4. Project integration mgmt

- **Project selection methods**
  - Benefit measurement methods
    - Murder board
    - Peer review
    - Scoring models
    - Economic models
      - Present Value (PV)
        - Value today of future cash flows
      - Net Present Value (NPV)
        - Present value of total benefits (revenue)
        - Project with highest NPV is selected
      - Internal Rate of Return (IRR)
        - Rate at which inflow & outflow are equal
        - The higher IRR the better
      - Payback Period
        - Time to recover investment
        - The lower the better
      - Cost Benefit Analysis
        - Compares expected costs to potential benefits
        - Should be over 1
  - Constrained optimisation methods
    - Linear PGM-ing
    - Integer PGM-ing
    - Dynamic PGM-ing
    - Multi-Objective PGM-ing
- **Input**
  - Project Statement of Work (SoW)
    - Created by customer/sponsor
    - Describes needs and project scope
    - May not be complete when received. Is refined in project scope statement
  - Business Case
  - Contract
  - OPA
  - EEF
  - Project Charter
  - Outputs from planning
  - PP
  - Approved change requests
  - PD
  - Performance reports
  - PP
  - Work performance information
  - Change requests
  - PD
  - Accepted deliverables
- **Output**
  - Project charter
  - PD
    - Mgmt. plans KA
    - Mgmt plans rest
  - Project documents
  - Project Performance Baseline
  - Change requests
  - Deliverables
  - Work performance information
  - Implemented previously approved changes
  - Updt PP / P doc's
  - Change requests
  - Updt. PP / P doc's
  - Approved change requests
  - Updt. PP / P doc's
  - Final Product
  - Updt. OPA
- **Processes**
  - 4.1 Develop project charter
    - Justifies Project
    - Gives PM authority
    - Planning Project to a high level
    - Select PM
    - EEF
    - OPA
    - Divide large P into phases
    - Understand the business case
      - Project Selection
        - Sound BC is needed to to select project
        - Captures business needs
        - Explains how P fits into strategic goal of orga
        - Benefits measurement method (comparative approach)
          - Murder board
          - Peer review
          - Scoring models
          - Economic models
            - Present Value PV
              - Value of today of future cash flows
            - Net Present Value NPV
              - Present value of total benefits - costs
              - Project with the greatest NPV is selected
            - Internal Rate of Return IRR
              - The higher the better
            - Payback period
            - Cost Benefit analysis
              - Compares expected costs to potential benefits
              - Greater 1 = Benefits are higher than costs
              - Smaller 1 = Costs are higher than benefits
            - Limits
              - EVA **[not earned value analysis]**
                - Economic value added
                - If P returns more value than initiative costs
              - Opportunity costs
              - Sunk costs
              - Working capital
              - Depreciation
                - Straight line depreciation
                - Accelerated depreciation
                - Double Declining balance
                - Sum of the Years digits
        - Constrained optimizations methods (mathematical approach)
          - Linear programming
          - Integer programming
          - Dynamic programming
          - Multi-Objective programming
    - Uncover initial requirements, assumptions and risks
    - Assess project & product feasibility within constraints
    - Create measurable objectives
    - Develop project charter
      - Content
        - Project Purpose
        - Measurable Project Objectives
        - High-Lvl Requirements
        - High-Lvl Project description [Product charact.]
        - Summary Milestone Schedule
        - Summary Budget
        - Project Approval Requirements [what constitutes success / who decides it / who signs off]
        - PM [Responsibility & Authority]
        - High level risks
        - Names & Responsibilities off persons authorizing Project Charter
      - Input
        - Project Statement of Work (SoW)
          - Created by customer/sponsor
          - Describes needs and project scope
          - May not be complete when received. Is refined in project scope statement
        - Business Case
        - Contract
        - OPA
        - EEF
      - Output
        - Project Charter
  - 4.2 Develop project mgmt. plan
    - Mgmt. plans document the strategy for the Project
    - Include project mgmt. Processes used
    - Determine how you will do planning - part of all mgmt. plans
      - Mgmt. plans
        - Describes how you will plan, manage & ctrl. KA for Project
        - Scope
        - Schedule
        - Cost
        - Quality
        - HR
        - Risk
        - Procurement
        - Communication
        - Changes
          - Orga has change ctrl system
          - Part of PMIS
        - Configuration
          - Orga has config. mgmt. system
        - Scope
          - Part of scope mgmt process
        - Requirements
          - How to identify, analyse & document the requirements
        - Process improvements
    - Determine team
    - Determine all roles & responsibilities
    - Go back – iterations
    - Create change mgmt. plan
    - Finalise the "how to execute & ctrl. - parts of all mgmt plans
    - Develop realistic final PP & perf. measurement baseline
      - Baselines
        - Scope
          - Project Scope Statement
          - WBS
          - WBS Dictionary
        - Schedule
        - Cost performance
      - Project documents
        - Activity attributes
        - Activity cost estimates
        - Activity list
        - Assumption log
        - Basis of estimates
        - Change log
        - Charter
        - Contracts
        - Duration estimates
        - Forecasts
        - Milestone list
        - Performance report
        - Project funding requirements
        - Proposals
        - Procurement documents
        - Project organisational structure
        - Quality ctrl measures
        - Quality checklist
        - Quality metrics
        - Responsibility assignment matrix
        - Requirements traceability matrix
        - RBS
        - Resource calendars
        - Resource requirements
        - Risk register
        - Roles & responsibilities
        - Seller list
        - Source selection criteria
        - Stakeholder analysis
        - Stakeholder mgmt. strategy
        - Stakeholder register
        - Stakeholder requirements
        - Statement of Work
        - Teaming agreements
        - Team performance assessments
        - Work performance information
        - Work performance measurements
    - Gain formal approval of the plan
      - Formal approval by mgmt.
      - Signature required
    - Hold kick-off meeting
      - Involves all key parties
      - Announce the start of the project
      - Get everyone familiar with project
    - Input
      - Project Charter
      - Outputs from planning
      - OPA
      - EEF
    - Output
      - PP
        - Including
          - Scope
          - Schedule
          - Cost
            - AKA
              - "budget mgmt. plan"
              - "budget plan"
      - P doc's
      - P performance baseline
  - 4.3 Direct & manage project execution
    - Integration part of project execution
    - Integrates all executing work into one coordinated effort
    - Execute the work according to PP
    - Produce product deliverables (product scope)
    - Request changes
    - Implement only approved changes
    - Continuously improve
    - Follow processes
    - Involves
      - PM takes time to manage Scope / Budget / Risk Quality / Schedule / etc...
      - Managing people
      - Doing the work
      - Improving processes
      - Being of service to team
      - Ensuring a common understanding
      - Keep everyone informed
      - Facilitate technical discussions
    - Input
      - PP
      - Approved change requests
      - EEF
      - OPA
    - Output
      - Change requests
      - Deliverables
      - Work performance information
      - Implemented previously approved changes
      - Updt PP / P doc's
  - 4.4 Monitor & control project work
    - Compares performance to what was planned
    - Acts as ctrl function
    - Measures against PP
    - Take action to ctrl. the Project
    - Measure performance against performance measurement baseline
    - Measure performance against other metrics determined by PM
    - Determine variances & if the warrant corrective actions or change requests
      - Corrective Actions
        - Deals with ACTUAL deviations
        - brings expected future P performance in line with PP
        - Needs a purposeful focus in identifying areas for attention
        - Looks for problems rather than waiting
        - Create metrics here fore during P planning
        - Have a REALISTIC PP
        - Continue measurements throughout P
        - Know when P is off track
        - Find root cause of deviation
        - Re measure after implementation of corr. action
        - Determine need for further actions
          - Output of... [Acc. PMBOK]
            - Direct & manage P execution
            - Mon. & ctrl. P work
            - Verify scope
              - When meeting with customer to obtain acceptance of interim deliverables
            - Ctrl. scope
              - When measuring P performance against baseline
            - Ctrl schedule
              - When measuring P performance against baseline
            - Ctrl. costs
              - When measuring P performance against baseline
            - Perform Q assurance
              - When making sure people are using the correct processes
            - Perform Q ctrl.
              - When making sure deliverables meet Q standards
            - Manage P team
              - When discovering a team member is not performing
            - Manage stakeholders
              - When communicating with stakeholders to resolve issues
            - Report performance
              - When creating performance reports
            - Mon. & ctrl. risks
              - When you notice their are many underetified risks occurring
            - Administer procurements
              - When the seller is not performing
    - Influence the factors that cause changes
      - Preventive Actions
        - Deals with POSSIBLE deviations
        - Requires more experience than calculation
        - Can be implemented at any time in any process
        - Therefore can be an output to any process
          - Output of... [Acc. PMBOK]
            - Direct & manage P execution
            - Mon. & ctrl. P work
            - Ctrl. scope
            - Ctrl schedule
            - Ctrl. costs
            - Perform Q assurance
            - Perform Q ctrl.
            - Manage P team
            - Manage stakeholders
            - Report performance
            - Mon. & ctrl. risks
        - Create metrics here fore during P planning
    - Request changes
      - No matter how well you plan P, there will always be changes
      - Changes identified when measuring against baselines in "Mon. & Ctrl. P work"
      - Defect repair (Rework)
        - If a component does not meet specification
          - Output of... (Acc. PMBOK)
            - Direct & manage P execution
            - Mon. & ctrl. P work
            - Verify scope
            - Ctrl. scope
            - Perform Q assurance
            - Perform Q ctrl.
    - Involves
      - Analyse & track risks
      - Perform Q ctrl.
      - Forecasting
      - Review changes & corrective actions
    - Limits/Techniques
      - Work Authorisation System
        - System for authorising the start of WP
        - Part of PMIS
          - EEF
        - Makes sure work only starts when formal authorisation
    - Input
      - PP
      - Performance reports
      - EEF
      - OPA
    - Output
      - Change requests
      - Updt. PP / P doc's
  - 4.5 Perform integrated change control
    - Changes are evaluated and accepted or rejected
    - Look at impact of each change on all P constraints
    - Perform integrated change ctrl.
    - Approve or reject changes
    - Inform stakeholders of the results of change requests
    - Updt. PP / P doc's
    - Manage configuration
    - Involves
      - High level basis
        - Estimate impact
          - REALISTIC PP
          - COMPLETE product scope & project scope
        - Create options
        - Approve/reject change
        - Gain customer buy-in
      - Detailed basis
        - Prevent root cause of change
        - Identify change
          - Can come from PM / Sponsor / etc...
        - Look at impact of change
          - How will it affect other areas
        - Create change request
          - Follow process
        - Perform integrated change ctrl.
          - Assess the change
            - If change is not part of P charter it may be separate P
          - Look for options
            - Increase opport.
            - Decrease threats
            - Schedule compression
              - Crashing
              - Fast tracking
          - Approve/reject change
            - If change affects PP / etc... => Change Ctrl. Board approval
          - Updt. status of change in Change Ctrl. System
          - Incorporate approved changes
        - Updt. PP / P doc's / baselines
        - Manage stakeholder expectation
        - Manage P to revised PP
    - Changes
      - Changes occur if PM does not identify all stakeholders & uncover their req's
      - Ctrl- of changes
        - Obtain final req's ASAP
        - Spend time on RM
        - Establish cost & time reserves
        - Have a Change Ctrl. process in place
        - Follow processes
        - Have templates for creating change requests
        - Clear roles & responsibility
        - Reevaluate the business case
        - Consider termination if excessive changes occur
        - Allow only approved changes
      - Categories
        - Affecting PP, baselines, charter, contract, policies & procedures
        - Those not affecting those areas
      - Change Ctrl. Board
        - Responsible for reviewing & analysing change requests
        - May include: PM / Sponsor / Customer / Experts / etc...
    - Input
      - PP
      - Work performance information
      - Change requests
      - EEF
      - OPA
    - Output
      - Change request status updt.
      - Updt. PP / P doc's
  - 4.6 Close project or phase
    - Effort to finalise all activities to formally close the project
    - Phase or project must be closed out
    - Projects or Phases are ALWAYS closed out
    - Confirm work is done to req's
    - Gain FINAL acceptance of the product
      - Verify Scope is for INTERIM deliverables
    - Complete financial closure
    - Hand off completed product
    - Solicit feedback from the customer about the project
    - Complete final performance reporting
    - Index & archive records
    - Updt. lessons learned knowledge base
    - Limits/Techniques
      - Expert judgement
    - Input
      - PP
      - Accepted deliverables
      - OPA
    - Output
      - Final Product
      - Updt. OPA