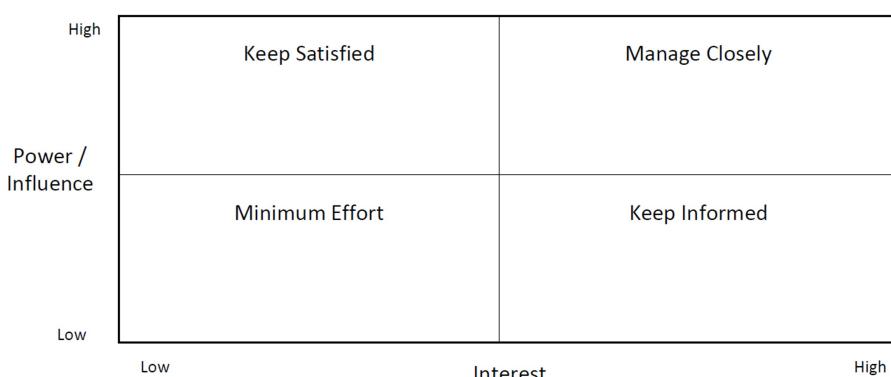
- Project team members

- **Subject matter experts** (technical knowledge) and/or personnel required to **perform** all required **project work** (as delegated by PM)
  - Provide resident expertise in execution of deliverables
  - Perform all assigned activities to agreed standards
  - Communicate all emergent issues and risk to PM
  - Identify and resolve technical problems
  - Attend and participate in performance/progress meetings

- **Project manager**

- Endorsed (or similar) person appointed to manage project
  - Develop project **plan**
  - Estimating, assigning and managing project **resources**
  - Manage project schedule, budget, stakeholder expectations, procurement and contracts, quality requirements
  - Directs and **motivate** project team morale and performance
  - Manage all change requests and resultant impacts and approvals
  - Initiate corrective action and/or reinforcement where required
  - Tracking, documenting and communicating project performance and deliverables
  - Identifying, assessing and managing risks
  - Managing and reporting relevant issues
  - Facilitate regular performance meetings
  - Coach, mentor and support project team
- Profiling project manager
  - Conceptual skills
  - Interpersonal skills
  - Technical skills
  - Managerial ability
  - Strategic expertise
  - Business acumen
  - Practical and relevant experience
  - Experience team player
  - Entrepreneurial energy
  - Project management discipline
  - Project management software skills
  - How to delegate
  - \*\*Dealing with **pressure** and managing **conflict**

- **Stakeholder power and interest matrix**



- **Plan stakeholder management**

- Clear, actionable plan required to **reach** and **interact** with stakeholders in support of project's interests
- Individual expectations and project objectives need to be managed throughout life cycle
- Proactive in capturing **relevant information** from each stakeholder based on **who they are** and their different **responsibilities**
- Document in a suitable format that can be readily disseminated, tracked and updated as project progresses to all who need it
- **RACI framework** to define roles and responsibilities
  - **Responsible** (nominate stakeholder charged with doing required activities)
  - **Approve** (nominate stakeholder who needs to approve all decisions)
  - **Consult** (nominate stakeholder who needs to be consulted prior, during or after an action)
  - **Inform** (nominate stakeholder who needs to be kept informed of progressive actions)

Step	Project Initiation	Project Executive	Project Manager	Business Analyst	Technical Architect	Application Developers
1	Task 1	C	A/R	C	I	I
2	Task 2	A	I	R	C	I
3	Task 3	A	I	R	C	I
4	Task 4	C	A	I	R	I

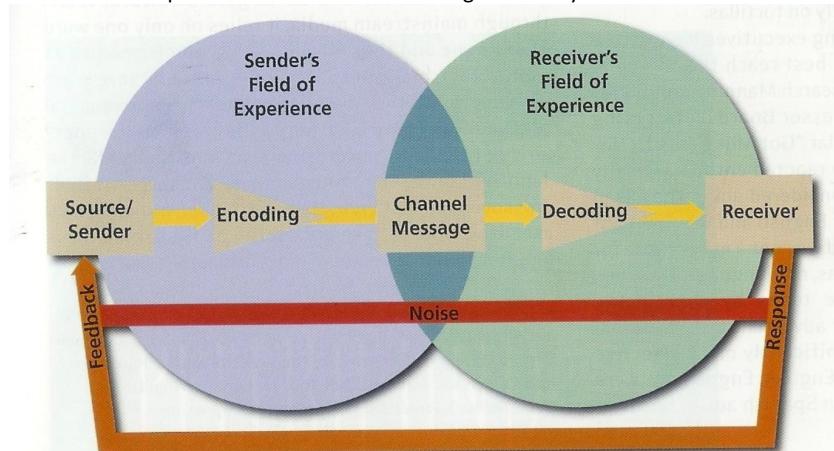
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- **PARIS framework**
  - **Participate** (nominate stakeholder charged with doing required activities)
  - **Approve** (nominate stakeholder who needs to approve all decisions)
  - **Responsible** (nominate stakeholder charged with doing required activities)
  - **Inform** (nominate stakeholder who needs to be kept informed of progressive actions)
  - **Signoff** (nominate stakeholder who provides official signoff)

- Example of **stakeholder management matrix**

Name	Responsibilities	Information required	Medium	Frequency
Sponsor	- Determine the overall business objective - Project priority	- Schedule delivery - Budgets - Priority status	- Report - Meetings	Monthly
P/Manager	- Manages schedule - Manages performance	- Team issues - Risk issues	Meetings	Daily
Client	Accepts project	- Performance - Progress	Report	Monthly
Contractors	Carry out work	Schedule	Meeting	Daily
SME (Subject matter expert)	Technical expert (design, installation, etc.)	Technical performance issues	Walkthroughs	Daily
Team	Task completion	Progress	Meeting	Daily Weekly

- Communication process model - communicating effectively with stakeholders



- **Adapt communication style** to ensure message received

- **Response strategies to stakeholder pressures in global projects** (differences in language, culture, legal, politics)

- **Adaptation** strategy: **obeying demands** and **rules** presented by stakeholders, i.e. Adjust to stakeholder pressures to achieve planned objectives
- **Compromising** strategy: **negotiating** with stakeholders; opening dialog, listen to their requests and offer compensations when appropriate (but remember to question ethical issues)
- **Avoidance** strategy: **losing attachment** to stakeholders and their claims. **Transfer responsibility** of dealing with claims to others in project network
- **Dismissal** strategy: **ignoring** stakeholder **demands**, i.e. Not considering stakeholders requirements in implementing project stages (unlikely to succeed)
- **Influence** strategy: dealing **proactively** with demands from stakeholders; **creating** and **communicating value** to stakeholders while **building relationship** with them (best strategy)

- **Difference between managers and leaders**

Managers	Leaders
Achieve results with and through others (plan, lead, organise and <b>control</b> )	Get people to do things willingly that they otherwise would not do ( <b>inspire, empower</b> )
- Administrates - Control - Systems - Short term - Things right - Solve problems - Make decisions - Us and them - Superior	- Innovate and create ideas - Trust - People - Long term - The right thing - Involve - Encourage decision making - Us together - Mentor

## SCOPE MANAGEMENT

- **Planning scope management**

- Scope management plan documents how **project scope** will be **defined, validated and controlled** (needs to be approved by key stakeholders)
- Establishes direction and guidance parameters on how scope will be managed
- Provides formal mechanism to limit, assess and authorise **changes** on consistent and transparent basis
- Charter/scope documentation produced in concept phase

- **Defining scope**

- What is (**inclusions**) and isn't (**exclusions**) required
- Establishes scope baseline for comparisons and updates
- Forms foundation of project plan
- Investigates if **expectation meets capability** (be aware expectation continuously changes)

Client expectation	Project capability
Expectation 1 <input checked="" type="checkbox"/>	Capability 1 <input checked="" type="checkbox"/>
Expectation 2 <input checked="" type="checkbox"/>	Capability 2 <input type="checkbox"/>
Expectation 3 <input checked="" type="checkbox"/>	Capability 3 <input checked="" type="checkbox"/>
Expectation 4 <input checked="" type="checkbox"/>	Capability 4 <input type="checkbox"/>
Expectation 5 <input checked="" type="checkbox"/>	Capability 5 <input type="checkbox"/>
Expectation 6 <input checked="" type="checkbox"/>	Capability 6 <input checked="" type="checkbox"/>

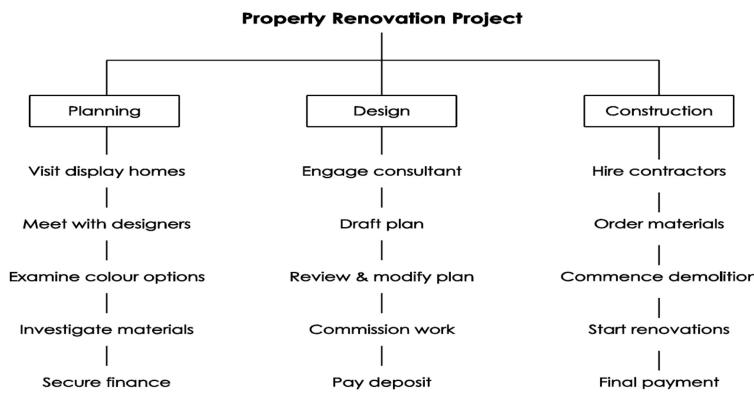
- Identifies project **deliverables, results** and **benefits**

## Work breakdown structure (WBS)

- **Decomposes** the project

- What work must be performed? Identifies **all required activities**
- How long will each activity take? Determines **duration**
- What **resources** can perform the work? Determines who and what (human and physical resources) are needed
- How much investment is required? Determines what budget is needed

- Graphical or tabular



ID	Task	Duration	Effort	Links	Start	Finish	Who	Cost	Notes
1	Research								
1.1	Magazines	2d	4h	-					
1.2	Samples	3d	8h	1.1					
1.3	Visits	1d	8h	1.2					
2	Materials	1d							
2.1	Paint	4d	16h	1.3					
2.2	Brushes	2d	2h	2.1					
...	...	....	....	....					

- Steps
  - Scope should provide well-defined, achievable project goals and road map for achieving them
  - Completion of scope statement
  - PM to secure formal scope approval by key stakeholders in writing
  - **Divide scope into activities** - work components that can be planned, estimated, scheduled and assigned to project team members
  - Activities should be grouped into hierarchical, deliverable oriented decomposition, i.e. WBS
  - WBS should be formally approved for PM to proceed to next phase
- Factors influencing WBS
  - Information captured by charter and scope (inclusions and exclusions)
  - Complexity of project
  - Accuracy required in estimates
  - Extent of quality definitions, standards and requirements
  - Degree of risk involved and risk profile of stakeholders
  - Extent of any contractual performance obligations
  - Required level of measurement and control
  - TBL and life cycle requirements
- **Advantages**
  - Captures **tasks** to complete project
  - Identifies task **relationships**
  - Easy to read table format
  - Makes it possible to **visualise** complex project
  - Ties project together
- **Disadvantages**
  - **Time consuming** and **costly**
  - **No timeline**
  - Potential inconsistency between table and effective schedule
  - Potential discrepancy between projected and effective resources
  - Some tasks may be **constrained** by factors other than predecessors (not taken into account in WBS)
- **Validation criteria**
  - Client **acceptance** will **never** be **automatic** in any project
  - Consider following criteria to add formality to process
    - Issuing **compliance certificates**
    - Measuring work **performance**
    - Conducting variance analysis
    - Undertaking physical **inspections**

- Conducting **quality testing**
  - Scheduling independent **audits**
  - Assessing technical feasibility
  - Maintaining traceability matrix
- Delivering agreed output
  - Promise 100%, try to deliver 110%
  - > 100% highly satisfied (over performance)
  - = 100% satisfied (agreed performance)
  - < 100% dissatisfied (under performance)
- **Controlling scope**
  - Scope will always change over time (**scope creep**)
    - Also known as: innovation, continuous improvement, client change of mind or poor management
  - Scope control requires written process with formal approval
  - Proposed changes should be **assessed** against all other project **variables** (time, cost, risk, contracts, quality, etc.) and **approved** by key stakeholders
  - Implemented changes must produce **updated** project **plans** and related documents

#### **Project charter/scope**

- Core outputs from concept stage
  1. Identify key stakeholders
  2. Assign project manager
  3. Create project charter
  4. Develop preliminary project scope statement (more detailed than charter)
- Example of format

Project charter	Project scope statement
<ul style="list-style-type: none"> <li>▪ Project title</li> <li>▪ Start date</li> <li>▪ Finish date</li> <li>▪ Key stakeholders</li> <li>▪ Business case support project</li> <li>▪ Deliverables/project goals</li> <li>▪ Budget information</li> <li>▪ Foreseeable risks</li> <li>▪ TBL and life cycle thinking</li> </ul>	<ul style="list-style-type: none"> <li>▪ Project title</li> <li>▪ Start and finish date</li> <li>▪ Detailing key stakeholders</li> <li>▪ Deliverables</li> <li>▪ Detailed description of all objectives, characteristics and requirements</li> <li>▪ Project justification</li> <li>▪ Detailing milestones</li> <li>▪ Detailing risks</li> <li>▪ Detailing assumptions</li> <li>▪ Project success criteria</li> <li>▪ TBL and life cycle thinking</li> </ul>

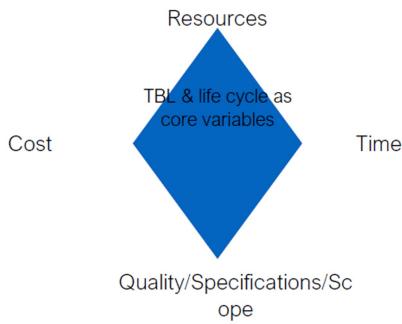
- **Benefits**
  - Nominates **key stakeholders**
  - Agrees **deliverables**/expectations
  - Builds commitment and conveys capability
  - Documents **agreement**
  - Identifies direction and requirement
  - Defines **baseline**
  - Authorises scheduling
  - Facilitates management
  - Pre-empts scope changes
- **Risks**
  - Imprecise language (e.g. Should do vs will do)
  - Inaccurate estimates
  - Lack of detail, i.e. Ignored specifications
  - Inability to close-out
  - Potential for misleading information
  - Economic 'truth'
  - Variation disputes
  - Inconsistency with quality specifications
  - Schedule delays
  - Unavailability of resources

#### **Setting project objectives**

- SMART framework
  - **Specific**
  - **Measurable**
  - **Achievable**
  - **Realistic** (relevant)
  - **Time frame** (time-bound)

- Appropriate, unambiguous, concise, communicated, written, agreed
- To measure progress (success) objectively, you must first have **clear objectives** to measure against (benchmarks)

### Optimising and negotiating project variables



Optimal input --> Optimal output

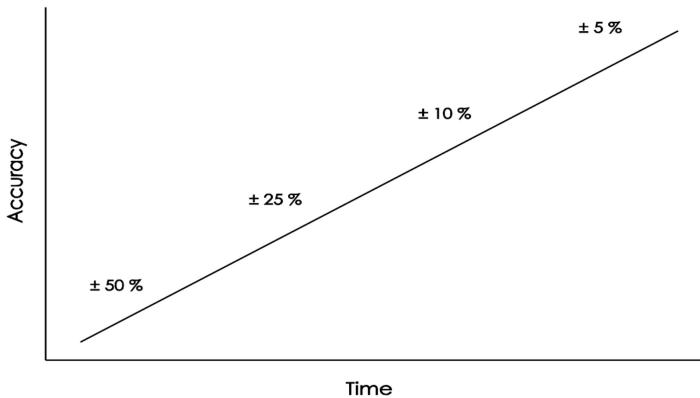
- **BATNA** (best alternative to negotiated agreement)
  - Review all options before negotiation, to decide on the **best alternative** if main goal unable to be achieved
  - Allows you to have stronger **safety net** and more **negotiating power**

### TIME MANAGEMENT

- Planning/scheduling
  - Refining project **goals** and **documenting best way to achieve** them
  - Variety of project plans produced, most common include: project timeline, cost and budget plan, risk plan, quality plan, communications plan, purchase and acquisition plan, TBL and life cycle plan, detailed assumptions (based on facts - if identified and any contingency plans)

### Estimating techniques

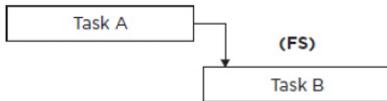
- **Analogous estimating (history)**
  - **Strong similarity** with previous projects in database
  - Easy to use, but **appropriate assumptions** needed as no two projects exactly same
- **Using resource unit rates**
  - Lower unit rates, more resources you can get with your money
- **Bottom-up estimating**
  - Each task **broken down into smaller components**
  - Estimates for smaller individual components **aggregated** to develop larger estimate for entire task as a whole
- **Expert judgement/educated guess**
  - **Opinion** or judgement based on expertise/specialised knowledge
  - Especially when estimates are **sensitive**
- **Vendor bid analysis**
  - Obtaining written bids from vendors (e.g. Expressions of interest (EOI) minimum 3 vendors)
- **Three point estimate** or wide band Delphi (weighted average)
  - Involves **team discussions** - team members correct one another in a way that helps avoid errors and poor estimation
  - Use three cost or duration estimates to represent **optimistic**, **probable** and **pessimistic** scenarios
 
$$T_e = \frac{T_o + 4T_m + T_p}{6}$$
    - E.g.  $T_o$  optimistic time = 5 days,  $T_m$  probable time = 10 days,  $T_p$  pessimistic time = 30 days
    - $T_e$  expected time = 12.5 days
    - Very common for software projects
- **Parametric estimating (metric)**
  - **Statistical/mathematical modelling**
- **Estimation guidelines**
  - No estimate guaranteed to be accurate, but **appropriate assumptions** make estimates more accurate (better to be conservative)
  - Record the following
    - **How calculation** determined
    - All underlying **assumptions** and impacting **constraints**
    - **Confidence level**  $\pm$  (we should already know acceptable tolerance level)
    - Optimistic, pessimistic and most likely range
    - All **source data** (from reliable sources)
    - Details of all **stakeholders involved** (roles and responsibilities)
- **Estimating accuracy**
  - **Progressive accuracy** - as work progresses, accuracy progresses



- Identifying resource capability when assigning resources to activity - the following information should be identified in detail
  - Name - individual name or generic label
  - Type - labour, material, etc.
  - Group - to whom resource belongs
  - Capability - skills, expertise, prior experience, etc.
  - Rate - normal rate or other fixed/variable costs
  - Location - geographical physical location
  - Quantity - how many required
  - Availability - actual free time they have to allocate
  - Calendar - what dates excluded throughout project
  - Report - who they currently report to
  - Development - additional training required
  - Evaluation - performance evaluations from past projects

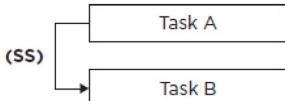
### Sequence

- Development of project schedule driven by **activity-to-activity relationships** in determining when activities start and finish
- Finish-start**



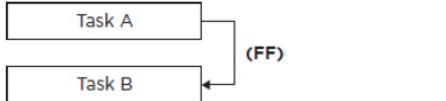
- One activity finishes to start the other activity
- Schedule in series

- Start-start**



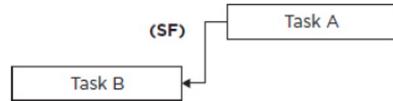
- One activity starts to start the other activity
- Schedule in parallel

- Finish-finish**



- One activity finishes to finish the other activity
- Schedule in parallel

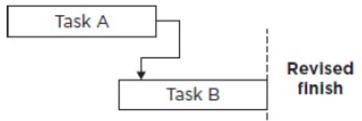
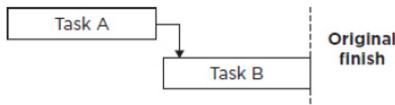
- Start-finish**



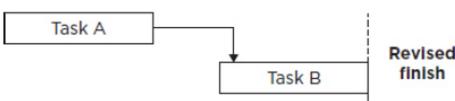
- One activity starts to finish the other activity
- Schedule in series

### Accelerated or delayed delivery

- Lead time** (intentional acceleration)
  - Amount of time **successor** task can be **advanced**



- Task B can start after task A had partially finished (i.e. Finished up to a point)
- In series task becomes parallel
- Take **time out** of project
- **Lag time** (intentional delay)
  - Amount of time **successor** task can be **delayed**



- Task B starts after task A finishes and then some
- In series tasks remain as is
- **Add time** to project

#### PERT network diagram

- Program Evaluation Review Technique
- Network diagrams and/or Gantt charts **create schedules** (unlike WBS which is not a schedule)
- Schedules **often represent intent**, not necessarily reality, unless they are updated regularly
- Activities can be sequenced **in-series** or **parallel**
- All tasks must be **linked** through project completion

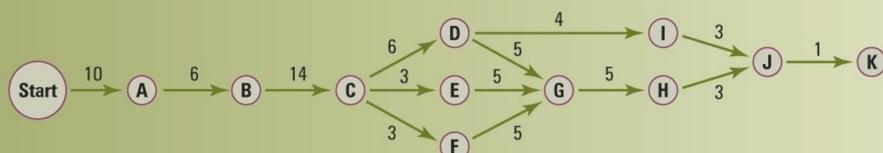
**[EXAM QUESTION - understand sequence and identify critical path]**

- Migrating WBS to network diagram

**TABLE 9.5** A PERT network for constructing an office building

EVENT	DESCRIPTION	EXPECTED TIME (IN WEEKS)	PRECEDING EVENT
A	Approve design and get permits	10	None
B	Dig subterranean garage	6	A
C	Erect frame and siding	14	B
D	Construct floor	6	C
E	Install windows	3	C
F	Put on roof	3	C
G	Install internal wiring	5	D,E,F
H	Install lift	5	G
I	Put in floor covering and panelling	4	D
J	Put in doors and interior decorative trim	3	I,H
K	Turn over to building management group	1	J

**FIGURE 9.5** A PERT network for constructing an office building

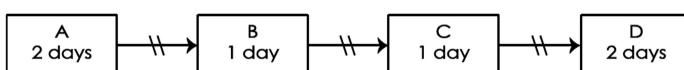


- CDG - critical path - any delays here will delay project
- CEG and CFG
- Allows us to build a project picture, i.e.
  - Project **logic** and how it is tied together
  - **Relationships** between tasks
  - **Flow** of work
  - Critical path
  - Potential **bottlenecks**
- **Advantages**
  - Excellent visual and interactive graphic to demonstrate schedule

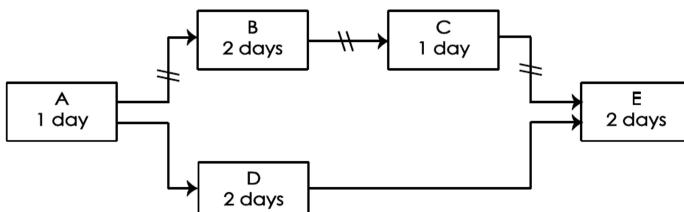
- **Participative** decision making
  - Joint **risk** identification and response strategy
  - Negotiated concessions (e.g. If need to complete task sooner, then need more staff and money)
  - Improved team ownership (accountability and involvement)
  - Shows critical path
  - Eliminates **idle time**
- **Disadvantages**
    - Difficult to read if project is large (too complex)
    - No timeline
    - Difficult to monitor and report performance
    - Not always easy to understand
    - Limited amount of information that can be displayed
    - Time consuming and costly to develop

- **Critical path analysis**

- **Longest path** through the network
- Delay in critical tasks means **project delay** - tasks must start and finish as scheduled for project to finish as scheduled
- **Shortest completion time**
- Path with **no float** (no flexibility)
- Critically important for good reason
  - Tasks must be **closely managed**
  - No delays possible
  - Accurate estimates
  - Regular performance reporting (ensure critical path progressing as planned)
  - Timely corrective action
  - Contingency actions required



1. In-series critical path - sample PERT

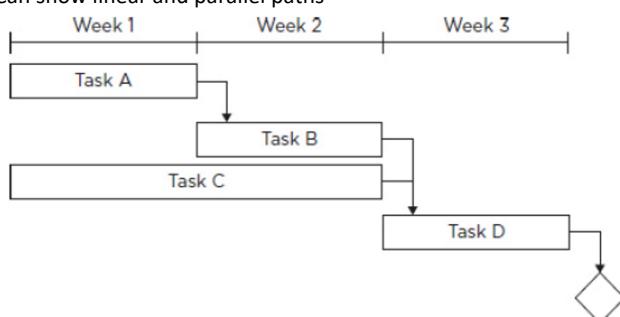


2. In-parallel critical path - sample PERT

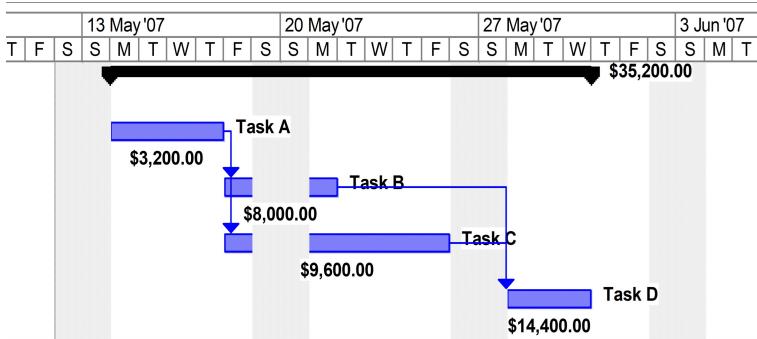
- **Gantt chart**

- Valuable **scheduling** tool
- Details activities, **order** of completion and establishes completion **times**
- **Visualise** actual and planned output over time
- Control tool to identify **deviations**
- Different task relationships possible (i.e. Finish-start, start-start, finish-finish, start-finish) which offer varying degrees of flexibility and complexity in relation to time, resources and costing

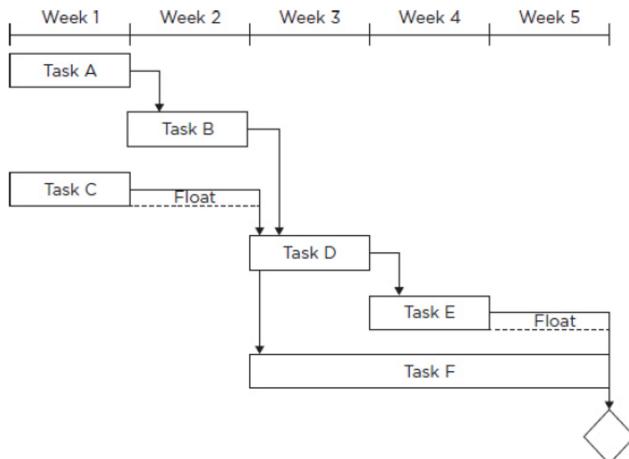
- Can show linear and parallel paths



- Time phased budgeting example



- Critical path



- Advantages

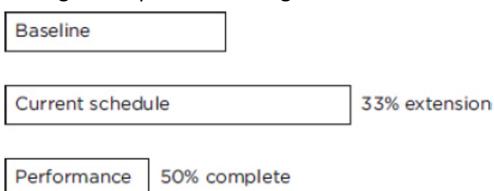
- Illustrates task duration
- Clarifies 4 task relationship types
- Ideal for monitoring actual progress to date
- Identifies critical path(s)
- Easy to allocate resources
- Easy to read from top down and from left to right
- Illustrates application of lead and lag time

- Disadvantages

- Difficult to read due to amount of information
- Time consuming to update and report
- Need software to avoid excessive time spent drafting and reviewing schedules
- Often bears little resemblance to reality
- Easily outdated given frequency of scope changes and revisions

### Controlling schedule

- To effectively control project schedule, consider following actions
  - Update changes to schedule as they occur
  - Determine current reporting date of project
  - Assess current status of project against published plan to identify true performance
  - Reschedule remaining activities
  - Recirculate agreed schedule revision and have approval from key stakeholders
  - Conduct retrospective reviews and walkthroughs to record lessons learned
- Example of tracking actual performance against baseline and current schedule



### SMART project planning framework - projects need to be:

- Strategically managed - project vision and mission aligned with company goals, mission and vision
- Alignment - stakeholders aligned with project objective; project team aligned with project plan; project priorities aligned with management metrics
- Regenerative - regenerative team has open communication, job ownership, risk taking propensity, trust, fun/motivation in undertaking project, creativity, etc.
- Transitional - appropriately managed change and stakeholder relationships while dealing with environmental complexity, uncertainty and risk

## COST MANAGEMENT

### Planning for cost management

- Establish **policies, procedures and documentation** for planning, managing, expending and controlling project costs (more serious implications compared to other areas)
- Different stakeholders
  - Contribute different amounts of funding
  - Measure costs differently
  - Report costs in different ways
  - Control costs at different times

### Estimating costs

- Difficult and risky to estimate/predict - always try to draw on **multiple procedures**
  - Pre-determined** (may negotiate)
  - Expert judgement** (in touch with market daily)
  - Analogous** (based on historical data, previous budgets)
  - Group decision making**
  - Unit rates**
  - Published commercial data**
  - Vendor bid**
  - Reserve**
  - 3 point estimation**

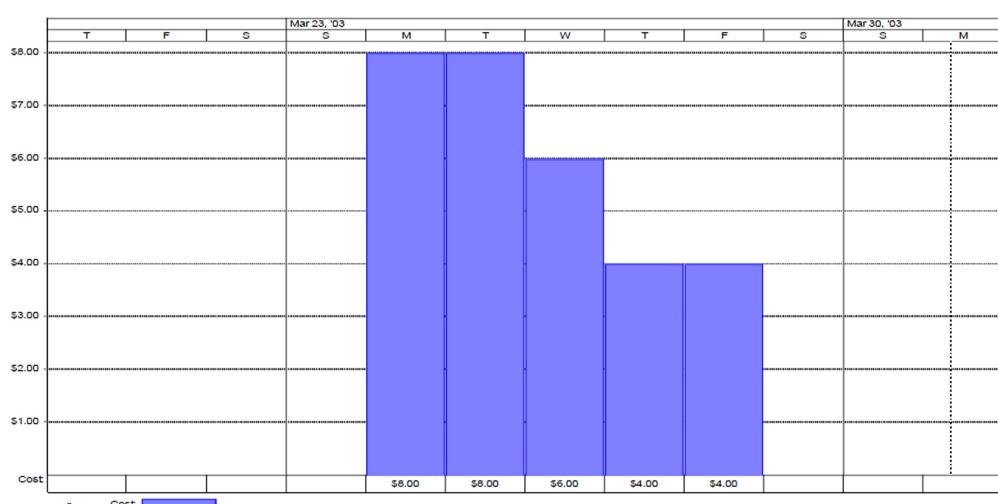
- Completing **resource matrix**

Resource	Task A	Task B	Task C	Task D	Cost: \$/Day	Available	History
Mary	*	*	+	-	100	Yes	Excellent performer
Ian	+	-	+	-	75	No	Always busy
Greg	-	+	+	=	50	Yes	Un-reliable
Julie	+	+	-	+	75	Yes	Good performer

Legend:  
 \* Proficient; + Good; = Adequate; - Poor

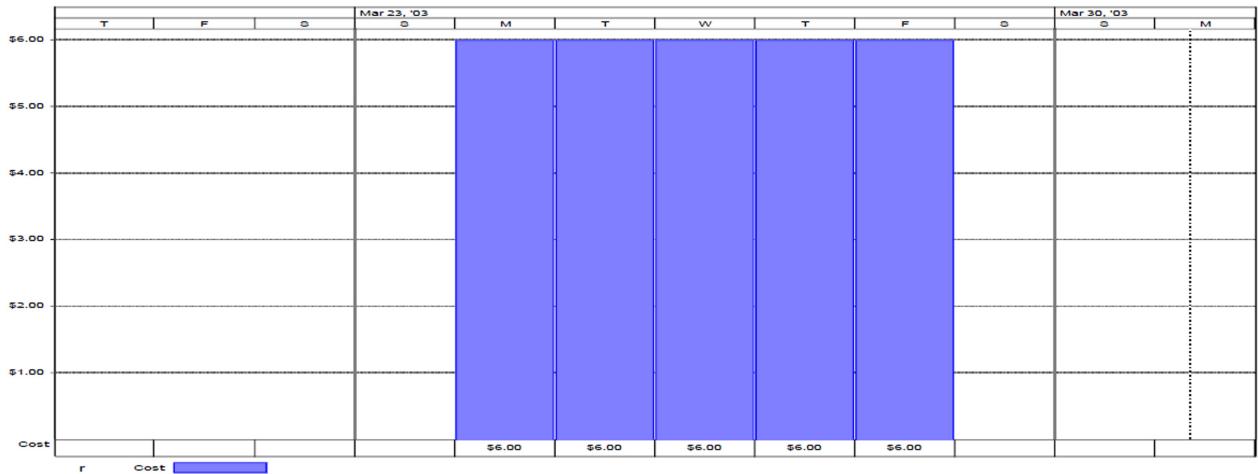
- Assigning project resources

ID	Task Name	Duration	Predecessors	Resource Names	Mar 23, '03		Mar 30, '03							
					T	F	S	S	M	T	W	T	F	S
1	a	2 days		r[2]						r[2]				
2	b	3 days		r[2]						r[2]				
3	c	5 days		r[4]						r[4]				



- Levelling project resources

ID	Task Name	Duration	Predecessors	Resource Names	Mar 23, '03							Mar 30						
					T	F	S	S	M	T	W	T	F	S	S	M		
1	a	2 days		r[2]													r[2]	
2	b	3 days		r[2]													r[2]	
3	c	5 days		r[4]													r[4]	



## Budgets

- Formal written financial statement of management's plans for future expressed in financial terms
- Approaches to budgets
  - Traditional - previous year's level of performance is foundation for next year's figures (and adjusted based on inflation and other factors)
  - Zero based - for each new period, all activities recorded with zero spending to begin with, then justified and new budget built from scratch
  - Program - activities grouped together for projecting costs generated by each program or major activity
  - Top down - based on pooling knowledge of senior managers and past results. Project costs are estimated, then passed to lower-level managers who continue breakdown into further estimates
  - Bottom up - individual task budgets estimated in detail by people directly responsible for doing or managing the work. Estimates are aggregated to give total project cost
- Advantages
  - Increase ability to improve decision making processes
  - Effective means of cost control
  - More reliable profits can be determined
  - Assess operational financial requirements
  - Ideal for areas needing control measures
  - Identify and diagnose problems
  - Act to improve management image
  - Useful in achieving long-term objectives
- Disadvantages
  - Top to bottom support is difficult to get
  - Time spent planning can delay action
  - Often 'locked' and inflexible
  - Restrictive in terms of innovation and change
  - Can ignore cyclical fluctuations
  - Communicate unrealistic targets
  - Based on 'guessed' and unreliable estimates
  - Involve high degree of uncertainty
  - Can be expensive to prepare
- Sample budget inclusions
  - Budget cost: Original (and or revised) approved estimate
  - Estimation technique: How was the budget determined
  - Actual cost: Reported actual cost
  - Variance: Difference between the budget and the actual costs
  - Confidence level: Degree of confidence & or accuracy in the estimate
  - Assumptions: Things believed to be true but have not been confirmed
  - Constraints: Limitations that may impact the estimates
  - Contingency: Amount of additional reserve funding required, source & approvals
  - % Work complete: Amount of work actually completed to date
  - Actual Cost: The reported cost in performing the activities to date
  - % Actual cost: Percentage of money spent against the budget

Variance percent: The difference between the budget and the actual costs  
 Tolerance: Degree of acceptable difference between budget & actual  
 Corrective action: Required actions to get the budget back into the 'black'  
 Budget remaining: The amount of the budget remaining to complete the project

### Controlling project cost

- Project budget analysis (traditional approach)

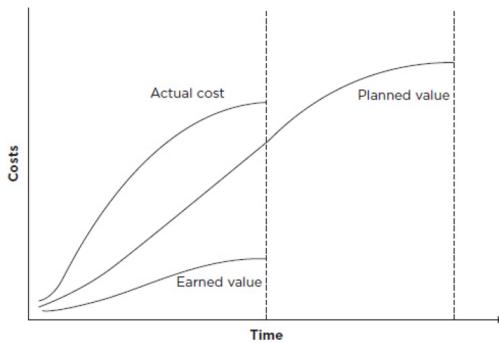
- Example:

Budgeted cost	\$500
Actual cost	\$600
Analysis	\$100 over budget

- Earned value analysis

- Combines scope, schedule and budget measurements to assess project progress and performance
- Example:

Planned value	\$500 (budget cost)
Earned value	\$300 (at status date, \$300 worth of earned value gets reported)
Actual cost	\$600
Analysis	Not only is the project over budget by \$100; the project has only delivered scope to the tune of \$300 measured against planned value of \$500. The project is behind schedule to the tune of \$200 worth of scope



- But does this show the whole picture of a project's cost?

### ROI of sustainability

- Best-in-class companies incurred significantly lower costs, e.g.

- Paper costs
- Facilities cost
- Energy costs
- Waste/disposal costs
- Packaging costs
- Transport/logistic costs

- Factors driving sustainability

- Desire for environmental/social stewardship
- Desire to increase brand reputation/value
- Obtaining competitive advantage
- Internal/external stakeholders pressure/expectations
- Rising energy costs
- Regulatory compliance

- Challenges

- Budget challenges (more costly)
- Difficult to demonstrate acceptable ROI to shareholders
- Fear of disrupting current business processes

- Managing social, environmental and financial performance simultaneously

- How companies make trade-offs at various levels and simultaneously manage social, environmental and financial performance
- Paradox exists where companies' informal systems strongly promote sustainability, their formal systems seemingly have a very traditional focus on financial performance
- Managers operating under these paradoxical systems do not believe these systems to be in conflict, and do not perceive a high level of tension
- They use the tensions creatively as source of innovation
  - Paradox theory encourages organisations to adopt strategies that involve balancing opposing forces, rather than favouring one or the other
  - Pursue both short-term profitability and long-term sustainability

- Sustainability balanced score cards (consider financial and non-financial measures, and explicitly considering environment, social or ethical

issues)

## QUALITY MANAGEMENT

- Challenges of quality
  - Very **subjective** - personal dimension, framed by individual experiences and expectations
    - Needs clear definition - clarify this with key stakeholders
    - Stick to that definition throughout documentation
  - Implies reliability, satisfies customer, value for money, complies with specifications
  - Dictates **measurement** (if we cannot measure something, it makes it difficult to ensure conformance, compliance and improvement)
  - Defined as characteristic, i.e. Excellence, attainment
  - Every project created and managed to be successful as measured against some defining benchmark, most notably time achievement (schedule), deliverable compliance (specification), cost control (budget), and TBL and life cycle
  - Project success (and by inference, its quality) is also measured against client's identified agreed needs, not just their wants
  - \* Clients not only have technical specification, but **intangible** (often unstated) **expectation** of quality against which deliverable is constantly measured
- Steps to meet quality requirements
  1. Quality **planning**
  2. Quality **assurance**
  3. Quality **control**
  4. Quality (continuous) **improvement**

### Quality planning

- All mandated quality **standards**, operational **definitions** and business **requirements** clearly **identified** and **agreed**
- Ensures these same standards can be achieved and measured throughout project
- Quality always needs to be considered at the start, not randomly throughout the project
- Examples:
  - Reviewing scope document, detailed product descriptions and technical specification
  - Examining all operational procedures relating to best practice & operational efficiencies
  - Aligning with the current business quality policy and supporting processes
  - Conducting benchmarking activities with other projects to identify areas of improvement
  - Designing a range of checklists that can be used to verify consistency
  - Accessing any standards and regulations pertaining to the project
- Building in (assuring) quality through:
  - Budget cost
  - Clear specification
  - Defined standards to aim for
  - Historical experience
  - Qualified resources
  - Impartial reviews (feedback)
  - Effective change control
  - Organisational wide commitment
  - Integrate processes
  - Documented planning

### Quality assurance

- **Activities** and **processes** to ensure **tasks performed as planned** and **deliverables meet** defined quality **standards**
- Declaration or **guarantee** that overall project performance evaluated on regular basis to give all stakeholder confidence that relevant quality standards will be satisfied (reassurance)
- Examples:
  - Quality management plan
  - Business rules and operational definitions
  - Appropriate internal systems (from the project start)
  - Processes to eliminate waste, variation and excess
  - Regular meeting of the quality team members
  - Scheduled and/or random quality audits
  - Lessons learned
  - **ISO standards** (i.e. Quality management practices (9000), Environmental management (14000), Social responsibility (26000 series))

### Quality control

- **Monitoring** and **inspecting** project deliverables and processes to ensure they meet specified quality standards
  - Identify, measure and eliminate **causes of unsatisfactory performance** while ensuring quality compliance demonstrated and achieved
- Remember control implies **measurement**
- Used throughout implementation and finalisation stages to formally demonstrate with reliable data that acceptance criteria have been met
- Examples of quality assurance and control tools:
  - Peer reviews
  - Physical inspection
  - Control charts
  - Scatter diagrams

- \* **Checklists** (widely used and consistent)
- Pareto diagrams
- Statistical sampling
- Flowcharts
- Cause and effect diagram
- Trend analysis
- Benefits
  - Better standards compared to competitors (advantage)
  - Elimination of rework
  - Completion of work-in-progress
  - Confirmation of acceptance
  - Documented quality improvement
  - Completed checklists
  - Process adjustments

#### **Quality continuous improvement**

- **Culture, commitment** and **ownership** of what project is delivering and ultimately, how well it is being delivered
- Continuous improvement can flourish where
  - **Innovation** encouraged
  - **Efficiencies**, economies of **scale** and **capacity** can be enhanced
  - **Risk taking** supported
- Examples of tools used for continuous improvement:
  - Regular performance reporting
  - Meetings and debriefs
  - Decision gates and approval processes
  - Walkthroughs and peer reviews
  - Scenario analysis
  - Evaluation reports
  - Suggestion boxes
  - User feedback

#### **Balanced scorecard (BSC) for projects**

- **Performance measurement framework** which includes strategic performance metrics to give PM and other key stakeholders a more 'balanced' view of project performance. Considers:
  - **Customer** perspective - customer satisfaction, economic value added, intended objectives, etc.
  - **Financial** perspective - within budget, variance between original and final budget, project costs compared to industry standards, etc.
  - **Project/internal** perspective - team satisfaction, resource management, etc.
  - **Growth and innovative** perspective - best practices identified, ongoing improvement, innovative ideas rate, TBL, life cycle, etc.
- Can be used for health checks throughout project life cycle
  - Project stage 1: initial measurement to establish **baseline** for project planning
  - Project stage 2: BSC benchmarks included in overall **project plan**
  - Project stage 3: BSC measurements **implemented** and initial benchmarks used to **compare** and improve BSC outcomes
  - Project stage 4: BSC measurements **reviewed** and **documented** in final report to support best practices and for lessons learned

#### **Indicators to measure sustainability performance** (Keeble et al. 2003)

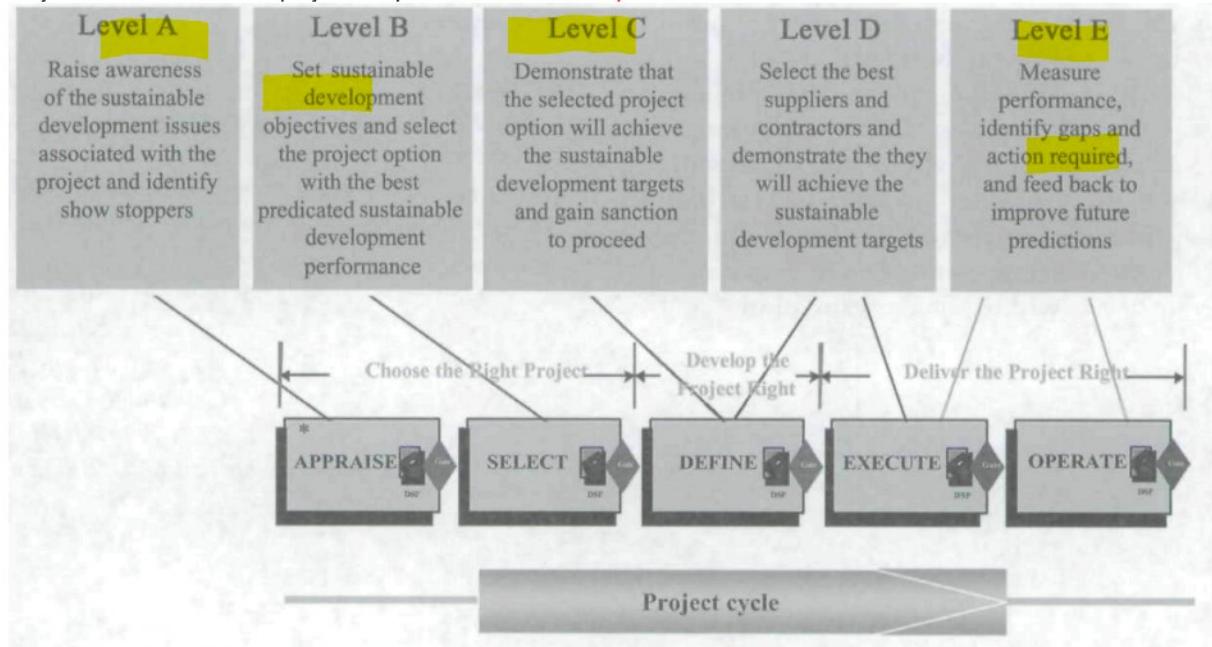
- Case study 1: measuring corporate wide sustainability performance
- Case study 2: measuring alignment of project activities with principles of sustainable development
  - **Economic** - will project generate prosperity and enhance affected economies?
    - Governance (e.g. Alignment with policies)
    - Economic (e.g. Jobs, tax, etc.)
    - Financial (e.g. Profit, etc.)
    - Innovation (e.g. Supports innovation, etc.)
    - Risk (e.g. Risk management, etc.)
  - **Social** - will project be implemented in socially responsible manner and benefit affected communities in a fair and equitable way?
    - Governance (e.g. Alignment with policies)
    - Social infrastructure (public safety and security, local education, stakeholder engagement, etc.)
    - Employment (e.g. Job security, safety, etc.)
    - Risk (e.g. Risk management etc.)
  - **Environmental quality** - will project cause long-term damage or improve environment?
    - Governance (e.g. Alignment with policies)
    - Emissions (e.g. Emission to air/water, waste, hazardous materials, etc.)
    - Risk (e.g. Risk management)
  - Use of **natural resources** - will project protect and enhance natural capital?
    - Governance (e.g. Alignment with policies)
    - Natural resources (e.g. Materials, energy, biodiversity, hazardous materials, waste, etc.)
    - Risk (e.g. Risk management)

#### **[EXAM QUESTION - remember steps]**

- Project assessment matrix - project lifecycle **sustainable development assessment**

### [EXAM QUESTION - remember steps!]

- Project assessment matrix - project lifecycle sustainable development assessment



- Level A - inform key stakeholders it can be done
- Level B - set SMART goals
- Level C - implement and demonstrate
- Level D - value chain

### HUMAN RESOURCES MANAGEMENT

- Planning for HR management
  - One of most important areas - "first who, then what"
  - HR management plan establishes baseline for identifying prerequisite HR resource needs (and necessary skills) for project's success
  - Well thought out plan should contain
    - Internal or external acquisition strategy
    - Roles and responsibilities
    - Acquisition and release timetables
    - Identification of professional development needs
    - Team building strategies
    - Plans for recognition and rewards
    - Performance management procedures
  - Examples of documents
    - Organisational chart
    - Stakeholder responsibility matrix
    - Position (role) description
    - Responsibility assignment matrix
    - Training register
    - Personnel files
    - Contractor agreement
    - Performance reviews
    - Application forms
    - Social media
    - Resumes
    - Aptitude tests
    - Psychological tests
    - Behavioural interviews
    - Reference checks
    - Employment contracts
- Multigenerational team
  - To acquire right resources at right time
    - Negotiate with operational managers to release/share resources
    - Investigate prevailing market conditions for contractors availability and commercial rates
    - Review preferred supplier arrangements
    - Communicate potential consequences to stakeholders on failing to acquire necessary resources
    - Evaluate potential resources against ambit of legal, regulatory, mandatory and/or other specific criteria covering their assignment
    - Consider professional development plans for nominated resources and how this time and cost will be addressed in budget
    - Factor in challenges of managing resources collocated in multiple locations each with different time zones and communication

- Determine how performance throughout project will be measured and evaluated
- Reflect on managers' ability to manage a group of diverse resources brought together for a finite time span
- Demonstrate empathy (where you genuinely can - this should not be faked)
- Encourage continuous, open and honest feedback
- Give everyone an opportunity to shine in what they are good at
- Identify what common ground is
- Praise effort, not just result
- Avoid rushing in to rescue
- Develop capacity, not dependency
- Provide environment where continual learning is encouraged
- Provide choices and pathways

- **Developing project team**

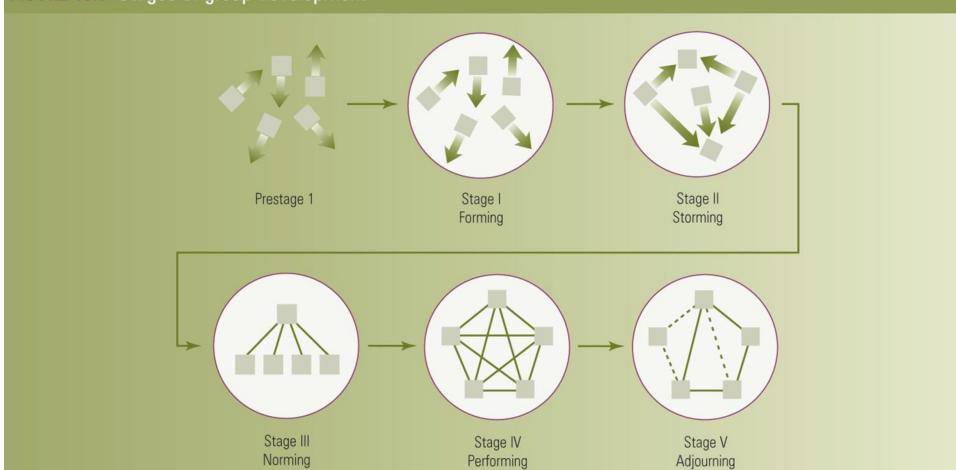
- Clear, communicated and recognised long term goals
- Clear, communicated and accepted objectives
- Unqualified opportunities for success
- Tolerance for calculated risk
- Mutual appreciation of members' individual and broad skills
- Defined, communicated and accepted roles
- Explicit, discussed and endorsed procedures
- Open, honest and continuous communication
- Supported leadership

- **Valuing project team diversity**

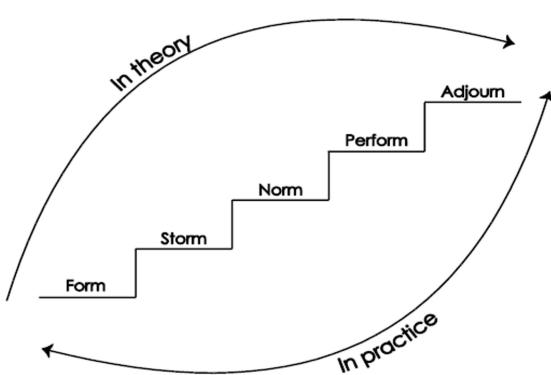
- Project teams will consist of unique individuals drawn from a very diverse demographic and cultural backgrounds
- Need to acknowledge, understand and value these differences
- Tie together (coordinate) those differences to deliver the project
- Creates an inclusive environment (safe and supportive)
- Promotes equality, values diversity

### Stages of group/team development

**FIGURE 15.1** Stages of group development



1. **Forming:** uncertainty and confusion about purpose, structure and leadership
2. **Storming:** inevitable and natural conflicts over tasks, priorities of goals, roles of team members, and leadership of team
3. **Norming:** cooperation and collaboration; roles and responsibilities clear and accepted, common expectations about how team's goals to be accomplished
4. **Performing:** mature, organised and well-functioning unit; diversity of opinions supported and encouraged, adaptive
5. **Adjourning:** preparing to disband; celebrations, lessons learned



- **Learning and development**
  - Taking on projects, observation, shadowing, acting in higher positions
  - Online learning, webinars, formal study, distance learning, internal courses, conferences
  - Job rotation, special assignments, simulations
  - Mentoring, role models, peer-assist programs
  - Committee work
  - Private research
  - Professional reading, professional memberships
- **Managing project team**
  - **Energise** team members to complete their scheduled work (on time, on budget, as specified)
  - **Direct** team towards meeting deadlines, milestones and other constraints
  - Draw team together cohesively
  - Enable team to function in **self-directed** mode
  - Allow team members to **self-correct** much of their own work
  - [NOT EXAMINABLE] Motivation
    - Maslow's hierarchy of needs
    - Herzberg satisfaction and productivity
- **Measuring team performance**
  - Can be assessed against any number of traditional **KPIs**, within project context these should include: **result-oriented** and **agreed upon criteria**
    - Performance against **objectives**
    - Performance against **schedule**
    - Performance against **budget**
    - Performance against **scope**
  - Reinforcing performance

Technique	Purpose
Structured interviews	Formal interviews with team members responding to questions asked
Critical incidents	Record of both positive and negative important (critical) incidents during review period
Written essays	Writing couple of paragraphs detailing each team member's behaviours and skills
Rating scales	Defined scales for each job-related skill, enabling quick comparisons between team members
Peer review	Team members review each other's performance against key criteria
360-degree feedback	Multi-rater anonymous feedback from people working with team member
Balanced scorecard	Rating against list of values, attributes and qualities deemed critical to success
- **Personalities**
  - Personality: unique combination of emotional, thought and behavioural patterns that affect how person reacts and interacts with others
  - People will bring their personalities to project. Consider **understanding** and **accepting** their:
    - Natural preferences for focusing their energy, gathering information, making decisions and living a certain way
    - Preferred way to respond to team challenges
    - Style of interacting and **communicating** with others
    - Unique way in how they make distinctive contribution
    - Areas of strength and weakness in being on team
  - **Myers Briggs Type Indicator (MBTI)**
    - Assessment of:
      - **Social interaction** - extrovert or introvert
      - Preferences for **gathering data** - sensing (experience) or intuitive (intuition)
      - Preference for **decision-making** - feeling (compassion) or thinking (facts)

- Style of making decisions - perceptive (flexibility) or judgemental (rituals)
- Help in selection process to decide who would be most suitable for a particular job and its requirements
- Understand how certain types solve problems and interact with people
- Understand personality and predict people's behaviour

- What effective team members need

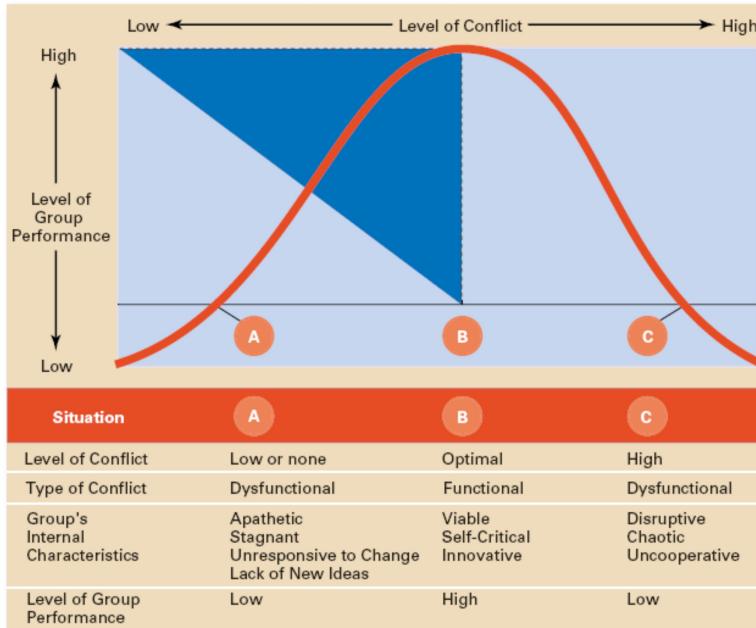
- Clear, communicated & recognised and accepted long-term goals and objectives
- Defined, communicated & accepted roles
- Experience & knowledge of project methodology
- Mutual appreciation of members' individual technical & broad skills
- The ability to identify key issues, solve problems & implement the solution
- Explicit, discussed & endorsed procedures
- A tolerance for calculated risk
- Open, honest, continuous communication & constructive feedback
- Work without ongoing supervision
- We trust & support each other and support our leader

- Indicators of team cohesion

- Positive
  - Cooperative climate
  - Trust and open support
  - Clear expectations
  - Exchange of ideas and opinions without criticism
  - Directions followed
  - Disputes resolved
  - Open communication
  - Ongoing constructive feedback
- Negative
  - Delays with decisions
  - Withholding information
  - Competing agendas
  - Directions challenged
  - Underperformance
  - Suspicion, animosity, distrust
  - Limited feedback
  - Subgroups populated

### Conflict

- Group/team performance



- Causes

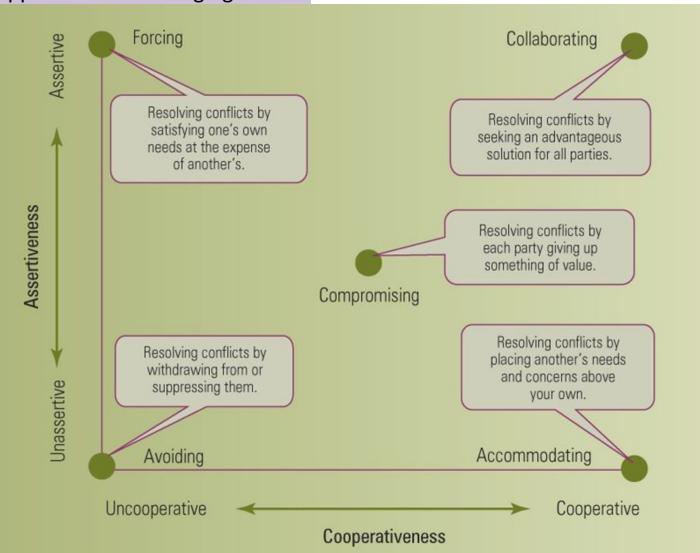
- Working under pressure to meet deadlines
- Mismatched task and skill sets
- Personality clashes within team and/or stakeholders
- Conflicting operational work priorities
- Performance issues
- Feelings of role insecurity
- Degree of involvement in decision making

- Lack of effective communication
- Changes to project scope
- Reporting to two or more managers/supervisors
- Disagreements over alternative solutions
- Different expectations
- Hidden agendas, self-interest and dishonesty

- **Balancing conflict**

Positive	Negative
<ul style="list-style-type: none"> <li>- Exploration of <b>new ideas</b></li> <li>- Consideration of other people's perspectives</li> <li>- Adjustments/modifications made</li> <li>- Clarification of different positions/interests</li> <li>- Postponed decisions</li> <li>- Time to reconsider, clarify and communicate proposal</li> </ul>	<ul style="list-style-type: none"> <li>- <b>Breakdown in communication</b></li> <li>- Increased hostility</li> <li>- Cessation of work on project</li> <li>- Legal action taken for contract breaches</li> <li>- Project personnel being replaced</li> </ul>

- **Approaches to managing conflict**



1. **Avoiding** (low assertion, low cooperation)

- No attempt made to address conflict at all (**lose-lose**)
- May be effective when
  - You cannot possibly win
  - Issue relatively minor
  - Confronting other party may result in more damage than resolution
  - Timeout needed to allow everyone to disengage
  - Inequitable balance of power

2. **Competing/forcing** (high assertion, low cooperation)

- Power and dominance used to gain compliance to your own perspective (**win-lose**)
- May be effective when
  - You know you are right (and have evidence)
  - Stakes too high if you lose
  - Quick and decisive action required
  - Unpopular decisions have to be made
  - Show of force is required

3. **Accommodating** (low assertion, high cooperation)

- Other person's point of view considered more important than your own (**lose-win**)
- May be effective when
  - Other person's evidence more compelling
  - Peace, goodwill and harmony more important to valued relationship
  - Want to create tactical advantage by offering concession (they win now, but you can win later)
  - You acknowledge weakness in your own position
  - You wish to avoid further damaging relationship

4. **Collaborating** (high assertion, high cooperation)

- Mutual and optimal outcomes sought by both parties (**win-win**)
- May be effective when
  - You want to build alliance and relationship
  - You need enduring commitment from other party
  - You want to encourage, investigate and consolidate different perspectives
  - Your solution is largely governed by other party getting theirs too
  - You need an optimal outcome without sacrificing your own

5. **Compromising** (mid assertion, mid cooperation)

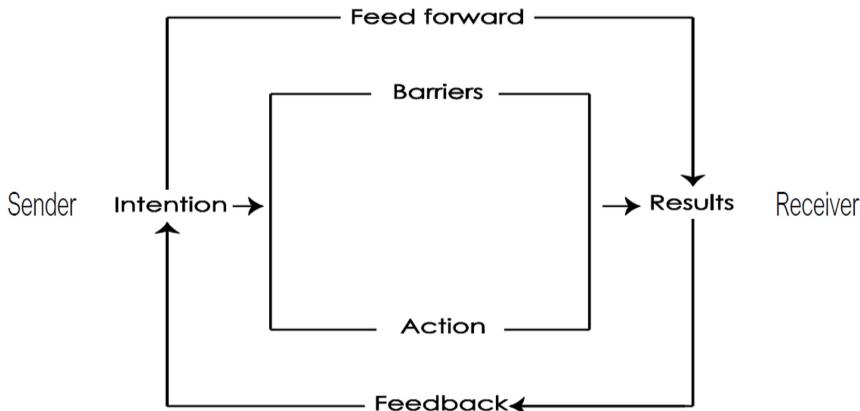
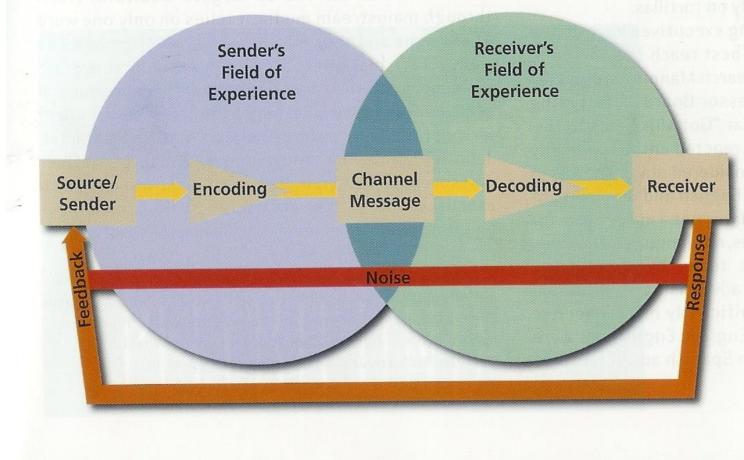
- Mutually acceptable out is reached, i.e. Partially satisfies both parties through each sacrificing some personal goals
- May be effective when
  - Outcomes only moderately important to each party
  - No other option is working
  - Balance of power is even
  - Gesture of 'moving forward' is required
  - A decision is required

## COMMUNICATION MANAGEMENT

### Planning communications management

- 75-90% of time spent communicating (writing, reading, talking and listening)
- Poor communication frustrates and undermines workplace (problems, issues and misunderstandings)
- Information should be provided in right **format**, at right **time**, to right **audience** and with right **impact**
  - Clear purpose and objective

### Communication process



### Barriers

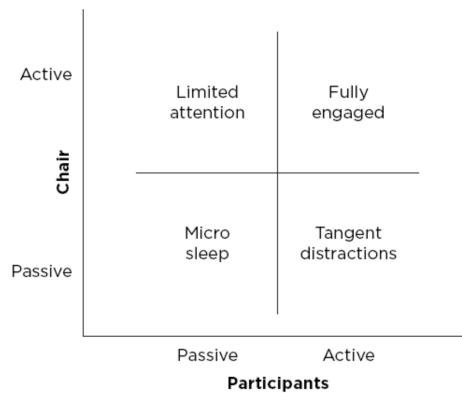
- Lack of client involvement (e.g. receiver very busy)
- Poorly informed stakeholders
- Lack of meetings and/or too many meetings leading to little action (especially if poorly planned)
- Lack of reporting requirements
- Poor and incomplete documentation
- Frequent scope change
- Changing project personnel (very damaging if PM changed, unless with very experienced team)
- Lack of auditing project to identify lessons learned

### Managing project communications

- Timely and appropriate **planning**, **collection**, **creation**, **distribution**, **storage**, **retrieval**, **management**, **control**, **monitoring** and **disposal** of information
  - Fact - indisputable, objective truth accepted by everyone (need good evidence)
  - Fantasy - someone's opinion or interpretation
  - Folklore - rumour, gossip or hearsay
  - Feelings - intuition, ego or emotion (do not rely on these)
- Communication works best when you work at communication (i.e. Plan and understand)
- **All documentation** encompassed under communications

- Project meetings

- Upwards of 85% of time in meetings
  - How much of this time is spent wisely, efficiently and effectively?
  - How many of meetings result in actionable outcomes?
  - What percentage of meetings include stakeholders who make required decisions?
  - How much constructive information is presented at meetings?
  - How participative are meetings?
  - How many meetings are poorly managed?
  - How many meetings are held to ratify what has already been decided?
  - How often do meetings go back over ground already discussed at previous meetings?
- Profiling meeting



**Figure 9.2** Profiling the meeting

- Kick-off meeting

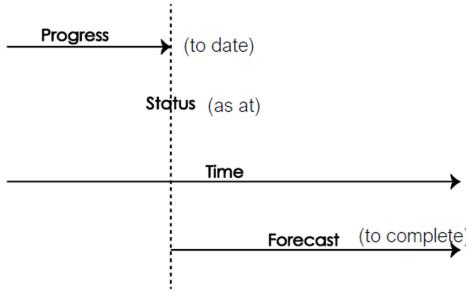
- In **initiation** stage, once project team assembled
- Details project **objectives, expectation, deliverables, outcomes** and **benefits**
- Meeting client or their representative
- Review all scope inclusions, exclusions and potential scope changes
- Clarify roles and responsibilities of executive, project, operational, technical, team and/or other support members
- Explain project management methodology (or framework) to be followed
- Walk through project management plan (and any subsidiary plans)
- Discuss different views between stakeholders and/or team members

- Kick-out meeting

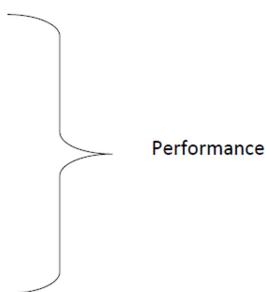
- Formally brings project to a **close**
- Projects can close at any time, whether **completed or not**
- Final meeting ensure all aspects of project formally closed out prior to team being disbanded

- Project performance reports

- Can often lead to impressive work of fiction (at worst), or concise and honest summary of project's progression, status and like conclusion (at best)
- Should convey
  - **Accurate, complete** and **timely** information
  - Provide possible escape route for mismanaged project
  - Reflect true facts on project's progression
  - Encourage **early detection of problems**
  - Enable problem-solving and facilitate decision making
  - Track all scope changes and revisions
  - Sustain project momentum, energy and commitment
- **Reporting continuum** - true measures of performance
  - Reporting requires continual monitoring, inspection, correction and reinforcement to be effective



1. **Progress report** (time zero to present)
    - Reports **information after** it has **happened**
    - Achievements, budget and cash flow progress, issues addressed, milestones reached, risk managed, changes, adopted, approvals received, delivery accepted, etc.
  2. **Status report** (**present**)
    - Reports current position of project against plan
    - On time, on budget, as specified, etc.
  3. **Forecast report** (**completion oriented**)
    - Reports against original completion date, anticipated scope changes, pending risks, approvals pending, escalating issues, expected delays, projected cost over runs, etc.
- **Project change control**
    - All **scope change**
      - Requests to be in **writing** (formally)
      - Must identify and be signed by stakeholder initiating change
      - Must identify complete **impact** (time, cost, specifications, resources, TBL) change will have on project
      - Must include updated **risk** assessment reflecting changes
      - Must include updated **quality** assessment (and TBL) reflecting changes
      - Must be **agreed, documented** and **communicated** between all relevant stakeholders
    - All successful scope changes must be reflected in **revised project charter/scope** and project **schedule**
    - **Causes of scope creep**
      - Poor initial definitions of requirements
      - Unanswered questions on deliverables
      - Lack of stakeholder involvement
      - Evolving expectations and/or mentality of exceeding expectations
      - Discovery of new solutions
      - Ineffective project management
      - Environmental factors (external to company)
    - **Benefits of project control**
      - Monitor
      - Assess
      - Improve
      - Adjust
      - Document
      - Forecast
      - Evaluate
    - **Measuring actual achievement**
      - Performance milestones
      - Time completed
      - Deliverables (including TBL)
      - Level of effort
      - Budget spent
      - Remaining duration
      - Issues resolved
      - Risks managed
      - Decisions reached
      - Reviews conducted
      - Approvals received
      - Team cohesion
      - Stakeholders managed



- o Taking corrective action

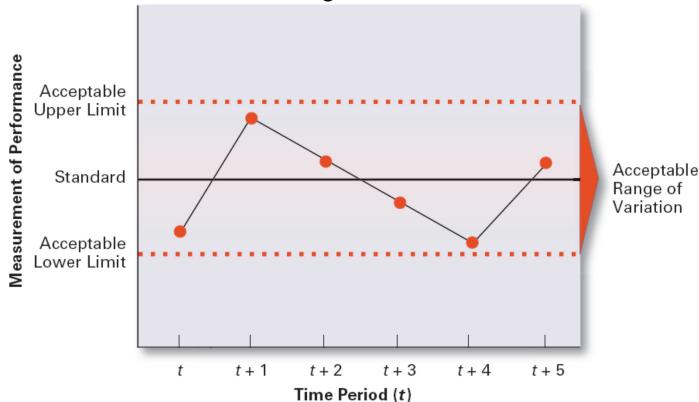
Behind Schedule	<ul style="list-style-type: none"> <li>► Accelerate</li> <li>► Increase resources</li> <li>► Reduce quality</li> </ul>	Ahead of Schedule	<ul style="list-style-type: none"> <li>► ...</li> <li>► ...</li> <li>► ...</li> </ul>
Over Budget	<ul style="list-style-type: none"> <li>► Reduce quality</li> <li>► Narrow scope</li> <li>► Accept substitution</li> </ul>	Under Budget	<ul style="list-style-type: none"> <li>► ...</li> <li>► ...</li> <li>► ...</li> </ul>
Outside Scope	<ul style="list-style-type: none"> <li>► Renegotiate costs</li> <li>► Redefine scope</li> <li>► Stop project</li> </ul>	Under Scope	<ul style="list-style-type: none"> <li>► ...</li> <li>► ...</li> </ul>
Consistent with TBL	<ul style="list-style-type: none"> <li>► ...</li> <li>► ...</li> </ul>	Inconsistent with TBL	<ul style="list-style-type: none"> <li>► ...</li> <li>► ...</li> </ul>

- o Effective project control

- Steps
  - Establish standards which will become measurement benchmark
  - Monitor standards through regular inspections and related activities
  - Measure performance against standard
  - Take corrective action to correct deviations (if required) and/or reinforce compliance
- Tools
  - Milestone charts
  - Budget charts
  - Control charts
  - Earned value reports
  - Action plans
  - Change request register
  - Contingency plans
  - Risk management plans

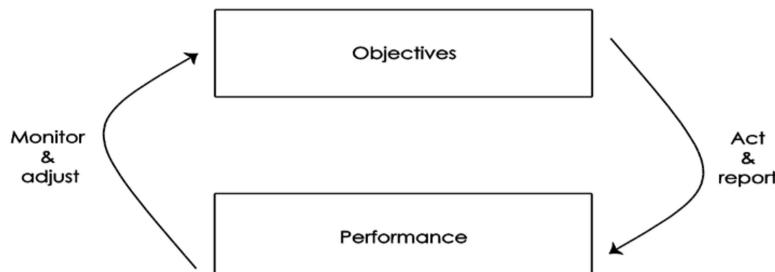
- o Defining acceptable range of variation

- Deviations outside this range needs attention



- Controlling project communications

- o Not isolated activity, fully integrated across project life cycle and all other project processes
- o Aim for optimal flow of information among all communication stakeholders at all times
- o Organised and summarised information reaching right people in line with both objectives and performance



## RISK MANAGEMENT

### Risk

- Risk
  - o Dealing with uncertainty and continuous change

- Possibility of loss or injury
- Situation, problem, enhancement or opportunity having a measured **impact** (positive - opportunity - or negative) on an **outcome**
- Exposure of an activity to an uncertain outcome
- Risk management
  - Iterative process of
    1. Identifying
    2. Assessing
    3. Analysing
    4. Managing and monitoring
    5. Evaluating and reviewing

### Identifying risk

- Potential sources of risk
  - **Key stakeholders** should all be involved in identifying, understanding and managing risks

Internal (controllable)	External (uncontrollable)
- Ambiguous project charter	- Economic cycles
- Communication bottlenecks	- Changing technology
- Lack of accountability	- Legislative constraints
- Managerial incompetence	- Environmental factors
- Lack of reporting	- Social changes
- Lags in decision making	- Supplier capability
- Poor deliverable definition	- Stakeholder expectations
- Inaccurate estimates	- Variable contractor performance
- Limited resources	
- Limited capability	

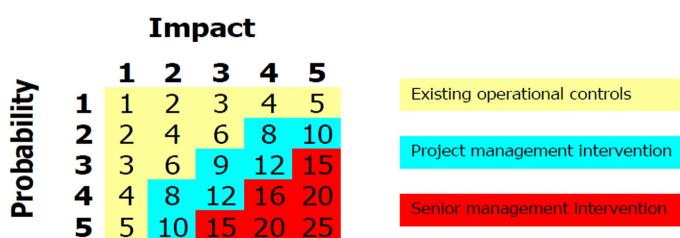
- Risks in each of the 9 PMBOK processes/competencies

Project management processes	Examples of potential risk
Integration	<ul style="list-style-type: none"> <li>- Inadequate methodology</li> <li>- Poorly defined life-cycle</li> <li>- Lack of approvals and signoffs</li> <li>- No authorised change-control process</li> </ul>
Scope	<ul style="list-style-type: none"> <li>- Poor definition of expectations</li> <li>- Lack of stakeholder involvement</li> <li>- No supporting documentation</li> <li>- Lack of precise requirement details</li> </ul>
Time	<ul style="list-style-type: none"> <li>- Scheduling conflicts</li> <li>- Deadlines agreed independently</li> <li>- Scheduling detail omitted</li> <li>- Critical tasks dominating the schedule</li> </ul>
Cost	<ul style="list-style-type: none"> <li>- Budgets agreed independently</li> <li>- Difficulty in tracking money spent</li> <li>- Lack of control over spending</li> <li>- Limited access to contingencies</li> </ul>
Quality	<ul style="list-style-type: none"> <li>- Failure to define quality standards</li> <li>- Monitoring and inspection costs</li> <li>- Schedule and cost implications from rework</li> <li>- Incomplete or ambiguous specification details</li> </ul>
Human resources	<ul style="list-style-type: none"> <li>- Poor project management expertise</li> <li>- Poor skills and training</li> <li>- Problems with monitoring and reporting performance</li> <li>- Operational priorities causing over-allocation issues</li> </ul>
Communications	<ul style="list-style-type: none"> <li>- Absence of accurate information</li> <li>- Lack of ongoing consultation with stakeholders</li> <li>- Uncontrolled documentation</li> <li>- Failing to update documentation</li> </ul>
Procurement	<ul style="list-style-type: none"> <li>- Non-compliance with specification</li> <li>- Viability of contractors</li> <li>- Supply, logistic, reporting and management problems</li> <li>- Contractual performance compliance</li> </ul>
Stakeholders	<ul style="list-style-type: none"> <li>- Inability to identify key stakeholders</li> <li>- Failing to control changing expectations</li> <li>- Disclosing confidential information</li> <li>- Lack of timely approval and signoff</li> </ul>

- **SWOT analysis**
  - Internal
    - **Strengths**
    - **Weaknesses**
  - External
    - **Opportunities**
    - **Threats**
- **PESTELG framework** (may also be useful to assess risks with global projects)
  - Identifies external factors - opportunities and threats
  - **Political**
  - **Economic/financial**
  - **Social** (including culture, values, language, religion, negative impact on community, etc.)
  - **Technological**
  - **Environmental**
  - **Legal**
  - **Global**
- Other tools and techniques
  - \* **Risk registers**
  - \* **Lessons learned**
  - Project completion reports
  - Historical research (or hindsight reviews)
  - Checklists
  - Fishbone diagrams
  - Brainstorming
  - Critical incident reports
  - Risk specialists
  - Strategic plans
  - Interviews and workshops
  - Project charter
  - Feasibility studies
  - Impact assessment studies
  - Industry databases
  - Subject matter experts
  - Specification descriptions
  - Simulation

#### Analysing risk

- **5 by 5 priority grid**
  - **Probability** of risk occurring
  - **Impact** of risk on project
  - Determines level of **intervention** and **priority**



Probability	Impact
1 Remote	1 Insignificant
2 Unlikely	2 Minor
3 Likely	3 Moderate
4 Very likely	4 Major
5 Certain	5 Catastrophic

- **Low** values 1-6: dealt with by **existing procedures**
- **Medium** values 8-12: **project manager** intervention
- **High** values 15-25: **senior management** intervention (project steering group and/or sponsor)

- Program evaluation and review technique (**PERT** analysis) considers **critical path** and other networks
- **SWOT** and **PESTELG** analysis - consider **issues impacting situation**
- **Expert judgement** - considers opinions, perspectives and viewpoints
- **Stakeholder forums** - involve key stakeholders; considers expectations, objectives and deliverables
- Decision trees - consider possible paths and expected values returned
- Sensitivity analysis - considers demand, feasibility, take-up
- Impact analysis - considers action and consequences

- Scenario scheduling - considers alternative scheduling options
- Contingency planning - considers possible options and recovery strategies
- Financial modelling - considers financial implications for funding and cash flows

### Managing risk

- Risk responses for negative risks
  - Reject: modify plan to **eliminate** risk (e.g. Rescheduling, scope adjustment)
  - Accept: **monitor** and **address** risk event as it arises
  - Mitigate: **proactive** action to reduce probability and/or impact of risk event
  - Transfer: **outsource** ownership and impact to third party more capable of dealing with risk
- Risk responses for positive risks
  - **Enhance**: actively **increase probability** and/or **impact** of an opportunity (e.g. Assigning additional resource to close out project earlier)
  - **Exploit**: **ensure** identified opportunity is realised by eliminating the uncertainty around it altogether so **opportunity definitely happens** (e.g. Using new technology or talent resources to reduce cost and duration required to complete project)
  - **Share**: **partnership** with **third party** (e.g. Joint venture where each party known for particular expertise that the other does not have)

### Monitoring and evaluating

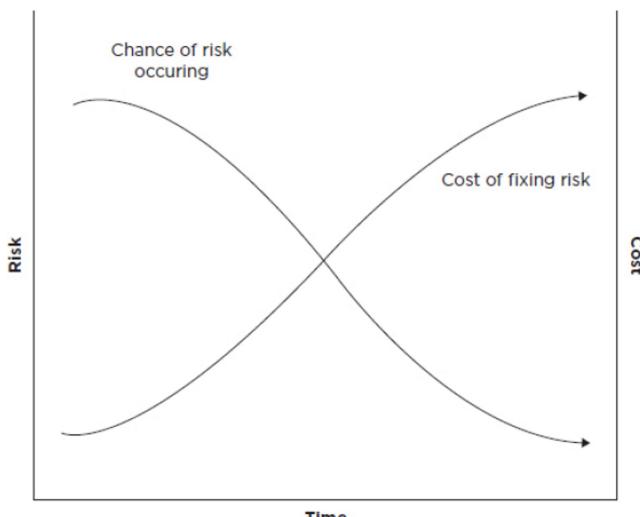
- Documenting risk register

Risk event	Probability	Impact	Priority	Strategy	Responsibility	Review
Inclement weather	4	Catastrophic (5) Schedule postponement	20	Seek approval for time extensions	Logistics officer	Revised priority (12)
Uncontrolled scope changes	5	Major (5) Revisions in schedule and budget	25	All proposed changes in writing and authorised	Project manager	Revised priority (14)
Fluctuating exchange rate	1	Major (4) Accessing contingency funds	4	Closely monitor cash-flow reserves	Project steering group	Revised priority (4)

- The more detailed the risk event, the more targeted the response
- Managed risk requires 'right' **owner**
- Risk is always **communicated** and owned by all stakeholders
- Risk either rejected, accepted or managed
- Risk can impact project schedule and other variables
- Ongoing risk control essential
- \* Risk register should be **updated** at **every phase** of project lifecycle

### Controlling project risk

- Risk management dilemma



- Risk is not static, **ongoing control** required
- Chance of risk occurring is higher at beginning of project, but less costly to fix
- Chance of risk occurring reduces later on in the project, but more costly to fix
- Project management as a strategy (not simply planning and execution)
  - Recognise and manage proactively project complexity
  - Decision making based on strategic approaches
  - Project life cycle thinking
  - Include variables in line with TBL

- Aligning risk profile
  - Risk averse
    - Low tolerance and ability to accept and manage risk
    - Conservative approach, proven techniques, **distanced from change**
    - **Caution** is principal focus
  - Risk neutral
    - Dispassionate tolerance and ability to accept and manage risk
    - No defined philosophies, reaction oriented, **measured indifference**
    - **Balance** is principal focus
  - Risk taking
    - High tolerance and ability to accept and manage risk
    - Challenges current thinking, **innovative** approach
    - **Experimentation** is principal focus

## PROCUREMENT MANAGEMENT

### Planning procurement management

- Processes necessary to **purchase** or **acquire products, services** or **results** needed from **outside** project team
- Process-based function driven by particular department or local division seeking to get possession of something that **solve** an **operational issue**
- **Value-adding** function that focuses on efficient attainment of goods, services or results that deliver a number of very specific and measured benefits to project
- Make best possible use of supplier's products and/or services while supporting changing scope, goals and objectives of project itself (if/when necessary)
- TBL and life cycle thinking as core of procurement
- **Procurement drivers**
  - Supply project with goods and services **as specified** and **as required**
  - Improved **relationships** with key suppliers (reliable network)
  - Balance output with both **value** and **quality**
  - Increase accountability in supply chain
  - Encourage greater **access** to innovative technology, premium materials, workplace competencies and expertise
- **Typical planning questions**
  - What is required?
  - How much will it cost?
  - From where will it be sourced?
  - When will it be needed?
  - Who will be involved?
  - How will it be managed?
  - Why is it the best option? (start with justification)
  - Will contracts be required? (yes is strongly recommended)
- **The 8 Rs of procurement**
  - Right **materials** (consider disposal issues)
  - Right **price**
  - Right **quantity**
  - Right **quality**
  - Right **source**
  - Right **reasons**
  - Right **time**
  - Right **return** (if for example return materials, machinery, etc.)
- **Procurement planning decisions**
  - **Make or buy** decision
  - Assess what project needs are and whether best satisfied by going to open market

Make decision (in-house)	Buy decision (out-house)
- Currency of skills	- Insufficient capability
- Known availability	- Conflicting operational and project priorities
- Cost effective resource allocation	- Enhance project scope
- Excess capacity	- Access to existing solutions
- Unknown supplier base	- Statutory and compliance requirement
- Existing management protocols	- Partnering opportunities
- Limited access to market	- Mitigate risk exposure
- Poor history of procuring	- Enhance existing relationships
- Time available to develop solutions	- Access to independent advice
- Opportunity to upskill in-house resources	- Need for contractual arrangement

  - Good starting point is **SWOT** analysis

### Separating scope of work from specification

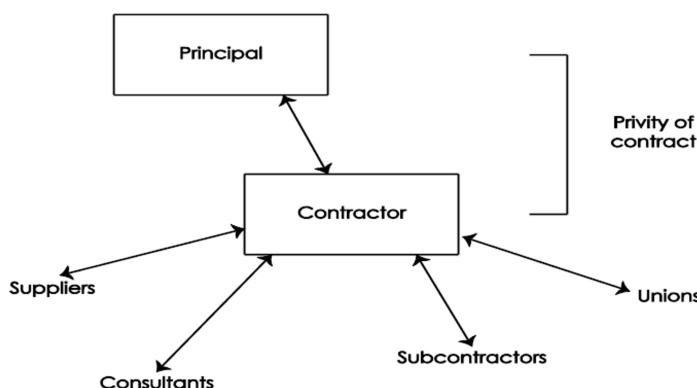
- **Scope of work (SOW)**: defines component of work that will be included in project, i.e. What project organisation wants. Identifies **what is required** (without specifying how)
- Specification: defines **technical detail** of work to be performed. Identifies **how** it must behave or function (especially when complex)
- **Suggestions for improving specifications**
  - Base them on **clear understanding** of project **scope** and agreed specification
  - **Clear, complete** and **user-friendly** solicitation documents
  - Express contract **clauses** and **conditions** clearly and unambiguously (e.g. Should be vs will be)
  - Include comprehensive **glossary** of terms
  - State **evaluation criteria** for assessing responses
  - Include response **templates** where possible (for consistency)
  - Use **third party** to review documents (objective, independent)
  - Include copy of **proposed contract** that will be used to administer agreement
  - Encourage alternative and/or **innovative** responses consistent with TBL and life cycle approach

#### Selecting potential suppliers

- Clear, complete, accurate and user-friendly solicitation documents ensures suppliers can address all criteria in their proposals
  - **Understanding** of requirement
  - **Technical** capability
  - **Management** capability
  - **Financial** capability
  - **Resource** capability
  - **Price**
  - Past **performance**
  - **Warranty**
  - **Legislation** compliance
  - References
  - TBL and life cycle thinking
  - Is a legal document necessary?

#### Contractual considerations

- **Essential contract elements**
  - Contract is legally binding agreement between two or more parties to act, or refrain from acting, in a particular way, i.e. Creating **legal rights** and **obligations** that are enforceable in law
  - With intent of **protecting interests** of both parties, contract should contain (as a minimum)
    1. An offer (capable of being accepted)
    2. Acceptance (capable of being communicated - preferably in writing)
    3. Intention/consent of each party to be legally bound (freely given)
    4. Consideration (something given back for the promise - e.g. Money)
    5. Mutuality (neither party is disadvantaged)
    6. Capacity (both parties not under any duress)
    7. Legality (it is not an illegal activity)
  - Inclusion of both express and implied terms, conditions and warranties
  - Provision for breach, remedy and non-performance clauses
- **Privity of contract**
  - Contract only exists between **buyer (principal)** and **seller (contractor)**, as distinct from all other parties



#### Types of contracts

1. **Fixed-price contract**
  - Delivery of well-defined product (goods or services) for a fixed price
  - **Detailed scope** or **requirement** is mandatory
  - Customer risks:
    - At mercy of sole source contractor
    - Incomplete specifications (due to project change) may lead to potential contract changes

- Tendency of contractor to use cheaper materials
- Contractor risks:
  - Requires careful cost estimation
  - Requires careful schedule estimation
  - Cost growth can lead to unprofitable projects
- 2. **Cost-reimbursable contract**
  - Seller paid for **actual costs** incurred **plus a fee** representing seller's profits
  - Often reduce initial negotiations as finite scope not required to get project underway
  - Customer risks:
    - Final cost unknown
    - Sole source contractor
    - Poor specification leads to more costs and contract changes
  - Contractor risks:
    - Fee percentage declines as costs rise
    - Rising costs can damage relationship with customer

- 3. **Times and material contract**
  - Contains features of **both** fixed fee and cost plus contracts
  - Customer risks:
    - No specification
    - Open-ended
    - Sole source contractor
  - Contractor risks:
    - Fixed rates
    - No defined tasks
  - Other considerations:

Considerations	Fixed-price	Cost-reimbursable	Times and material
<i>Final price</i>	Known	Not known	Not known
<i>Profit</i>	Expected, potentially variable, but not guaranteed	Agreed and fixed	Assumed
<i>Risk</i>	High (supplier)	High (buyer)	Low (supplier)
<i>Cost</i>	Fixed	Estimated only	Not known
<i>Terms</i>	Rigid	Flexible	Flexible
<i>Responsibility</i>	Borne by supplier to accurately estimate true costs	Borne by buyer to ensure costs are legitimate	Borne by both buyer and seller
<i>Preparation time</i>	Detailed and lengthy	Quick to get up and running	Little required
<i>Protection afforded</i>	Buyer	Supplier	Both
<i>Contingency</i>	Potentially high	Low	Not applicable
<i>Variations</i>	Costly	Allowed	Allowed
<i>Auditability requirement</i>	Low	High	High
<i>Degree of control</i>	Low	Very high	Low
<i>Completion incentive</i>	High	High	Low
<i>Performance incentive</i>	High, if savings and efficiencies made by seller	Low, often agreed and fixed	None
<i>Scope requirements</i>	Final, detailed and specific	Indicative, subject to revision	Fluid
<i>Ease of administration</i>	Relatively easy	Considerable time and effort	Low level required

- No perfect way to do it, but best to have good relationship with supplier

- **Project management practices impacting project performance overseas**
  - Quality of contract
  - Quality of response to perceived variations and extent of changes to contract
  - Cultural and language barriers
  - Relationship building
  - Public image and public relations

#### Conducting procurement activities

- **Obtaining seller responses, selecting a seller and awarding a contract**
- How? Request for proposal, request for quotation, invitation for bid, expression of interest, invitation to tender
- Evaluation of responses
- **Additional negotiations** (where required) to add value to project
- Award contract
- Mutually binding agreement between two or more parties
- Triggers contract administration phase

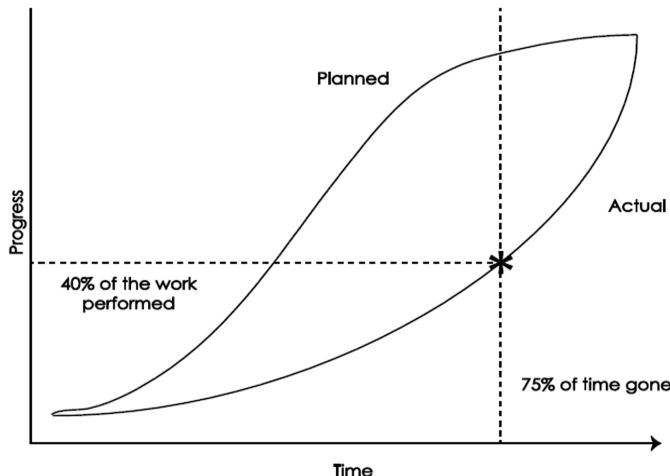
- Example of evaluating potential suppliers

Criteria	Weight	Supplier 1		Supplier 2	
		Score	Total	Score	Total
Quality / TBL	4	2	8	5	20
Technical capability	4	4	16	3	12
Past performance	4	3	12	5	20
Price	3	3	9	3	9
Timely supply	5	5	25	5	25
			70		86

Weight: 1 (low) 5 (high) Score: 1 (low) 5 (high)

#### Controlling procurement activities

- Contract manager, administrator, superintendent or project manager is responsible for **contractual relationships** and integrating project management processes throughout lifecycle
  - **Directing and managing** authorised work
  - **Inspecting and verifying** completed work prior to payment
  - Ensuring all **variations** are properly assessed and **approved**
  - Confirming rectification of all **corrective work**
  - Maintaining accurate historical **records**
- **Performance reporting**
  - Discrepancy between what was planned and what actually occurred over time
  - Performance below the line - severe contractual issues would arise from this reported position



#### Closing out procurement activities

- **Reviewing** all procurement documentation
- **Updating** and **archiving** all appropriate records
- **Financial reconciliations** (be fair, build reputation)
- Analysing all requested and approved contract changes
- Completion of agreed **inspection** and **testing** procedures
- Reporting and rectification of any defects and/or damages
- **Auditing** entire procurement process
- Written **confirmation** that project (or at least supplier's involvement) has been completed
- **Common procurement issues**
  - Types of contracts (seek legal advice)
  - Documentation
  - \* **Transparency**
  - Performance metrics (ensure clear and referred to)
  - Managing multiple (external) providers and potential issue escalation
  - Constraints, risk, assumptions
  - Objective evaluations
- **Negotiation - getting to yes**
  - Separate people from problem (**focus on problem**)
  - Focus on interests, not position
  - Invent options for **mutual gain**
  - Insist on using **objective criteria**
  - Preparation for negotiation

- Get the facts right, e.g. Who does what
- Consider negotiation power, importance of relationship, cultural, language and saving face issues
- Know what can be compromised (gotta vs wannas)
- Set negotiation **tone** (environment important)
- Develop your **BATNA** and be **patient** as negotiations are full of ups and downs
- Remember negotiations are 50% psychology and 50% sales

## **INTEGRATION MANAGEMENT**

- Activities that identify, define, combine, unify and coordinate within and across all other processes

### **Developing project proposal**

- Confirms existence of project itself (as distinct from operational priority)
- Enables **foundational understanding** of project
- Validates alignment of the (change) project to **strategic direction** of organisation, while also considering ongoing operational priorities
- Documents (in broad terms) organisational **need**, **assumptions**, **constraints**, **stakeholder** requirements, provisional **estimates** of both time and money, and high level **risk** (among others)

### **Developing project management plan**

- Goal is to have all plans integrated into a single, comprehensive and endorsed project management plan that **defines basis of all project work** (combine all project areas together)
  - **Scope** management plan
  - **Time** management plan
  - **Cost** management plan
  - **Quality** management plan
  - **Human resource** management plan
  - **Communications** management plan
  - **Risk** management plan
  - **Procurement** management plan
  - **Stakeholder** management plan
  - **Integration** management plan
  - Plan for **TBL**

### **Directing and managing work**

- PM responsible for:
  - Ensuring project **objectives** are accomplished
  - Creating **deliverables** in line with planned work
  - Providing opportunities for project **team** to learn and **develop**
  - Obtaining and allocating required **resources**
  - Establishing open **communication channels**
  - Generating **performance reports**
  - Engaging with **stakeholders**
  - Monitoring **risk** events and **treatment** responses
  - Documenting **lessons learned**

### **Monitoring and controlling performance**

- Activities focus on:
  - **Comparing** actual project **performance** against planned performance (as per plan)
  - **Assessing** performance to identify what corrective or preventative actions may be required
  - Recommending appropriate **follow-up action**
  - Identifying and responding to existing, recurrent or new **risks**
  - Maintaining accurate **records**
  - **Circulating** all relevant reports and **information**
  - **Verifying** implementation of all approved **changes**

### **Performing integrated change control**

- A formalised, agreed and practised **integrated change control process** in place from the project's inception ensures **only approved changes** are incorporated into the revised baseline
- Written and recorded **variation registers** or **change logs**, **change requests** nominate the required change along with any justification and impact revisions to time and cost baselines
- Working in conjunction with other stakeholders, project manager will ensure any proposed change is reviewed, evaluated, approved, delayed, rejected or actioned, and that these decisions are communicated

### **Closing down project**

- Getting **client acceptance** (100%) - do not assume this will happen
  - Detailed **completion checklist**
  - **Satisfaction levels** and surveys
  - Defects warranty
  - **Written** (formal) **acceptance procedure**
  - Specification conformance **inspection** and **testing**
  - **Reviews** and evaluations

- **Walkthroughs**
  - **Final payments**
- **Debrief stakeholders**
  - Was the project delivered
    - On time?
    - On budget?
    - On scope?
    - On specifications?
  - Were all variations and scope changes addressed competently?
  - Were TBL and life cycle included?
  - Were communication channels effective and kept open at all times?
  - Was reporting documentation accurate?
  - Was project managed professionally?
  - Did they have confidence in the project manager and team members?
  - Were the issues resolved in a win-win solution for all?
  - What improvements exist for how future stakeholders are managed?
- **Project performance review**
  - Final **kick-out meeting**
  - Concise history of project
  - Explanation of variances (justification)
  - Document successes and failures (be transparent)
  - Evaluate project's **lessons**
  - Recommendations for future projects
  - Identify processes requiring amendment (new technology, efficiency)
  - Assess administrative support (waste of time for PM to do admin)
  - Review project performance
  - Evaluate suitability of tools and processes
  - Critically assess organisational structure
  - Review accuracy of estimates (assumptions)
  - Evaluate team performance
- **Learning lessons**
  - Missed deadlines
  - Inaccurate estimates and calculations
  - Schedule revisions
  - Inspection and testing of failures
  - Poor contractor performance management (reliability)
  - Lack of team cohesion
  - Cost over-runs
  - Unauthorised scope changes
  - Poor quality work - including TBL - which required reworking (waste time and money)
  - Unresolved and escalated conflict

#### **Mapping project processes (and project management competencies)**

- **KRAC**
  - Challenge and/or change your processes
  - **Keep** (if it works, keep it)
  - **Remove** (if it doesn't work, remove it)
  - **Add** (was something missing)
  - **Change** (what can change)
- **Project manager and team**
  - Project manager
    - Were you satisfied with outcome?
    - Did you have sufficient support? (e.g. From client, sponsor, director)
    - Were your communications approaches effective?
    - Was the methodology/processes appropriate for the type of project?
    - Do you require more training?
    - Were you satisfied with your team?
  - Project team
    - Was your workload appropriate?
    - Did you experience any team conflicts?
    - Was team communication effective?
    - Was your work related to your skills, knowledge and competencies?
    - Were you adequately rewarded for your project work?
- **Celebrate achievement**

- Arrange kick-out meeting with your team members
- Acknowledge team effort
- Introduce team members to client (if they have not already met them)
- Formally appraise and record team members' positive performance
- Ask team (or individual) how they would like to be rewarded
- Give constructive feedback to team (both as a team and individually)
- Get all team members to give each other constructive feedback
- Give team members challenging duties to move onto (one of greatest motivators)
- Assign team members to new, and perhaps more complex, project work
- Channel your personal feedback to team members up the chain of command so a higher authority can recognise their contribution
- Recommend team members for promotion as a result of their achievement
- Hold memorable party with your team members and their families

- **Archiving project file**

- Create single source location
- Include all supporting information
- Completion close-out checklist
- Required approvals and sign off
- Secure completed project file

## **ETHICS**

### **ETHICAL ISSUES IN BUSINESS AND PROJECT MANAGEMENT**

#### Ethics

- **Moral dimension of ethics**

- Moral philosophy - branch of philosophy that studies principles of **right** and **wrong** in **human conduct**, i.e. Science of conduct
- Set of **guidelines** - models/frameworks constructed by society that direct/prescribe appropriate **values** and subsequent **behaviours**
- Often **culturally determined** (right or wrong in one culture may be different in another)
- (Consider wider range of stakeholders)

- **Normative dimension of ethics**

- Asks the question, "what is the right thing to do?"
- Moral correctness based on personal values, shaped by:
  - Family
  - Religion
  - Experience
- **Personal feelings** on how we should treat **people** and **environment**
- Influences **mindset, expectations, objectives, attitude, goals, behaviour, habits**

- Cosimo's values

- Honesty, integrity, accountability
- Excellence
- Positive mindset (empowered to make decisions)
- Self-discipline
- Team culture
- Customer experience

#### Why ethics?

- Moral **awareness** (recognise moral issues)
- Moral **reasoning** (assess opposing arguments on moral issues - holistic view)
- Moral **coherence** (forming consistent viewpoints based on facts)
- Moral **imagination** (look for alternative responses to moral issues - differing views)
- Moral **communication** (use of ethical language)
- Moral **reasonableness** (ability and willingness to be morally reasonable - fair, objective)
- **Respect for people** (genuine concern for safety and well-being of others and oneself)
- Tolerance for **diversity** (respect for ethnic and religious differences, and acceptance of reasonable differences in moral perspectives)
- Moral **hope** (appreciation of possibilities of using rational dialog in resolving moral conflicts - best solution)
- **Integrity** and **honesty** (maintaining moral integrity and honesty, and integrate professional life and personal convictions - align with professional and organisation values)
- **Growing social responsibility** movement since 1960s led to increased social expectations
  - Social **equity** and distribution of welfare, **happiness** at work, leisure life satisfaction and overall **QoL**
  - **Environmental** quality, human **health**, bioethics, **animal welfare** and potential impact on **future generations**
  - Recognition that environment and balanced use of natural resources are vital for achieving good QoL, both presently and for future generations
- **Regulatory control**
  - Protection of workers, consumers, citizen, stakeholder and environment rights (relate to TBL)
- Demonstrated successes
  - **New** sustainable business engineering and project management **models**
  - New paradigms (competition = **coopetition**), i.e. Cooperative competition (working with competitors) and focus on relationship building throughout value chain

- Success involves long-term view, strong internal values driving behaviour, careful selection of compatible business partners, changes to technology systems and processes consistent with above
- Sustainable development
  - Meet needs of present without compromising ability of future generations to meet their own needs
  - **Ethics and sustainable development** are **strongly related** with respect to:
    - Financial bottom line (make a profit while balancing need for social, environment and natural resource balance)
    - Social bottom line (focus on society as a whole, not just shareholders)
    - Environmental bottom line (controlling pollution and toxic emissions, preserve biological diversity)
    - Natural resources (conservation and search for substitutes for non-renewable resources)

#### Engineering tasks/responsibilities and possible ethical problems

- Engineering ethics: responsibilities and rights that ought to be endorsed by those engaged in engineering, and also of desirable ideals and personal commitments in engineering
- 1. **Conceptual task** (to solve problem/create opportunity)
  - Examples of possible problems: unrealistic assumptions, untrue feasibility studies, violation of patents and/or trade secrets, test of prototype done only under most favourable conditions, not complete, etc.
- 2. **Design** (specifications)
  - Examples of possible problems: design changes not carefully checked, lack of risk identification and management plan
- 3. **Manufacture** (scheduling tasks, fabrication of parts, assembly/construction, quality control, testing)
  - Examples of possible problems: promise of unrealistic completion dates, bribes, inadequate testing of purchased parts
- 4. **Implementation** (monitoring social and environmental product/project effects)
  - Examples of possible problems: no formal procedure for following project/product effects on society and environment
- 5. **Final task** (recycling/disposal)
  - Examples of possible problems: lack of attention to ultimate product disposal, fail to provide public notification of hazards
- Examples of ethical issues in engineering practice
  - Intellectual property (**IP**) issues
  - **Environmental** ethics
  - Ethics and **research**
  - **Risk** management, safety and health issues
  - Gift giving, bribery and **corruption**
  - **Whistle-blowing**
  - **Computer** ethics

#### MORALE FRAMEWORKS: ETHICAL THEORIES AND HOW TO USE THEM

##### Main ethics theories

1. Utilitarian/consequences-based theory	Action judged as ethical or unethical based on consequences/outcome
2. Deontological/duty-based theory	Actions judged on ethical standing alone and without regard to consequences
3. Virtue-based theory	Focus on individual, not on the action. Individuals should seek to live a virtuous life

- Others (not examinable):
  - Egoism (self-centred - all activities directed toward self-satisfaction)
  - Humanism (well-being, dignity and autonomy of everyone)
  - Relativism (moral values relative to particular environment)
  - Eastern philosophy (Confucianism,

##### Utilitarian/consequences-based theory

- "The **end justifies the mean**"
- Focus on action, i.e. **Actions** which give **greatest net benefit** for **greatest number of people**
- Ethically right action is the one that produces **more good than bad consequences**
- E.g. Pharmaceutical company releases a new drug with a few side effects. The drug is beneficial to a large number of people to combat a particular disease than those troubled by a minor side effect
- Basic principles
  - **Maximising benefits**
  - **Minimising costs**
- Predominates Western thinking, particularly business and marketing
  - Cost-benefit analysis
  - Gain of market share to loss of others
  - Many other strategic competitive advantage tools
- Consumer sovereignty (consumers have power over what companies produce)
- Downfalls
  - **Minority** rights at risk
  - **Who decides what 'good' is?**
  - Assumes 'end' justifies the 'means'
- Ford Pinto case
- Cost-benefit analysis leaves a number of questions unanswered

- Who decides what counts as the benefits and costs to be measured? (e.g. Cost of human life)
- Can a standard measure be reached?
- What counts as consequences?
- How far into the future should consequences be calculated?

- Summary

- Action is right if it produces best consequences overall
- Greatest good for greatest number
- Act is right if it maximises overall utility
- Most common form of consequentialism (forward-looking)

### Deontological/duty-based theory

- Based on idea that we are morally obliged to follow fundamental rules and principles regardless of consequences
  - To do the right thing simply because it is the right thing to do
  - Backward-looking with emphasis on means rather than end
- Morality is a matter of duty - duty-based approaches to ethics
- Duty not determined by reference to consequences but rather to moral rationality
- Most famous deontologist is Immanuel Kant (1724-1804)
  - Argued for logical consistency, a 'maxim' which he called categorical imperative.
  - Kant proposed 3 formulations of categorical imperative:
    1. Act as if, through your actions, you were making universal law for everyone to follow.
      - Do things we would tolerate anyone else doing, and not give ourselves privileges or excuses
      - E.g. Resist temptation to bribe contractors, mislead customers, delay payment to suppliers
    2. Always treat any human being (self included) as an end in himself/herself, never merely as a mean to an end
      - E.g. Respect safety and dignity of employees/customers, do not take advantage of others' incapacity
    3. Act as if you were a member of a community of fellow moral legislators who are ends in themselves (set rules together)
      - E.g. Do not force your will upon another
- Kantianism (both strong and weak forms)
  - Strong (categorical imperative) - you must respect rights of future generations and refrain from impinging on them
    - Issues - only if ethical ground for decision making is sought
  - Weak (conditional imperative) - if you value future generations the refrain from impinging on them
    - What if we don't value?
- Duty-based approaches typically include list of duties, obligations to be adhered to, including:
  - Universally binding duties of
    - Fidelity (faith, loyalty)
    - Gratitude
    - Justice
    - Beneficence (generosity)
    - Self-improvement
    - Non-maleficence (non-harming)
  - Additional principles:
    - Be fair, obey law, keep promises or contracts, respects rights of others, do not lie or cheat, help those in need, avoid and prevent harming others, encourage others to follow these principles
- Duty-based theories suppose impacts are known
  - If not and the cost is high, unlikely that firms will respond, e.g. Global warming, loss of biodiversity
- Summary
  - Deontological theory assess right from perspective of the act itself
  - Features of act itself determine whether it is good or bad
  - All people possess rights and in doing so have corresponding duties
  - Kant was a deontologist who said that an act was right in so far as it obeyed a maxim which could be universalised (categorical imperative)
  - Treat people as ends in themselves, not as means to your ends (categorical imperative)
- Both utilitarian/consequentialist and deontological/duty theories are relevant to business (parts of each are beneficial)
- It is necessary for business to make a profit (consequence), but not at all costs (deontological)
- Also necessary to take into account interests and consequences other than profit, i.e. Social and psychological impact, QoL, TBL
- Necessary restrictions on what can be traded, i.e. Drugs, child sex and labour, etc. (deontological)
- Free markets are controlled by respect for persons and their rights (utilitarian)

### Virtue-based theory

- A number of philosophers in recent years have argued for a virtue-based moral theory in addition to or instead of deontological and utilitarian approaches
  - Making good or sound decisions involve exercise of judgement
  - Moral rules do not solve real moral problems because they must always be applied, and any application requires judgement, which cannot be automatic and which requires a virtuous person to make the judgement correctly (i.e. Good to have rules, but need to apply

those rules using judgement)

- Consistent with Aristotelian approach that guiding purpose of life should be the quest for goodness and virtue
- Aristotle divided virtues into two basic kinds
  - Intellectual virtues - highest of which is wisdom, result from proper functioning of higher or intellectual aspects of human beings
  - Moral virtues - derive from proper control by reason of bodily appetites and inclinations. We are not born virtuous, we become virtuous by practice
- Virtuous professional is successful professional, just as virtuous life is the happy life
- Anthropocentric view where 'man is the measure of all things'
  - Whereas consequentialism and deontology determine what makes a right act right, virtue ethics takes a normative stance on how to go about achieving something of moral worth
  - What is right is that that would be **carried out by virtuous person** (or what a virtuous organisation or marketer would do)
- Ethics can be taught, but ethical conduct cannot, it must be **practiced**
- **Summary**
  - Concentrates on person who performs the act
  - Particularly focuses on character traits of person or the character development of the person
  - Possession and development of good character of moral virtues will lead a person to do the right thing

#### MORAL REASONING AND CODE OF ETHICS

- **Ethical dilemmas:** situations in which **moral reasons** come into **conflict** or when application of moral values are **unclear**
  - Moral values are many, varied and can make competing claims
- Moral judgement is then required
  - Process of forming and linking:
    1. Moral problem
    2. Possible solutions (exclude nothing)
    3. Ethical judging of these solutions

#### [EXAM QUESTION - 9 tests and ethical cycle]

- **9 tests (LDCUMSSJR)**
  - Develop list of questions that reflect various ethical theories that can aid managers in determining whether a particular contemplated action is ethical or not
  - Recognise that there are sometimes conflicts among various ethical principles that imply different and sometimes competing positions. Number of conflicts increases as number of stakeholders increase
  - Guideline for decisions:
    1. Does action **violate law?** (**legal test**)
    2. Is action **contrary** to widely accepted **moral obligations** (duties of fidelity, gratitude, justice, non-maleficence, beneficence)? (**duties test**)
    3. Is it likely that any **major damages** to people or organisations will result from contemplated actions? (**consequences test**)
    4. Is there a satisfactory **alternative action** that produces **equal or greater benefits** to parties affected than the proposed action? (**utilitarian test** - maximise profit without affecting others)
    5. Does action violate any other **special duties**, i.e. Protect **consumers** and provide safe products? (**special obligations test**)
    6. Is the **intent** of the contemplated action **harmful?** (**motives test**)
    7. Does contemplated action **infringe** upon **rights** of consumer (and other **stakeholders**) in any way? (**rights test**)
    8. Does contemplated action leave **another person** (or sentient being) **less well-off?** (**justice test**)
    9. Can contemplated action be considered **sustainable** in that it does not negatively impact upon future generations? (**sustainable test**)
- **Ethical cycle**
  1. **Case**
  2. **Moral problem statement** - precise/specific formulation (not legal problem, legality should already be satisfied)
  3. **Problem analysis** - clear identification of relevant elements, i.e.
    - a. **Stakeholders** (including external and future generations)
    - b. **Moral values involved**
    - c. **Relevant facts**
  4. **Options for action** - **all possible** options be identified (thinking creatively is essential)
  5. **Ethical judgement** - thorough application of moral concepts, ethical theories, models and frameworks
  6. **Reflection** - reflect on outcome of previous stage
  7. **Morally accepted action(s)** are chosen to solve case/ethical dilemma

#### Code of ethics

- Engineering has direct impact on QoL of all people, so engineers must perform under standard of professional behaviour and adhere to highest principles of ethical conduct
- Code of ethics: state moral responsibilities of engineers as seen by the profession and as represented by a professional society
  - Values and principles that shape decisions we make in engineering practice
  - Functions as **commitment by profession** as a whole that engineers will serve the **public health, safety and welfare**
- **Roles of code of ethics for engineers**
  - **Serving and protecting public**

- Engineering involves advanced expertise that professionals have and public lacks
    - Professionals stand in fiduciary relationship with public - trust and trustworthiness essential
  - **Guidance**
    - Provide helpful guidance by articulating main obligations of engineers
  - **Inspiration**
    - Positive stimulus (motivation) for ethical conduct
    - Voice what it means to be a member of a profession committed to responsible conduct in promoting safety, health and welfare of public
  - **Shared standards**
    - Diversity of moral viewpoints among individual engineers makes it essential that professions establish explicit standards, in particular minimum (but high) standards
    - In this way, public assured of standard of excellence on which it can depend, and professionals provided a fair playing field in competing for clients
  - **Support for responsible professionals**
    - Give positive support to professionals seeking to act ethically
    - A publicly proclaimed code allows an engineer under pressure to act unethically to say "I am bound by the code of ethics of my profession, which states that..."
  - **Education and mutual understanding**
    - Encourage shared understanding among professionals, public and government organisations about moral responsibilities of engineers
  - **Deterrence and discipline**
    - Can serve as formal basis for investigating unethical conduct
    - Professional societies do suspend or expel members whose professional conduct has been proven unethical
    - Can be powerful sanction when combined with loss of respect from colleagues and local community that an action is bound to produce
  - Contributing to **profession's image**
    - Present positive image to public of ethically committed profession
    - Reputation of profession, like reputation of individual professional, is essential in sustaining trust of public
- **Limitations of codes**
- No substitute for **individual responsibilities** in dealing with real world ethical dilemmas
  - Codes may include only **general wording**, leaving areas of **vagueness**
  - Despite value of guiding professional conduct, codes are **not always complete** (not exhaustive) and final word

## STEPS IN RESOLVING ETHICAL DILEMMAS → Exam

### Line drawing approach

- Used when moral principles are clear, but a large extent of '**grey area**' exists
- Two paradigms considered
  1. At one end, place the '**positive paradigm**' (i.e. Something which is unambiguously morally acceptable)
  2. At the other end, place the '**negative paradigm**' (i.e. Something which is unambiguously not morally acceptable)
  3. In between is placed the **problem** under consideration, along with other similar examples
- Scenario
  - It is proposed that our company dispose of a slightly hazardous waste by dumping it into a lake.
  - A nearby town takes its drinking water supply from this lake.
  - Our research shows that with the amount of waste we plan to put into the lake, the average concentration of the waste in the lake will be 5 parts per million (ppm). The limit for this material has been set at 10ppm. At the 5 ppm level, we expect no health problems, and consumers would not be able to detect the compound in their drinking water.
  - Positive paradigm (PP): The water supply for the town should be clean and safe;
  - Negative paradigm (NP): Toxic levels of waste are put into the lake  
(Dump toxic levels of waste in lake) NP \_\_\_\_\_ PP (Water should be clean & safe)
  - Additional hypothetical examples for consideration:
    1. Our company dumps the chemical into the lake. At 5ppm, the chemical will be harmless, but the town's water will have an unusual taste
    2. The chemical can be effectively removed by the town's existing water treatment system
    3. The chemical can be removed by the town with new equipment that will be purchased by the company
    4. The chemical can be removed by the town with new equipment for which the taxpayer will pay
    5. Occasionally, exposure to the chemical can make people feel ill, but this only lasts for an hour and is rare
    6. At 5ppm, some people can get fairly sick, but the sickness only lasts a week, and there is no long term harm
    7. Equipment can be installed at the plant to further reduce the waste level to 1ppm
    8. ...
  - Hypothetical examples should continue until it's clear what the best resolution would be.
  - Now, let's redraw our line including our hypothetical examples
    - "**P**" on the line stands for "**the problem under consideration**"  
(Dump toxic material) NP \_\_\_\_\_ 6 \_\_\_\_\_ 5 \_\_\_\_\_ 4 \_\_\_\_\_ 1 \_\_\_\_\_ P \_\_\_\_\_ 7 \_\_\_\_\_ 2,3 \_\_\_\_\_ PP (Water be clean & safe)
  - As explained, given that no humans will be harmed and waste levels are below those that could cause harm, dumping the toxic waste is probably a morally acceptable choice.

- However, since it's far from the positive paradigm, there are surely better choices that can be made, and our company should investigate these alternatives.
- Although this approach seems ethically acceptable, other considerations should include:
  - **Subjective** aspects of this approach (personal views)
  - **Legal** aspects
  - **Political** aspects
  - **Wider community** perception of the matter
- Look for option that eliminates moral issues
- Line drawing can help solve ethical aspects of a problem, but remember that a choice which may appear morally acceptable may not be the best choice
- The immoral choice is never the correct choice (remove the NP)
- To be effective line drawing must be used **objectively, honestly** and **transparently**

**Stages hierarchy model** → Exam      **Don't confuse with ethical question**

- According to this model, there are seven stages of moral development
  - **Pre-conventional morality** (stage 1 and 2)
    - **Self-interest**, and concerned only about personal gain or loss
    - Questions asked in these stages: "What's in it for me?" "Why should I bother to help?" "Who's in charge?"
    - Social norms and conventions only obeyed if there is a **direct payoff**
    - **Very minor consideration** of other **stakeholders**
  - **Conventional morality** (stage 3 and 4)
    - Stage 3: concern is to **close friends, family and associates** by meeting their expectations
    - Stage 4: **professional integrity** and **lawful pursuit** becomes an important end in itself
    - Most people
  - **Post-conventional morality** (stage 5, 6 and 7)
    - Rules and/or goals are seen to be invalid unless founded on a concern for **social justice** and **collective well-being** (TBL approach)
    - Striving to be reasonable, consistent and purposeful in pursuit of principles that are good for **community**
    - Holistic, broader community and **future generations**, long-term difference made
    - < 1/5th of adults reach stage 5, and stage 6 and 7 are rare
- Model of development of moral reasoning capacity, i.e. People at higher levels (e.g. 6-7) still retain ability to assess situation from lower stages
- Factors such as **temptation, stress, bad mood**, etc. can **alter** people's **moral disposition**
  - E.g. Corruption spreads not only among people considered to be retarded in their moral development who are incapable of reaching stage 4 and above, but can also involve people who, for whatever reason, fail to apply their full moral reasoning capability

## MANAGING CROSS CULTURAL BUSINESS ETHICS

- Globalisation involves companies running projects in a variety of countries
- Many legal, political, social, economic, ethical, cultural, religious, etc. differences exist between countries
- As a result, it can be very difficult compromise decisions such as project objectives, inputs, outputs, etc. while maintaining one's integrity and principles
- Many **structural differences** between Australian system and other countries' systems exist
  - Main difference is scarcity on international **level of background institutions** - including **laws**, accepted **practices**, **moral norms** and **social demands** - to control/guide international business and ethical projects implementations
  - This may result in many great abuses (e.g. Child labour, unfair wages, unacceptable working conditions, etc.)
- Assuming ethics is important in international business, whose ethics should business follow?
- When the norms of the home and host country are in conflict, there are four options available to a multinational company
  1. Follow the norms of the **home country** because that it is the **patriotic** thing to do
  2. Follow the norms of the **host country** to show proper **respect** for the host country's **culture** (i.e. When in Rome, behave as Romans do)
  3. Follow whichever norm is **most profitable**
  4. Follow whichever norm is **morally best**
  - The four options are **not mutually exclusive** (aim for TBL and not to compromise own morals)
- To reduce likelihood of many abuses occurring, a number of norms should be implemented, including:
  - Implementing "the moral minimum" which is to **do no intentional direct harm**. This applies to all actions of all people, corporations and countries
  - If project is morally justified, it should **benefit** the **host country**. However, the good of the country is not the same as the good of corrupt leaders or of an oppressive elite country. It must **include** the good of the **ordinary people** of the country
  - Respect the **human rights** of workers, consumers and all others in the host country (all stakeholders, including **future generations** - **[EMPHASISE IN EXAM]**)
  - Promote **development** of just **background institutions** internally **within country** as well as on **international** level (help bring in standards and better frameworks)
  - Respect **laws** of host country, as well as its **culture** and local **values**, providing these do not violate human rights or impose immoral laws
- These norms are examples of rules that can be generated and defended by the actions/decisions of an ethical project manager in a foreign country

- Ethical standards adopted can be a reflection of the standards achieved by negotiating and compromising fairly
  - Negotiation is considered morally justifiable and is often the proper procedure to follow
  - A transaction/practice is just if all stakeholders potentially affected by it, freely agree to it as just
  - A just compromise does not involve compromising one's principles and integrity. The ethical requirement is to keep negotiation fair and just, however all the concerned and affected parties define justice

#### Universal moral values for corporate code of ethics

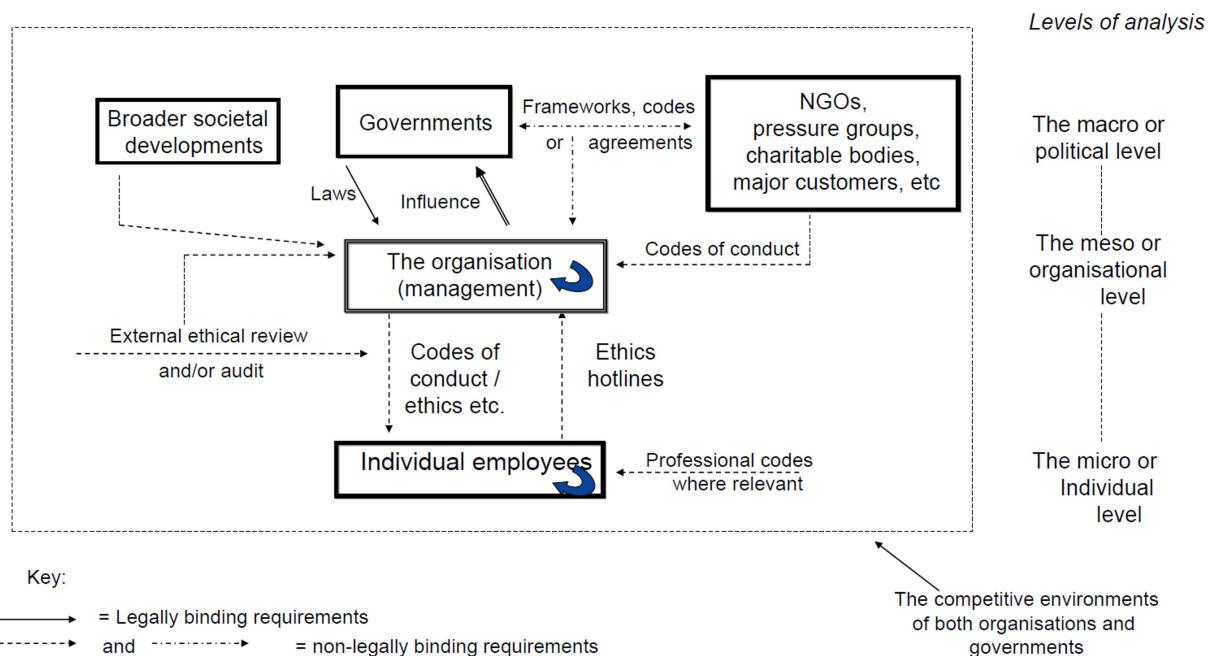
- Universal moral values are generated by considering three sources (1) corporate code of ethics, (2) global code of ethics, and (3) business ethics literature
- Six universal moral values for corporate codes of ethics have been proposed:
  1. Trustworthiness (integrity, honesty, loyalty, transparency)
  2. Respect (for human rights)
  3. Responsibility (accountability in self, self-restraints)
  4. Fairness (equality, impartiality)
  5. Caring (no harm, empathy for staff, community, stakeholders)
  6. Citizenship (TBL, life cycle thinking, obeying law)

#### UN Global Compact's ten principles (not examinable)

- Cross-cultural judgement concerns with practices, institutions, general systems or theories other than those of one's culture, society or system
- These judgements are product of a country's own point of view or concept of justice
- Different systems can be just and justice does not require that all countries adopt the US (or any other) view of justice, changing their political, social and economic systems to match or suit those of any other country
- (Integrate strengths into one)
- The best starting point in further development of standards for managing cross-cultural business ethics is self-regulation by business within guidelines and standards that already exist (start by the way we do things)

#### ETHICAL MANAGEMENT AND LEADERSHIP

Formal and informal pressures for ethical behaviour



#### Loyalty and integrity

- Executive integrity
  - Is more than presence of morality or appropriation of values, it involves the process of seeing or creating values
  - In this sense, organisation is not viewed as a closed, determined structure but is seen as a perpetual state of becoming
  - Dialogue is transformation of mere interaction into participation, communication and mutual empathy
  - Therefore, executive integrity is breaking out of narrow individualism and based on fearless trust in what true dialogue and understanding might bring, both new responsibilities and forms of responsiveness to the other
- Themes that often appear in organisational codes of ethics
  - Expected to maintain highest levels of honesty and integrity, both inside and outside working hours
  - Maintain confidentiality
  - Devote best efforts and loyalty to firm
- Limits of manager/leader's ethics

- Organisations expect employees to be loyal and show integrity at work
  - How do managers and leaders respond to these expectations?
  - Where do they place their loyalty? (if company and individual values align)
  - Where do they seek to show integrity and where do they not?
- **Whistleblowing** - disclosure by organisation members of illegal, immoral or illegitimate practices under their employers to persons or organisations that may be able to effect action
- **Principled resignations** - resign as a matter of principle to maintain their personal integrity
- **Limits of loyalty and integrity**
  - Loyalty is being **faithful** to
    - Self and family
    - Groups and associations one has chosen to join
    - Employing organisation
    - Society at large
  - Integrity is **thinking honestly** and soundly, and **acting accordingly** (more about character) in
    - Personal and private arena
    - Public arena
    - Organisation
    - Society at large
  - Loyalty and integrity **may conflict**
    - Loyalty to people or institutions is a fine quality, which arouses admiration and respect
    - But it is part and not whole of morality
    - In order to understand and exercise it aright we have to set our loyalties to our persons and organisations within a much larger framework of ethics
    - Adherence to this framework is what both expresses and creates integrity
  - Sacrifice
    - Loyalty and integrity both demand sacrifice
    - Integrity demands **sacrifice of things** - money, status, power (promotion) - **for its maintenance**
    - Loyalty is **sacrifice of integrity to obtain things** - money, status, power - **for oneself** or for some **other body** such as an organisation
    - E.g.
      - Integrity - a person will tell the manager of the wrongdoing and try to convince them to put things right
      - Loyalty - a person will offer to cover up for the organisation

#### **Attributes of an ethical (virtuous) manager/project manager/leader**

- Ethical managers/project managers/leaders should provide a **good role model** at all times by:
  - Being **ethical** and **honest at all times** (obeying wide loyalty and integrity principles)
    - Telling the **truth**
    - **Admitting failure**
    - **Communicating shared ethical values** to employees
    - **Rewarding** employees who behave ethically and **punish** those who do not
    - **Protecting** employees (whistleblowers) who bring to light unethical behaviours or raise ethical issues
  - These traits are typical of ethical project managers who lead by example
  - Establish codes of ethics and decision rules
  - Hire individuals with high ethical standards
  - Have all levels of management continually reaffirm importance of code of ethics and the organisations commitment to the code
  - Publicly reprimand and consistently discipline those who break the code (at least verbally)
  - Provide ethics training
  - Conduct independent social audits
  - Provide support for individuals facing ethical dilemmas (empathy and support)

#### **[EXAM QUESTION]**

- **Transactional vs transformational leaders**
  - **Transactional leaders**
    - Leaders that lead primarily by using **social exchanges**: guide or motivate their followers to work towards established goals by exchanging rewards for their productivity
    - They:
      - Link **job performance to rewards**
      - Strive for structural **efficiency**
      - Ensure **resources allocation** to get the job done
    - Commonly found in organisations
  - **Transformational leaders**
    - Stimulate and **inspire followers to transcend** their own **self-interests** for the **good of the organisation** to achieve extraordinary outcomes
    - **Motivate, engage** and provide **meaningful experience**

Create strategic vision	Vision is the substance of transformational leadership
Communicate the vision	Communicating the vision is the process of transformational leadership
Model the vision	Not only talk about the vision, they enact it ("walk the talk")
Build commitment toward vision	Transform vision into reality

- Develop a vision for the organisation, inspire and bind employees to their vision (collectively) and give them a can do attitude that makes the vision achievable
- Strongly correlated with **lower turnover rates** and **higher** levels of **productivity**, employee **satisfaction**, **creativity**, goal attainment, follower well-being and **quality of life**
- Research shows that transformational leaders implement a more consistent ethical approach to leading than transactional leaders