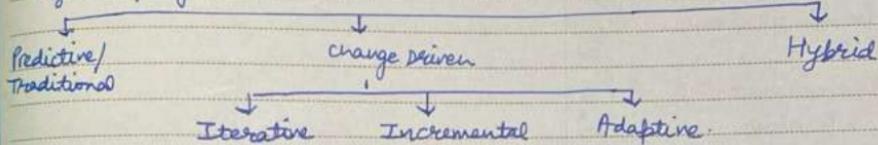


1. Project → Unique, Temporary, Progressively elaborated.
2. Operations → ongoing.
3. Portfolio → Collection of Projects/Programs/operations → for Strategic.
4. Process → Collection of logically related activities, produces deliverables.
5. Program → Grouped projects that are inter-related.

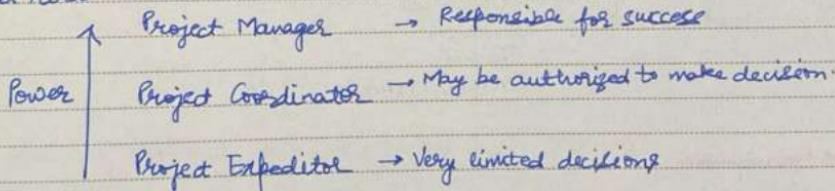
→ Project life cycle



→ Project Governance → Framework + Functions + Processes, Tailored.

→ Stakeholder → Person / Group of People / organization affected.

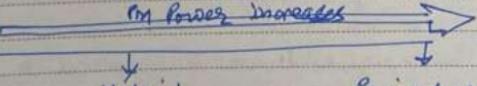
→ Project Roles:



→ Project Management Offices

- Supportive → Support like templates, training, lessons
- Controlling → determine the framework / methodology
- Directive → control & the PM report to them.

→ Organizational Structure



Functional
[Sales/
Marketing/
IT etc.]

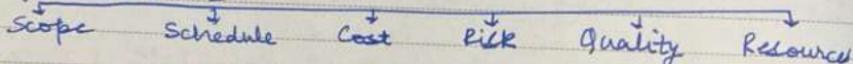
Matrix
→ Weak
→ Balanced
→ Strong

Project oriented
(Projectized)

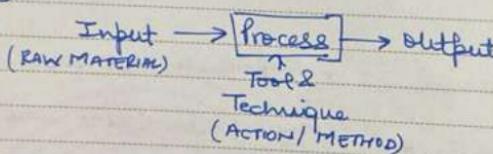
→ Process Groups + knowledge Areas.

1. Integration Mgmt	(7)	1. Initiating	(2)
2. Scope	(6)	2. Planning	(24)
3. Schedule	(6)	3. Execution	(10)
4. Cost	(4)	4. Monitor & Control	(12)
5. Quality	(3)	5. Closing	(1)
6. Resource	(6)		
7. Communications	(3)		
8. Risk	(7)		
9. Procurement	(3)		
10. Stakeholder	(4)		

→ Project constraints.

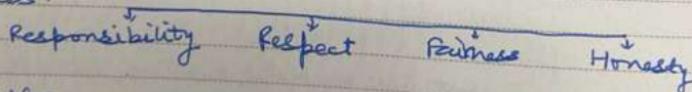


→ Process



→ Principles

→ Values:



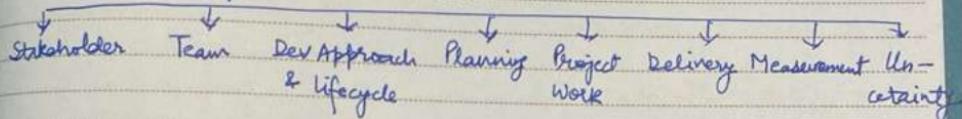
→ Principles

1. Be a diligent, respectful & caring steward.
2. Create a collaborative project team env.
3. Effectively engage with stakeholders.
4. Focus on value.
5. Recognize, evaluate & respond to system interactions.
6. Demonstrate leadership behaviours.
7. Tailor based on context.
8. Build quality into processes & deliverables.
9. Navigate complexity.

10. Optimize risk responses
11. Embrace adaptability & resiliency.
12. Enable change to achieve the envisioned future state.

→ Domains

Groups of related activities.



→ stakeholder engagement

Identify → Understand → Analyze → Prioritize → Engage → Monitor

→ Measurement

→ Key Performance Indicators (KPIs)

Leading
(Predict)

Lagging
(Measure afterwards)

→ Effective metrics.

Specific Meaningful Achievable Relevant Timely

→ Pitfalls in metrics

1. Hawthorne effect → Do no work, just measure
2. Vanity metric
3. Demoralization
4. Misuse
5. Confirmation bias

_____ X _____

→ Project Documents

↳ They are not part of Project Management plan
↳ 33 in count

1. Activity Attributes
2. Activity List
3. Assumption log.
4. Basis of estimates.
5. Change log.
6. Cost estimates.

MDLIB

T

ACOS

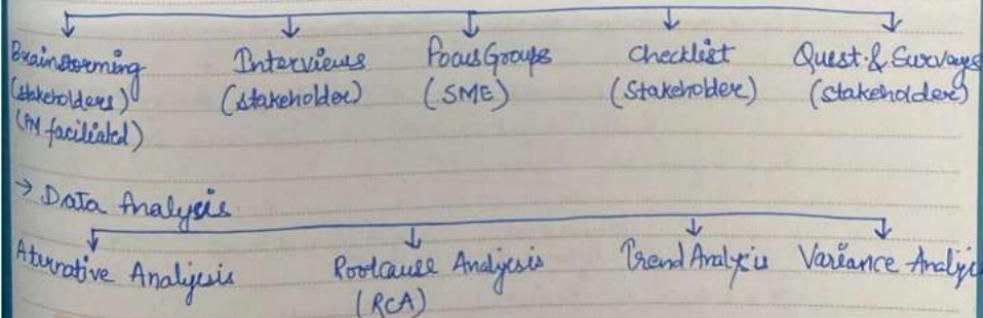
PR

7. Cost forecasts.
8. Duration estimates.
9. Issue log.
10. lesson learned Register
11. Milestone list.
12. Physical Resource assignments.
13. Project Calendars
14. Project communication.
15. Project Schedule.
16. Project Schedule W/W diagram.
17. Project Scope Statement.
18. Project team assignments.
19. Quality control measurements.
20. quality metrics.
21. Quality Reports.
22. Requirement Documentation.
23. Requirement traceability metrics
24. Resource breakdown structure
25. Resource Calendars.
26. Resource requirements.
27. Risk Register.
28. Risk report.
29. Schedule data.
30. Schedule forecast.
31. Stakeholder Register.
32. Team charter.
33. Test & evaluation documents.

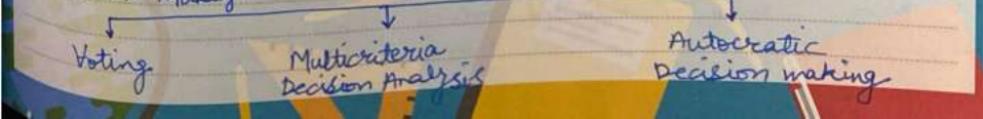
→ Project Management Plan

1. Scope Management plan.
2. Requirement mgmt plan.
3. Schedule mgmt Plan
4. Cost mgmt plan.
5. Quality mgmt plan.
6. Resource mgmt plan
7. Communication mgmt plan
8. Risk mgmt plan
9. Procurement mgmt plan.
10. Stakeholder mgmt plan
11. Change mgmt plan.
12. Configuration mgmt plan.
13. Scope baseline [Create WBS]
14. Schedule Baseline [Develop Schedl.]
15. Cost Baseline. [Determine budget]
16. Performance measurement plan
17. Project life cycle description.
18. Development approach.

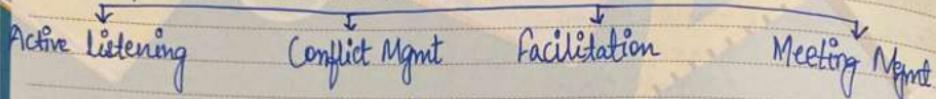
→ DATA Gathering Methods



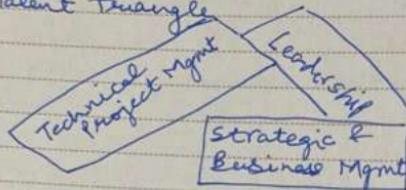
→ Decision Making



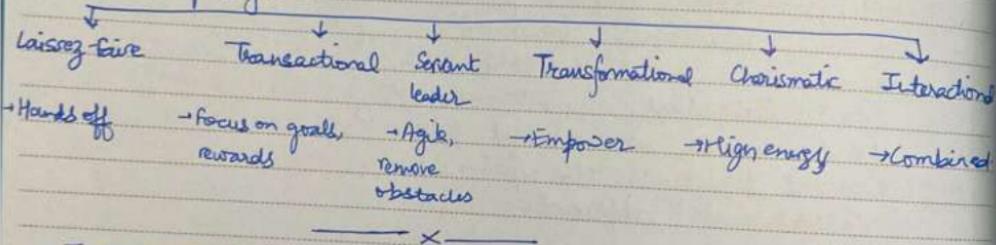
→ Interpersonal & Team Skills:



→ PMI Talent Triangle



→ Leadership styles.



→ INTEGRATION

→ DEVELOP PROJECT CHARTER

↳ 1 input is Business Document

Business Case

(Whether project is worth)

↳ 1 input is Agreements

Project Benefits Mgmt Plan
(Measure benefits)

Service level
Agreement

Letter of
intent

Contract

Work required
for payment

↳ 1 input is Project Selection Methods

ROI

Benefit Cost
Ratio

Economic
Value Add

Internal
Rate of
Return

Opportunity
Cost

Payback
Period

Present
Value

4. Change Models

- | | | |
|---------------------------------|--|------------------|
| 1. Managing changes in Organiz' | | 2. ADKAR Model |
| 1) Formulate change | | 1) Awareness |
| 2) Plan change | | 2) Desire |
| 3) Implement change | | 3) Knowledge |
| 4) Manage Transition | | 4) Ability |
| 5) Sustain change | | 5) Reinforcement |

3. 8 Step process → top down Approach

- 1) Create Urgency
- 2) Form a powerful coalition
- 3) Create a vision for change
- 4) Communicate the vision
- 5) Remove obstacles
- 6) Create short term wins
- 7) Build on the change
- 8) Anchor the changes in corporate culture.

4. Virginia Satir Change Model

- 1) Late status quo
- 2) The foreign element
- 3) Chaos
- 4) The transforming idea
- 5) Practice and integration
- 6) New status quo

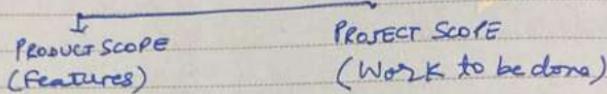
5. Transition Model William Bridges

- 1) Ending, losing, & letting go
- 2) The neutral zone
- 3) The new beginning

=x =

Scope Management

- Gold plating → extra work which is not in scope.
- Scope creep → unauthorized work added to scope



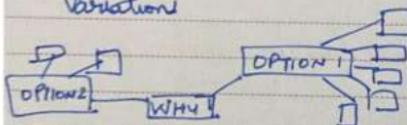
→ Benchmarking → Comparing to other projects / industry standards

→ Data representation

Idea / Mind Mapping

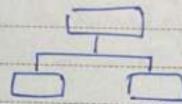
→ Gathered in Brainstorming

→ Mapped together to discover new considerations / variations



Affinity Diagram

→ Large ideas grouped & sorted together for review.



→ Prototypes.

→ Requirement Traceability Matrix.

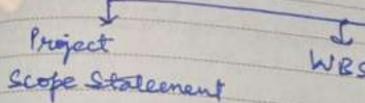
- Who provided requirement
- why requirement is added
- Description of requirement
- Current status.

→ Project Scope Statement

- Description / Goals
- Identified risks
- Acceptance criteria
- Constraints / Exclusions

→ Decomposition → Breaking down the deliverables into small components.

→ Scope Baseline



↓
WBS

Dictionary

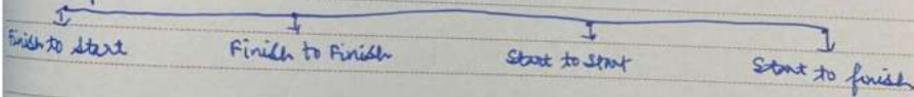
- Description
- Assignee
- Duration
- Date Assigned
- Cost estimate
- Code
- Due Date

→ Job shadowing → an interpersonal & team skill

= X =

→ SCHEDULE

→ Sequence Activities



→ Dependency determination

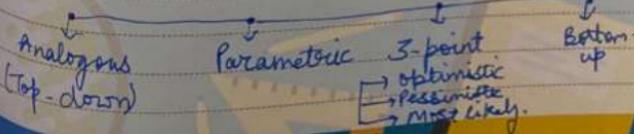
Mandatory Dependencies
(Hard logic)

Discretionary Dependencies
(Soft logic)

External Dependency Internal Dependency

→ Leads - a successor activity can be advanced by this much
Lags - delay in successor work package/activity.

→ Estimation tools



→ 1 develop schedule tool
 Resource Optimization Techniques

Resource leveling

- Start & end dates adjusted based on resource constraints
- May change critical path
- Goal of balancing the demand for resources

Resource Smoothing

- Adjust activities of a schedule
- Goal is to not exceed predefined resource limits
- May not change critical path.

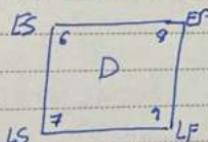
→ 1 tool in develop schedule → Schedule compression

Crashing
 (Add Resources)

Fast Tracking
 (Parallel)

→ Monte Carlo = What if scenarios (Part of data analysis)

→ CRITICAL PATH METHOD



$$\text{float/slack} = \frac{\text{LS}-\text{ES}}{\text{total float}}$$

$$\text{total float} = \frac{\text{LF}-\text{EF}}{2}$$

→ Forward Pass

→ Backward Pass

→ PERT (Program evaluation & Review Technique)

or 3-point Estimate

β (Beta) Distribution

$$\frac{\theta + 4\mu + \rho}{6}$$

Standard Deviation

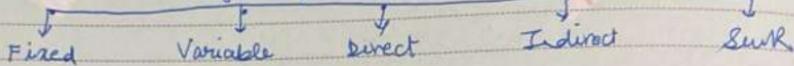
$$= \frac{\mu - \theta}{6}$$

△ (Triangle) Distribution

$$\frac{\theta + \mu + \rho}{3}$$

→ Cost

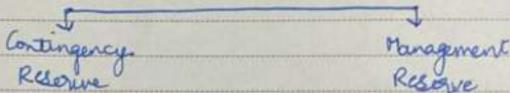
→ Value engineering



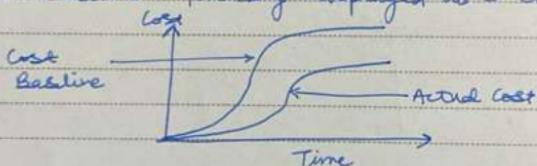
→ Estimate Cost Types

Definitive	Budget	Rough Order of Magnitude
-5% +10%	-10% +25%	-25% +75%

→ Reserve analysis - tool in 'Determine budget'



→ Cost Baseline: Generally displayed as S-curve



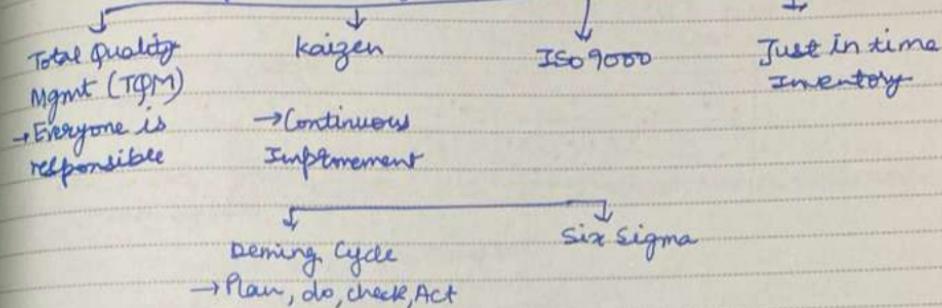
→ Earned Value Management

1. BAC (Budget) @ completion
2. PV (Planned value) = Planned % complete \times BAC
3. EV (Earned Value) = Actual % complete \times BAC
4. AC (Actual Cost) = Amount spent
5. CV (Cost Variance) = EV - AC
6. CPI (Cost Performance Index) = EV / AC
7. SV (Schedule Variance) = EV - PV
8. SPI (Schedule Performance Index) = EV / PV
9. EAC (Estimate @ completion) = BAC / CPI
10. ETC (Estimated To Complete) = EAC - AC
11. VAC (Variance @ _____) = BAC - EAC
12. TCPi (To-Complete Performance Index) = $(BAC - EV) / (BAC - AC)$

1 Quality

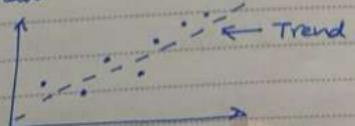
Quality Grade

→ Quality Methodologies



→ Terms

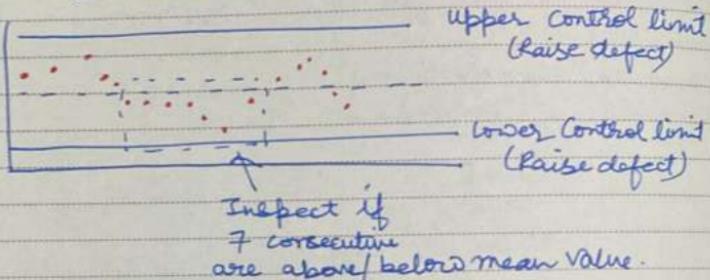
- Attribute - Does a character conform.
- Sampling
- Variable - How well a characteristic conform.
- Sampling
- Mutual exclusivity - 2 events can't occur together
- Tolerance → specified range of acceptable result.
- Prevention
- Inspection
- Control limits : boundaries of common variation in a stable process.
- 1 tool to manage quality is → Ishikawa / Fishbone diagram which tells the causes of defects
- Flowcharts
- A type of Histogram → Pareto Chart (80-20 rule)
- Scatter diagram → Shows trends in the data



→ Design for X - design something keeping 'X' element in mind

→ 1 tool in Control quality is → CONTROL CHART.

→ Tells if a process is in control
→ Uses **RULE of 7**



→ Flowchart = process diagrams used to show possibility of room for improvement.

= X =

→ Resources.

Organization Charts & Positions Descriptions

Hierarchical

Matrix-based charts

Text-oriented format

→ Responsibility Assignment Matrix (RAM) =

RACI Charts

→ Responsible, Accountable,
Consulting, Informed.

→ **A always = 1**

→ Develop team → Tuckman's ladder

1. Forming
2. Storming
3. Norming
4. Performing
5. Adjourning

→ Colocation = Tight Matrix

→ Develop team → Maslow's hierarchy of needs

1. Physiological → Necessities
2. Safety → Security
3. Social → Needs of love, approval
4. Esteem → Respect
5. Self actualization → Pinnacle

→ Herzberg's theory of motivation

↳ Hygiene agents - Must, but if absent, are demotivating

→ McGregor's Theory X & Y

- ↳ X → Micromanage, distrust
- ↳ Y → Self led, motivated

→ Z → Emphasis of well-being, steady employment.

→ Expectancy theory - People behave based on what they expect as a result of their behavior.

→ McClelland 3 need theory

1. Achievement

2. Power

3. Affiliation

→ Forms of Power

1. Reward power

2. Expert power

3. Legitimate (formal power)

4. Referent - Respect

5. Punishment.

→ Situational leadership Model.

→ OSCAR Model

1.O → Outcome

(What you need) (Future State)

2.S → Situation

(Where are you right now) (Current State)

3.C → Choices / Consequences

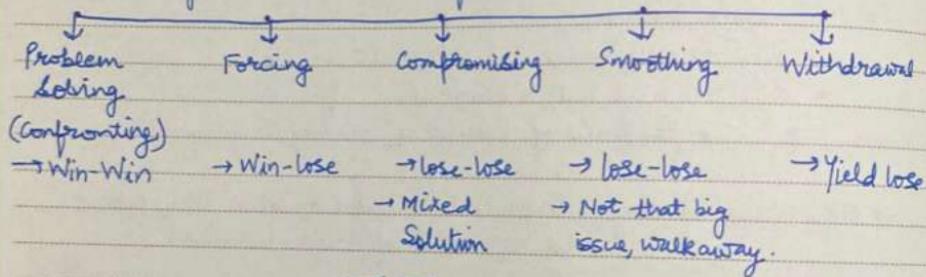
4.A → Action.

5.R → Review.

→ Dreher Sibbet Model.

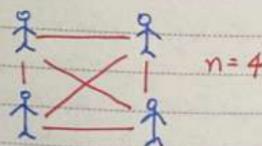
- Create Team { Step 1 - Orientation - Why
- 2 - Trust building - Who
- 3 - Goal clarification - What
- 4 - Commitment - How, define the plan
- Sustain Team { 5 - Implementation - Start working
- 6 - High performance - Reach new level
- 7 - Renewal - Working through changes

→ Manage Team - Tool - Conflict Resolution

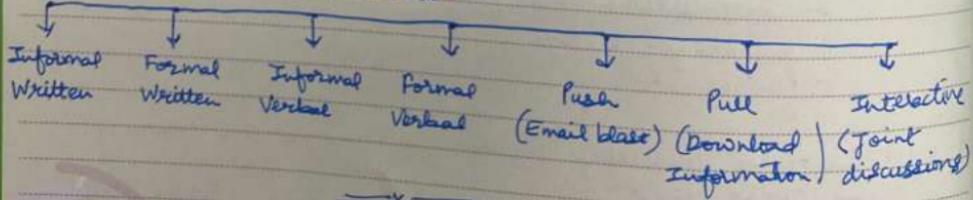


→ Communications

→ Communication channels
 $\Rightarrow \frac{n(n-1)}{2}$

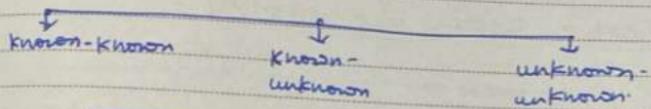


→ Communication methods



RiskIndividual
Project
RiskTo
Overall
Project
Risk

- Risk appetite
- Risk Tolerance



- Non-event Risk
- Variability Risk
 - Ambiguity Risk

- Identify risk - tool - SWOT analysis

STRENGTH	WEAKNESS
OPPORTUNITY	THREAT

- Risk Register

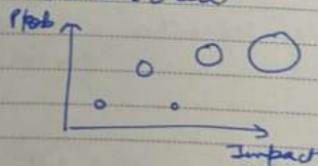
RISKID	Risk	Response	Cause	Project Area
--------	------	----------	-------	--------------

- Risk Data representation

Probability &
Impact matrix

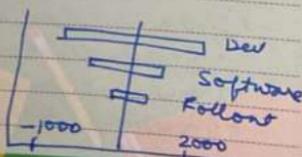
Risk	Probab	Impact	Score/Park
------	--------	--------	------------

Hierarchical chart
(Bubble chart)



- Quantitative analysis

↳ Sensitivity analysis → Tornado Chart



→ Influence chart = A kind of flowchart for graphical aid to decision making in uncertainty

→ Decision Tree Analysis

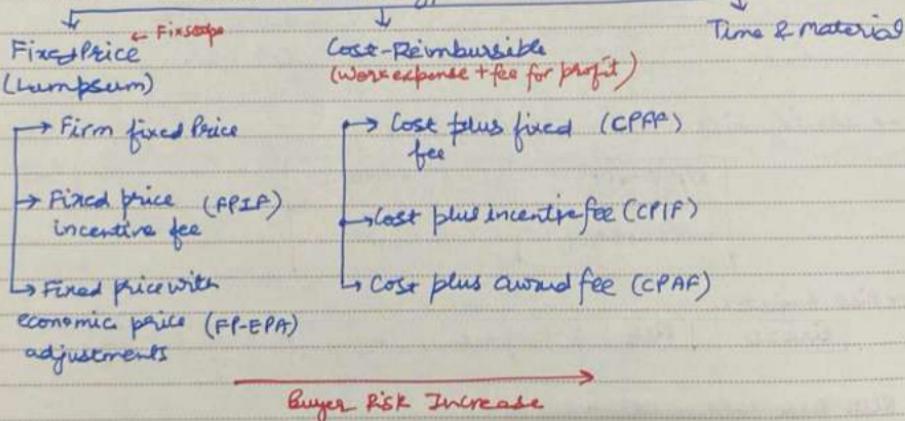
= Make or buy analysis.

$$\text{EMV} = \text{Probability} \times \text{Risk}$$

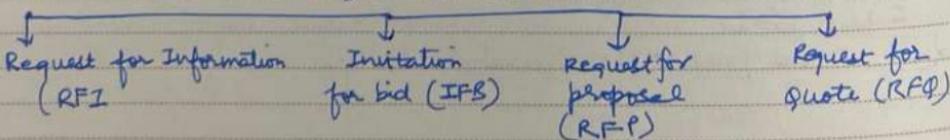
$$\text{Total} = \text{Initial cost} + \text{EMV}$$

Procurement

Contract Types



Bid Documents



→ Pre-approved seller list.

→ Source Selection criteria.

→ Independent cost estimate.

→ Procurement Statement of work - tells what will be procured.

→ Procurement strategy - outlines procurement contract type.

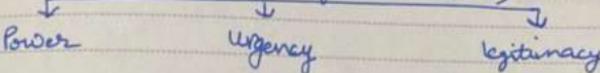
DATE:

stakeholder

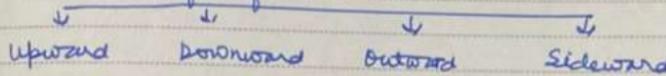
→ stakeholder cube

3D cube → Interests + Power + Influence of stakeholders

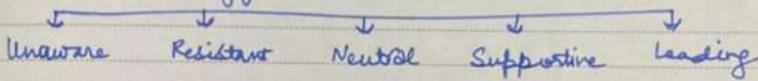
→ Salience model (of stakeholders)



→ Directions of influence



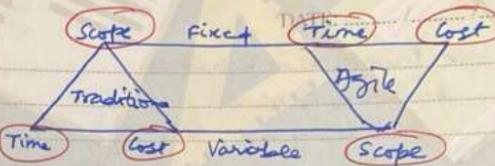
→ Stakeholder engagement assessment matrix



= X =

→ AGILE

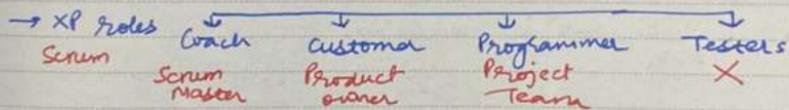
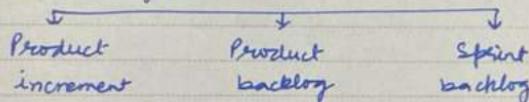
→ Inverting the triangle



→ Agile Manifesto Values

1. Individuals & Interactions - over - Processes & Tools
2. Working Software - over - Comprehensive Documentation
3. Customer Collaboration - over - Contract negotiation
4. Responding to change - over - Following a plan

→ Scrum artifacts



→ Metaphor

→ Sprint

Release

Sprint/Release planning

Product owner

Retrospective

Scrum Master

Dev Team

Daily Scrum

Iteration

Small releases

Planning game

Customer

Reflection

Coach

Team

Daily Standup

→ Little's law

We can predict completion time based on queue size.

→ Minimum Viable Product

→ Prioritization Techniques

1. Simple Scheme

- ↳ Priority 1 → Priority 2 → ... etc
- ↳ Problematic if multiple items are P1.

2. MoSCoW

- ↳ Must have, Should have, Could have, Would like (but not now)

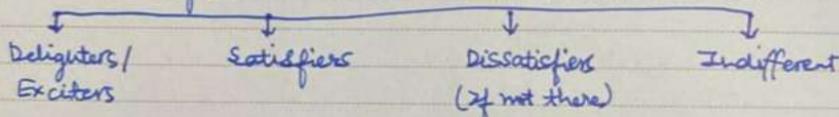
3. Dot Voting / Multi-Voting

- ↳ Distribute dots to requirements

4. Monopoly money.

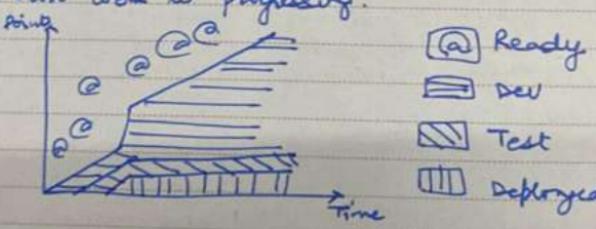
5. 100 point method

6. * Kano Analysis



→ Cumulative flow Diagram (CFD)

- ↳ Tells how work is progressing.



█ is widening, ▨ its bottleneck
are activity

→ Agile contracting

- ↳ Money for nothing - After x amount delivered, sponsor closed, you keep money
- ↳ Change for free - replace task x with y

→ Gulf of evaluation - one person interpretation is different from other.

$$= x =$$

→ Agile Chatterbox Chattering

- ↳ Use 5Ws & 1H
- ↳ May use project ticket

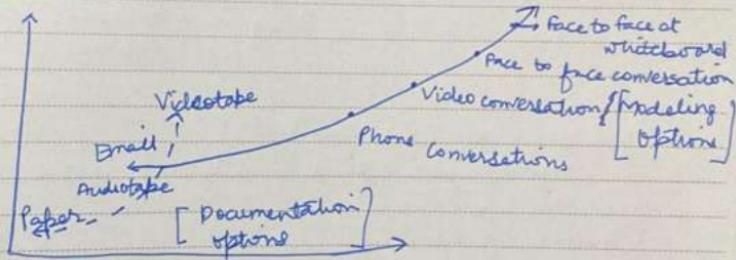
→ Agile modeling

- Use case diagram
- Data models (RDBMS)
- Screen designs
- Wireframes

→ Persona

↳ Quick guide of key stakeholders & interests.

→ Communication



→ Stakeholder zones

Red zone

Greenzone.

→ Workshop - meeting where work gets done

→ Brainstorming

quiet writing

Round Robin

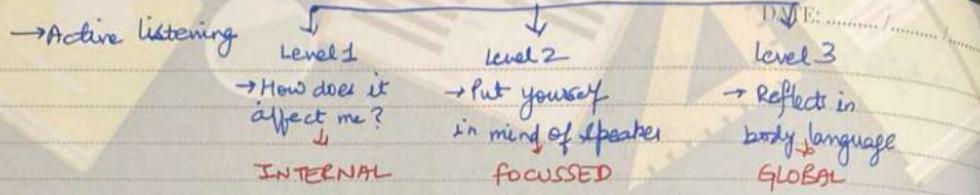
free for all

→ Collaboration Games

Remember the future
(prioritizing)

Prune the product tree
(understand dependencies of tasks)

Speedboat (sailboat)
(Wind - keeper
Anchor - blocker)

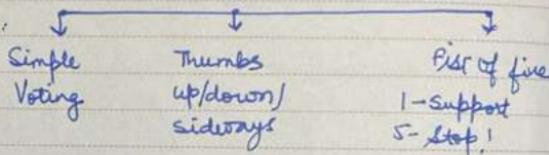


→ Conflict resolution

↳ Levels of conflict:

- 1 - Problem to solve
- 2 - Disagreement
- 3 - Contest
- 4 - Crusade
- 5 - World War

→ Participant decision Models:



→ COCOMO (Constructive Cost Model)

People cost 11 times more than processes

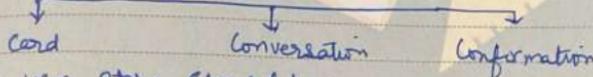
→ Generalizing specialists

→ Models of team development

1. Shu - Hg - Ri
 - ↓
 - Obey
 - ↓
 - Move
 - Find individual
 - ↓
 - Away path
 2. Deceyfus model of Adult Skill acquisition
- Novice → Advanced Beginner → Competent → Proficient → Expert

— X —

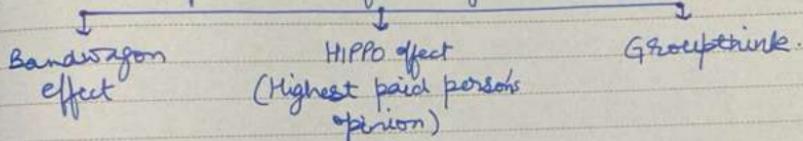
→ Parkinson's law = Work tends to expand to fill the time given.
 → Three C's of stories



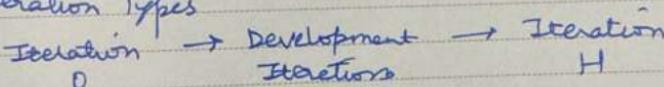
→ Effective user story should be:

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→ Wideband Delphi → Used for anonymous estimations, prevents:



→ Iteration Types



→ lead time - Time for entire process
 → cycle time - part of process
 closely related to WIP.

$$\text{cycle time} = \frac{\text{WIP}}{\text{Throughput}}$$

→ Kaizen :

Edward Deming → PDCA
 Plan - Do - Check - Act

→ Retrospective stages

1. Set stage - 6 minutes
2. Gather data - 40 —
3. Generate insight - 25 —
4. Decide what to do - 20 —
5. Close retrospective - 20 —

DATE:

Gather data step

- Triple nickel - 5 minute - 5 ideas, 5 people
- Mad / Sad / Glad

Generate Insight

- Fishbone
- Ask 5 whys

Decide what to do

- Set goals that are

S M A R T

Specific Measurable Attainable Relevant Timely

Close

- + → do more (plus)
- △ → do less (Delta)