To remember how many processes in each knowledge area or group…

Knowledge Areas	Initiating Process Group	Planning Process Group	Executing Process Group	Monitoring and Controlling Process Group	Closing Process Group
7 4. Project Integration Management	4.1 Develop Project Charter	4.2 Develop Project Management Plan	4.3 Direct and Manage Project Work 4.4 Manage Project Knowledge	4.5 Monitor and Control Project Work 4.6 Perform Integrated Change Control	4.7 Close Project or Phase
6 5. Project Scope Management		5.1 Plan Scope Management 5.2 Collect Requirements 5.3 Define Scope 5.4 Create WBS		5.5 Validate Scope 5.6 Control Scope	
6 6. Project Schedule Management		6.1 Plan Schedule Management 6.2 Define Activities 6.3 Sequence Activities 6.4 Estimate Activity Durations 6.5 Develop Schedule		6.6 Control Schedule	
4 7. Project Cost Management		7.1 Plan Cost Management 7.2 Estimate Costs 7.3 Determine Budget		7.4 Control Costs	
3 8. Project Quality Management		8.1 Plan Quality Management	8.2 Manage Quality	8.3 Control Quality	
6 9. Project Resource Management		9.1 Plan Resource Management 9.2 Estimate Activity Resources	9.3 Acquire Resources 9.4 Develop Team 9.5 Manage Team	9.6 Control Resources	
3 10. Project Communications Management		10.1 Plan Communications Management	10.2 Manage Communications	10.3 Monitor Communications	
7 11. Project Risk Management		11.1 Plan Risk Management 11.2 Identify Risks 11.3 Perform Qualitative Risk Analysis 11.4 Perform Quantitative Risk Analysis 11.5 Plan Risk Responses	11.6 Implement Risk Responses	11.7 Monitor Risks	
3 12. Project Procurement Management		12.1 Plan Procurement Management	12.2 Conduct Procurements	12.3 Control Procurements	
4 13. Project Stakeholder Management	13.1 Identify Stakeholders	13.2 Plan Stakeholder Management	13.3 Manage Stakeholder Engagement	13.4 Monitor Stakeholder Engagement	
	2	24	10	12	1

Project Management Process Groups

Remember 2 phone #s (766) 436-3734 & 224-1012

And don't forget the one process in the closing process group

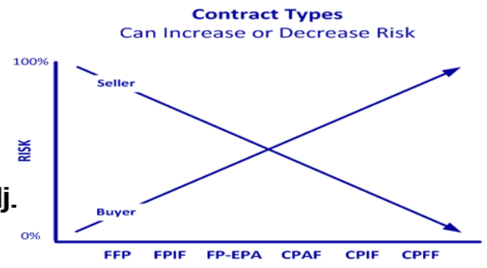
1. Portfolio drives Strategic Business Objectives
2. Programs are when projects are Managed in a Coordinated way to Obtain Benefits not seen managing them individually
3. Planning the project by breaking down each piece into smaller, more manageable pieces is the process of Progressive Elaboration
4. Work Performance Data = Raw Data
   a) e.g. start & finish dates
5. Work Performance Information = Performance Data
   a) e.g. forecasted estimates to complete
6. Work Performance Reports = Representation of Information
   a) e.g. status report
7. Inputs and outputs are things you can hold in your hand. You cannot touch tools & techniques, you do these things.
8. PMO holds Organization Process Assets…
9. …but Enterprise Environmental Factors are External to the PMO
10. The Project Management Plan is a binder mostly filled with subsidiary plans and baselines.
11. The Project Management Plan and Charter are an input to almost every 'Plan Relevant Management Process'
12. All project work captured on WBS.

74. Stakeholder Classification Models:
Power/Interest Grid, Power/Influence Grid, Influence/Impact Grid
Also… Salience Model: "Power", "Urgency", Legitimacy

75. Professional Responsibility involves:
- Adhering to the PMP Code of Professional Conduct
- Maintaining high professional ethics
- Developing cultural competence in our emerging global society
  Do the right thing. Ask lawyers if something is a bribe or a legal payment

76. Responsibility to the Profession
- Be truthful at all times and in all situations
- Report Code violations (with factual basis)
- Disclose conflicts of interest
- Comply with laws
- Respect others' intellectual property rights
- Support the Code of Ethics

77. Contract Types:



FFP: Firm Fixed Price
- Needs scope fully defined

FPIF: Fixed Price Incentive Fee
- Incentive for early delivery

FP-EPA: Fixed Price Econ. Price Adj.
- High Commodity Costs

CPAF: Cost Plus Award Fee
- Award for performance plus all costs

CPIF: Cost Plus Incentive Fee - Seller shares in costs going above or below target

CPFF: Cost Plus Fixed Fee - Costs reimbursed plus profit set in stone

T&M: Time and Materials - When scope is ill-defined

78. Earned Value always immediately follows the equals sign
- CV = EV – AC If cost is involved, the other number is AC
- SV = EV – PV Negative is bad in variances: Over budget/behind schedule
- CPI = EV/AC You are getting x cents of value for every dollar invested
- SPI = EV/PV You are proceeding at x percent of planned schedule
  Less than 1 is bad in indexes: Over budget or behind schedule
- EAC = BAC/CPI If you have a systemic problem
- EAC = AC + (BAC-EV) If you have a once only problem
- EAC = AC + (BAC-EV)/(CPI*SPI) Taking cost and schedule into account
- ETC = EAC – AC How much work is left minus how much have you spent already?
- VAC = BAC – EAC Negative is bad in variances: Over budget
- TCPI = (BAC – EV)/(BAC - AC) What CPI do I need to maintain to finish on budget?

PROJECT MANAGEMENT
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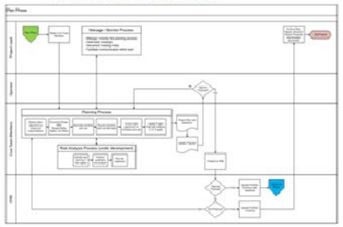
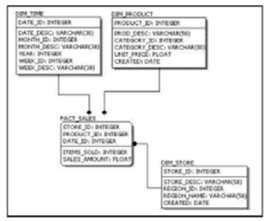
28. Data Representation Tools: Include Cause & Effect, plus…

Flowcharts



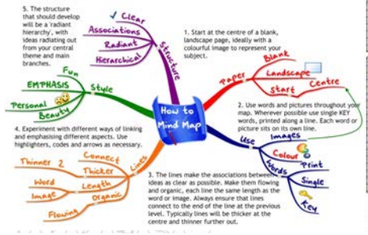
Logical Data Model



Matrix Diagrams

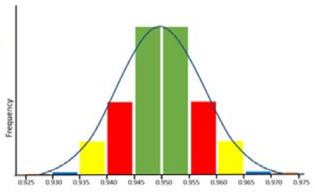
Customer Requirements				
	Customer *D*	Customer *M*	Customer *R*	Customer *T*
Purity %	> 99.2	> 99.2	> 99.4	> 99.0
Trace metals (ppm)	< 5	—	< 10	< 25
Water (ppm)	< 10	< 5	< 10	—
Viscosity (cp)	20-35	20-30	10-50	15-35
Color	< 10	< 10	< 15	< 10

Mind Mapping

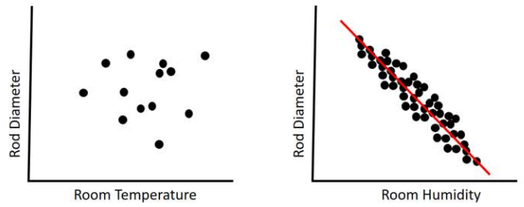


Affinity Diagram

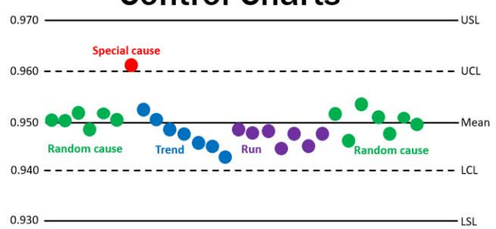
Histograms



- ### Scatter Diagrams



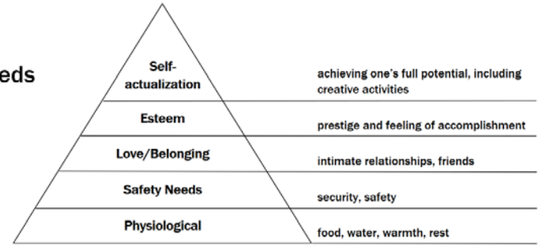
Control Charts



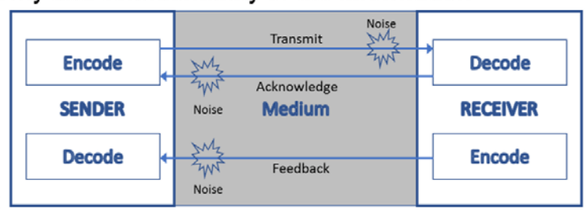
29. **Audits done through Manage Quality during Execution**
30. **Verification** determines whether a product, service or result meets pre-determined specification or regulations
31. **Validation** determines whether a product, service or result meets the needs of the customer
32. **Organizational Breakdown Structure (OBS): Shows each team member and the work package for which they are responsible**
33. **Resource Breakdown Structure (RBS): Shows the resources – people and material – that are needed on the project grouped by category**
34. **Responsibility Assignment Matrix (RAM): Shows all activities associated with one person and all people associated with one activity. There should only be one 'A' for each activity**
35. **RACI Chart R(Responsible) A (Accountable) C (Consult) I (Informed)**
    - Only one person Accountable per element

36. **Maslows's hierarchy of needs:**

    Lower level needs must be met before Higher level needs



37. **McGregor's Theory X and Theory Y**
    Theory X – Workers have no ambition; micromanage
    Theory Y – Workers motivated; laissez-faire
38. **Herzberg's Motivation-Hygiene Theory**
    Motivators – Gives workers positive satisfaction
    Hygiene – Not motivating but gives workers dissatisfaction with their absence
39. **Expectancy Theory:** workers motivated to behave in a specific way because of what they expect the result of that behavior will be
40. **Organizational McClelland's (Three) Need Theory**
    Need for **achievement** (nAch) Need for **affiliation** (nAff) Need for **power** (nPow)
41. **Contingency Theory:** Effectiveness of a leader's style – either "**task-oriented**" or "**relationship-oriented**" – is contingent upon the situation [Leader-Member Relations; Task Structure; Leader's Position Power]
42. **Ground rules ("team norms"):** Expectation of acceptable behavior by team members
43. **Colocation ("tight matrix"):** Placing most active team members in the same physical location, e.g. "**war room**"
44. **Tuckman model:** Stages of team development **Forming, Storming, Norming, Performing, Adjourning**
45. **Six bases of power: Reward, Coercive (Punishment), Legitimate (Formal), Referent, Expert, Informational**
46. **Conflict management (Resolution methods) Withdraw (Avoid), Smooth (Accommodate), Compromise (Reconcile), Force (Direct), Collaborate (Problem Solve)**
47. **Leadership styles: Autocratic (Authoritarian), Democratic (Participatory), Laissez-faire**
48. **A project manager spends 90% of their time on a project communicating**
49. **Categories of Communications:** Formal-Written (e.g. minutes); Informal-Written (e.g. e-mail); Formal-Verbal (e.g. presentation); Informal-Verbal (e.g. ad-hoc discussions)
50. **Mehrabian 7-38-55:** Meaning and feeling in verbal communications consist of three parts: Words spoken – 7%, Voice/tone (Paralingual) – 38%, Body language – 55%
51. **Effective and efficient communications**
    Right audience, Right format, Right time, Right level, Right impact, Provide only the information that is needed
52. **Number of communications on a project: n(n-1)/2**, where n is the number of parties
53. **Communication technology considerations:** Urgency of information; Availability of technology; Ease of use; Project environment; Sensitivity and confidentiality of the information
54. **Sender-Receiver model**
55. **Communication Methods**
    Interactive
    Push
    Pull



56. **Two ways to manage risks:**
    Proactive – In anticipation of a risk
    Reactive – In response to a risk
57. **Event-based risks** – uncertainty that something may or may not occur
58. **Non-event risks**
    - **Variability** – uncertainty about some key characteristics of a planned event, activity, or decision
    - **Ambiguity** – imperfect knowledge that may affect the project's ability to achieve its objectives

59. **Known-Unknown** (know the risk, don't know the impact) vs **Unknown-Unknown** (don't know the risk, don't know the impact)
60. **Risk Attitude:** Influenced by: **Risk appetite**, **Risk tolerance**, **Risk threshold**
61. **Risk Management Plan:** Describes how risk management activities will be structured and performed, includes: methodology; roles and responsibilities; budget; timing; reporting formats; tracking; risk categories; definitions of risk probability and impact
62. **Risk Breakdown Structure (RBS)** – Hierarchical diagram to organize and group potential risks
63. **Information gathering techniques:**
    - **Brainstorming** – Free-form; simple and fast
    - **Delphi Technique** – Use questionnaire, summarize and recirculate; reduce bias
    - **Interviewing** – Asking stakeholders and SMEs
    - **Root Cause Analysis** – Identify potential problem and discover underlying causes
    - **SWOT Analysis** - Identifies possible internally generated risks **(Strengths, Weaknesses, Opportunities and Threats)**
64. **Risk register:** Used to record analysis, decisions, and status of risks throughout the project, includes: risk ID; name and description of risk; category; status; owner; risk score; response plan
65. **Probability & impact matrix:** Table used to score a risk's affect on each objective
66. **Qualitative risk analysis** (*prioritizing* risks for further analysis or action)
67. **Quantitative risk analysis** (numerically *analyzing the effect* of identified risks on overall project objectives)
68. **Quantitative risk analysis and modeling techniques**
    - **Sensitivity Analysis** – Helps determine which risk has the most impact; a ***tornado diagram*** is used to compare relative importance of variables
    - **Expected Monetary Value Analysis** – Calculate the expected outcome when the future includes scenarios that may or may not happen.
      - **EMV = Value of outcome × Probability of occurrence**
    - **Modeling and simulation** – Model the uncertainties into their potential impact on project objectives, results are then graphed to show probabilities; typically use the ***Monte Carlo*** **technique**
69. **Responses to risks**
    - For negative risks (threats) – **Avoid**; **Transfer**; **Mitigate**; **Accept**
    - For positive risks (opportunities) – **Exploit**; **Enhance**; **Share**; **Accept**
70. **Contingent Response Strategies (contingency plan or fallback plan):** A developed response plan that will only be executed under predefined conditions (***trigger***)
71. **Residual risks:** Expected remaining risks after planned responses have been taken or if risk is accepted
72. **Secondary risks:** Risks that arise as a direct outcome of implementing a risk **response**
71. **Stakeholder Analysis:** Identifies Stakeholders' interests, influence, and expectations "and relates them to the purpose of the project.
72. **Stakeholder Register :** All the details related to the Identify Stakeholder process, including:
    - Identification Information
    - Assessment information
    - Stakeholder Classification
73. **Interpersonal Skills :** Applied by the Project Manager to manage Stakeholders' expectations, such skills might include, above all:
    - Building trust
    - Resolving conflict
    - Active listening
    - Overcoming resistance to change

Elaboration of Scope

Project Phase	Scope Elaboration	Description
Pre-Project	Statement of Work	Narrative description of work to be delivered by the project
Initiation	Charter	High-level scope plus authorization
Planning	Scope Statement	Documents entire scope in detail
Planning	WBS	Hierarchical decomposition of scope
Planning	Scope Baseline	Scope Statement + WBS + WBS Dictionary

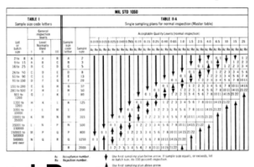
13. **Dependencies** have two aspects: Mandatory vs. Discretionary and Internal vs. External. Internal Dependencies are internal to your TEAM
14. **Relationships** are SF, FS, FF and SS, not dependencies
    - Think S = Sister; F = Father. They are your relations
15. **Analogous** estimating uses an analogy. This is similar to that.
16. **Parametric** estimating uses metrics. (5000 lines of code at 500/day)
17. **Three-point** estimating uses the formulae Beta = (O + 4ML + P)/6
    - or Triangular Distribution = (O + ML + P)/3
18. **No buffers** on activities
    - Contingency Reserve covers risks and known unknowns
    - Management Reserve covers unknown unknowns
19. **Float** = LS – ES or LF - EF
20. **Float** = How much can I delay an activity without delaying the project
21. **Free Float** = How much can I delay an activity without delaying the early start of a successor activity
22. **Critical Path** = Path with float of zero on all activities
    = Path with longest duration
    = Path showing shortest possible project duration
23. **Resource Leveling** increases project duration but Smoothing may not
24. **Crashing** adds resources (Think party crashing)
25. **Fast Tracking** runs activities in parallel (Think railroad tracks)
26. **Data Gathering Tools:** Include Brainstorming plus…
    - Benchmarking

Checklists

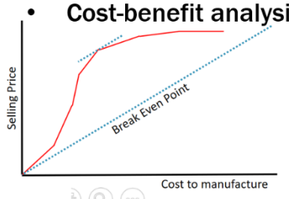
Check Sheets

Reason	Frequency	Comments
Label mismatch	//	
Label missing	/	
Incorrect label	///	
Wrong color	𝍸 𝍸 /	Green 𝍸
Damaged label	/	Blue /
Other	//	

Statistical Sampling



27. **Data Analysis Tools:** Include Alternatives, Document and Process Analysis, Performance Reviews plus…
    - Cost-benefit analysis



Cost of quality

Cost of conformance	Cost of non-conformance
Prevention Costs (Build a quality product)	**Internal Failure Costs** (Failures found by the project)
• Training • Document Processes • Equipment • Time to do it right	• Rework • Scrap
Appraisal Costs (Assess the quality)	**External Failure Costs** (Failures found by the customer)
• Testing • Destructive testing loss • Inspections	• Liabilities • Warranty work • Lost business

Root Cause Analysis