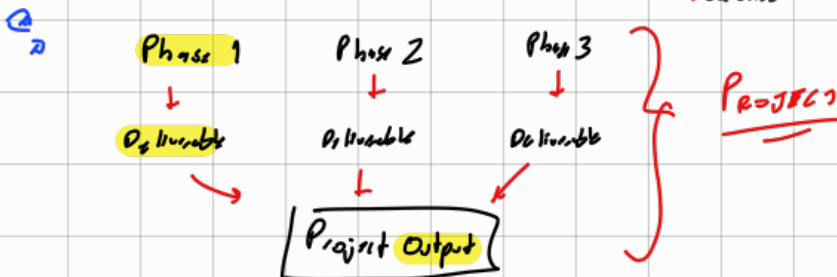


~ ① PM TERMS ~

① P. Expditer → P. Coordinator → Project Manager → Program Manager → Portfolio Manager

↑
↳ together
CEO

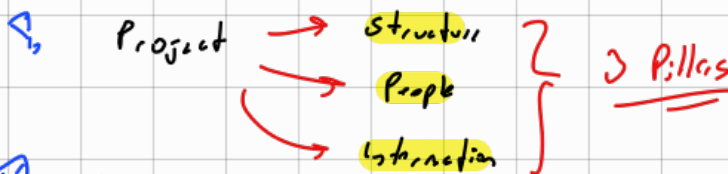
② Designing a phase → Project or Program } Product
Selling the phase → operation } Management → Total Lifecycle
↳ supplies
↳ production
↳ services



Phase-gate Review:

↳ Evaluates deliverables of a phase
↳ Determines if the project is ready to proceed to next phase

↳ Project Lifecycle → Phases grouped together.



STAKEHOLDERS

- ↳ PM
- ↳ Customer → Determines success
- ↳ Project Team
- ↳ Sponsor → Provides resources / responsible for aligning with goals
- ↳ Funct. Manager → Control resources / CEO etc.

STRUCTURES

- ↳ Funct. Organisation → FM > PM
- ↳ Matrix Organisation → FM ≅ PM
- ↳ Project oriented Org. → PM > FM
- ↳ Hybrid → Different departments have different structures

RISK VS ISSUE

- ↳ Risk → May happen
- ↳ Issue → Did happen

CONSTRAINTS

- ① Scope
- ② Schedule
- ③ Cost
- ④ Risk
- ⑤ Quality
- ⑥ Resources



Triple Constraints

~ ② PM PRINCIPLES ~

- ① PMI Code of Ethics →
- ① Responsibility
 - ② Respect
 - ③ Fairness
 - ④ Honesty

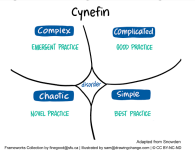
12 PRINCIPLES

- ① Stewardship
- ② Team environment
- ③ Stakeholders
- ④ Value
- ⑤ System Thinking
- ⑥ Leadership
- ⑦ Context
- ⑧ Quality
- ⑨ Minimize complexity
- ⑩ Optimize risk
- ⑪ Adaptability
- ⑫ Enable change

~ ③ PM PERFORMANCE DOMAINS ~

① Stakeholders → Identity → Understand → Analyze → Prioritize → Engage → Monitor

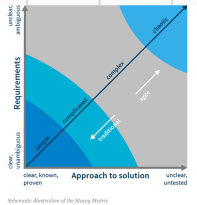
② Team → Servant Leadership
 ↳ Leadership can be: ① Controlled ② Distributed (shared)



③ Development Approach and Lifecycle → Determining approach

Strong Matrix

④ Planning → Resources: ① Team Resources ② Physical Resources
 ↳ Metrics
 ↳ Workforce
 ↳ Asset
 ↳ Hybrid



⑤ Project work → Performing the work
 ↳ Vendor Managing
 ↳ Lessons Learned and Retrospectives

⑥ Project Delivery → Is the project meeting objectives?

↳ Quality Req. can be reflected in: ① Completion Criteria ② Definition of Done ③ Statement of work
 ↳ Some projects deliver value at the end some deliver throughout.

⑦ Measurement → How are we doing? → Planning → Metrics → ? → Deliveries → Work

↳ Key Perf. Indicators (KPIs)
 ① Leading → Predict the trend

② Lagging → Measure the deliverables (past)

Effective criteria

S
M
A
R
T
Specific
Measurable
Achievable
Relevant
Timely

↳ Pitfalls: ↳ Hawthorne Effect → Observation changes behavior

↳ Vanity Metric → Statistics that look good on surface

⑧ Uncertainty → Uncertainties → Risk Associated

↳ Ambiguity Associated
 ↳ Complexity Associated

What to do?

↳ Gather Info

↳ Prepare for multiple outcomes

↳ Build in resilience

↳ Keep volatility in check

~ ⑦ PREDICTIVE PROJECT MANAGEMENT TERMS ~

⑦ PREDICTIVE PROJECT MANAGEMENT → = Traditional = Waterfall

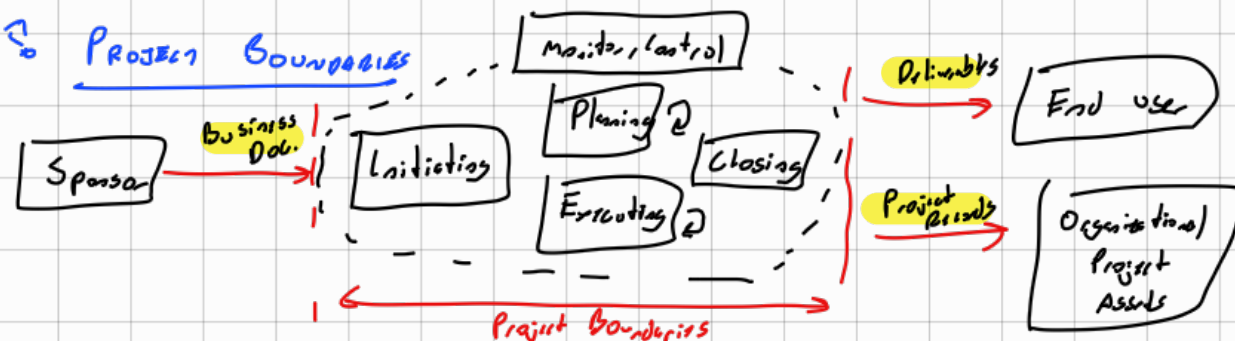
- Customer needs are well defined
- Standards are clear
- Changes to scope are not expected
- PM in control
- Planning done upfront
- Objective: Complete the scope ASAP and reduce the cost while meeting objectives.

⑦ Process Groups

⑦ Integration Process

- | | | |
|------------------------------|--|---|
| ① Initiating | → Getting the project authorized | → Develop Project Charter |
| ② Planning | → Putting together the PMP | → Develop Project Management Plan |
| ③ Executing | → Starting the work | → Direct and Manage Project work
→ Manage Project Knowledge |
| ④ Monitoring and Controlling | → Checking the work throughout the project | → Monitor and Control Project work
→ Perform Integrated Change Control |
| ⑤ Closing | → The end | → Close Project or Phase |

⑦ Project Boundaries



1. IT70's

Every phase has its own **Inputs** **Tools** **Techniques** **Outputs**

2. Common Inputs

- Enterprise Environmental Factors (EEF) → Things that influence the project but not a part of it
→ Internal and external, Positive and negative
- Organizational Process Assets (OPA) → Assets of the company
- Project Documents → Additional documents apart from the PMP
→ PMP can't be changed without a Change Req. while Project Documents are updated regularly
- Project Management Plan (PMP)
 - Management Plan → Project Management Plan
 - Register, List, Log → Project Documents
- Business Documents → Why is this project initiated?
 - Business Case
 - Project Benefits Management Plan
- EEF
 - Org. Culture, Structure, Resources
 - Regulations
 - Political Climate, Market Conditions
- OPA
 - Process Guidelines
 - Past Knowledge
 - Corporate Knowledge
 - Reusable Components

3. Common Tools AND Techniques

- Expert Judgment → Subject Matter Expert (SME)
 - Data Gathering → Checklists etc.
 - Data Analysis → Alternative Analysis, Root Cause Analysis (RCA), Variance Analysis, Trend Analysis
 - Data Representation
 - Decision Making → Multicriteria Decision Making
 - Meetings → Agenda, Meeting Minutes
 - Project Management Information System (PMIS) → Automated computer system
 - Interpersonal and Team Skills
- 

4. Common Outputs

- Change Request
- Work Performance Data, Information, Report → **Executing** → **Control** → **Information** → **Report**
→ **data**
- Updates
- Once a work is done on a project → team updates work performance data

~ ⑤ PM Process ~

1. Project Charter

- ↳ Authorizes the project
- ↳ Defines authority
- ↳ Outlines objectives
- ↳ Formally initiates project
- ↳ Project Sponsor ^{issues} → Project Charter

Charter → Objectives, Stakeholders, Milestones

↳ vs
Scope Statement → Detailed deliverables, Boundaries, Acceptance Criteria

2. Progressive Elaboration → Taking the project from concept to PMP.

How to? → Management Plans

What to do? → Business

3. Scopes

- ↳ Product Scope → Features and functions
- ↳ Project Scope → Work needed to accomplish
- ↳ Gold Plating → Doing extra work
- ↳ Scope Creep → Unauthorized work added to scope

4. STATEMENT OF WORK

↳ Statement of Work (SOW) ^{refers to} → Scope
Business Needs
Strategic Plan

5. INTERPERSONAL AND TEAM SKILLS

- ↳ Job Shadowing → Viewing the job being done and record areas of improvement
- ↳ Situational Leadership → Adapts and evolves based on the competence of the team

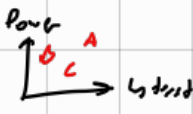
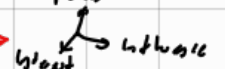
6. REQUIREMENTS TRACEABILITY MATRIX

Req.	Source	Person	Description	Status
1	Tom			In Progress
2	Bob			Delayed
3	Mary			Cancelled

1

DATA REPRESENTATION

STAKEHOLDER

- Power - Interest Grid 
- Stakeholder Cube 

REQ

- Syllabus Model $\rightarrow$ Power, Urgency, Legitimacy

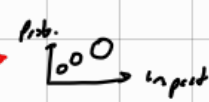
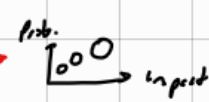
RESPONSES

- Directions of Influence $\rightarrow$ Senior Management $\rightarrow$ PM $\rightarrow$ up $\rightarrow$ down $\rightarrow$ team $\rightarrow$ sideways $\rightarrow$ CEO wants from PM $\rightarrow$ upward influence
- Mind Mapping
- Affinity Diagram

RISK

- Organizational Charts $\rightarrow$ Hierarchical, Matrix Based (RACI), Task Oriented

PROCESSES

- Probability and Impact Matrix 
- Bubble Chart $\rightarrow$ Prob. 

QUALITY

- Stakeholder Engagement Assessment Matrix $\rightarrow$ Current vs Desired $\rightarrow$ Unaware, Resistant, Neutral, Supportive, Leading
- Cause and Effect Diagrams $\rightarrow$ Ishikawa = Fishbone = Why-Why $\rightarrow$ Causes of defects

IDEAS

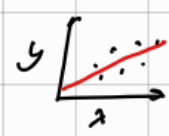
- Histograms $\rightarrow$ Pareto Diagram $\rightarrow$ 80/20 Rule $\rightarrow$ Pareto Diagram $\rightarrow$ Ranks issues by freq.
- Scatter Diagrams $\rightarrow$ Defects per week 

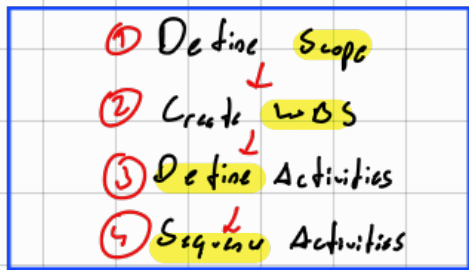
RELATION

- Flow charts $\rightarrow$ $\square \rightarrow \square \rightarrow \square$ $\rightarrow$ Room for improvement?

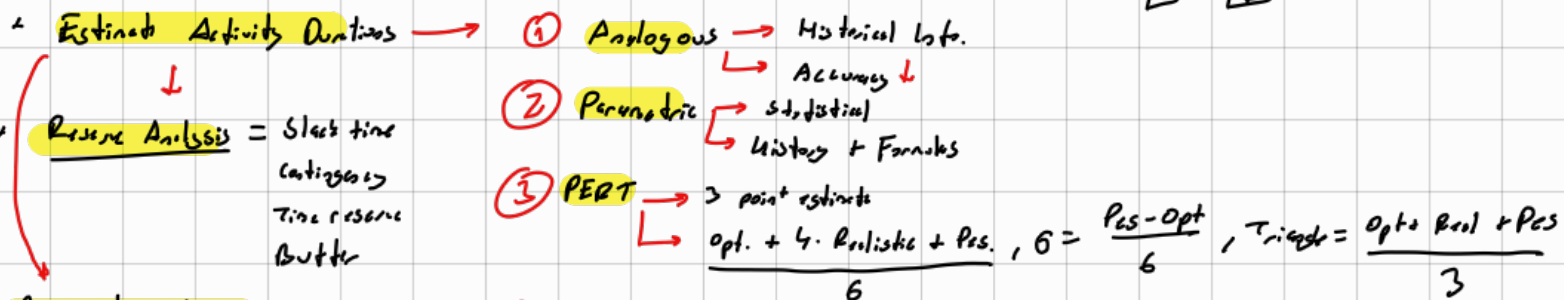
- Affinity Diagram $\rightarrow$ Group ideas

- Scatter Plot $\rightarrow$ Determines if a correlation exist





↳ Sequence Activities → Pseudocode Diagramming Method (PDM)

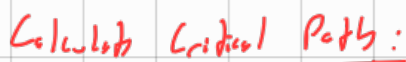


- 2. Develop Schedule → Sequences, Durations, Resource requirements, Constraints } Schedule model
- Resource Leveling → Reallocates resources or putting different times
- Crashing: Adding Res. → Last ↑ Cost ~
- Fast Tracking: Perform Parallel → Cost ~ Last ↑

①

①

①

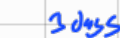


⚠ Activities on the critical path has no

same thing!!

← Float / Shift / Total Float

The amount of time you can delay an activity without delaying the project



$\text{Duration} = \frac{\text{EF} - \text{ES} + 1}{\text{or}} \frac{\text{LF} - \text{LS} + 1}{}$

Forward Pass $\rightarrow$ ES, EF

S - [A] - [B] - [C] - [D] - [E] - F

Path Conversion

1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-20-21-22-23-24-25-26-27-28-29-30-31-32-33-34-35-36-37-38-39-40-41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-56-57-58-59-60-61-62-63-64-65-66-67-68-69-70-71-72-73-74-75-76-77-78-79-80-81-82-83-84-85-86-87-88-89-90-91-92-93-94-95-96-97-98-99-100

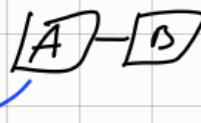
LS, LF $\leftarrow$ 1 Backwards Pass

Free float is the amount of time you can delay an activity without delaying the next activity

$$\angle \text{Free Float} \neq \text{Total Float} = \text{Slack} = \text{Float}$$

$$FF_A = ES_B - EF_A - 1$$

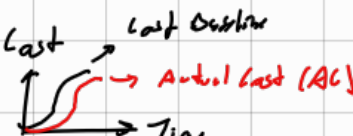
↳ Critical path has no FF as well.



1. Cost Management

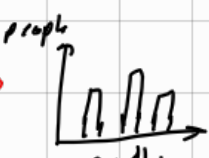
- Value Engineering →
 - Fixed → Costs stay same
 - Variable → Costs that vary
 - Direct → Directly to project
 - Indirect → Shared among projects (salary etc.)
 - Sub → Already spent
- Control threshold → At what % should it be brought under control?
- Cost Estimates →
 - Definitive Estimates → -90%, +10%
 - Budget Estimates → -90%, +25%
 - Range order of magnitude estimates → -25%, +75%
- Basis of Estimates →
 - Range → Always give a range for estimates.
 - Confidence level
- Cost Estimates →
 - Labor
 - Materials
 - Equipment
 - Services
 ⇒ Project Cost Estimates should not include operational costs.

2. DETERMINE BUDGET

- Cost aggregation → Sum of the cost of activities
- Reserve analysis →
 - ① Contingency Reserve → PM
 - ② Management Reserve → Management
- Budget Limitation is handled by rescheduling
- Cost Baseline is displayed by S-curve →
 

3. RESOURCE MANAGEMENT

- RACI →
 - R esponsible → Does work
 - A ccountable → Oversees work
 - C onsulted
 - I nformed
 For every task, only one person is accountable.

Tasks/Project	A	R	C
1		R	C
2		A	C
- Resource Management Plan →
 
- Team Charter →
 - Includes acceptable behavior
 - Ideally created by entire team

Risk Management 1

Sum of Individual Project Risks is Overall Project Risk

Risk Breakdown Structure (RBS)

Risk

External

Regulation

Vendors

People

Funding

Organizational

Identify Risks → Risk Register → Identified risks + responses

Risk Report → Sources of Overall Project Risk

Ambiguity Risk → Represents uncertainty

Prompt List → Predetermined list of risk categories.

Qualitative Analysis → Risks prioritized by prob. and impact (individual)

Qualitative Analysis → Risks prioritized by total effort or overall objectives

Monte Carlo Simulations:

What if scenario computer simulations

Distributions

Assigning numbers

Risk Process

Plan Risk Management

Identify

Qualitative

Quantitative

Plan Response

Sensitivity Analysis (Tornado Chart)

Decision Tree (Cost or Buy Analysis)

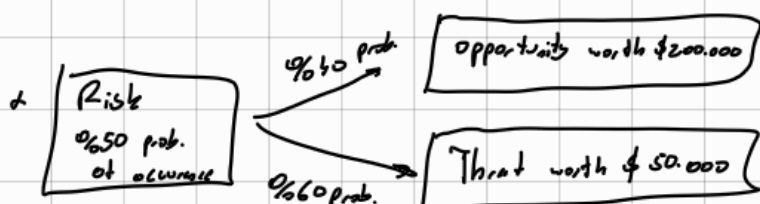
Risk Responses

Risk Response Strategies	
Negative Strategies	Positive Strategies
- Escalate - Avoid - Transfer - Mitigate - Accept	- Escalate - Exploit - Share - Enhance - Accept

Contingent Response → Under certain conditions.

EMV of the risk

Expected Monetary Value



$$\text{Positive} \rightarrow 0.50 \cdot 0.40 \cdot \$200,000 = 40,000$$

$$\text{Negative} \rightarrow 0.50 \cdot 0.60 \cdot \$50,000 = 15,000$$

$$\text{EMV} = \$25,000$$

Risk → Risk Response

Residual Risk: Risk remaining after response

Secondary Risk: Risk arise due to response

Risk Management Plan

How risks will be identified

General approach to risk responses

Planning

Plan Risk Responses

What should we do? (Risk Register)

Monitoring and Controlling

Monitor Risks

Is it working? → If not → Change Req.

Risk

identified

Apply Risk Response → Use Contingency Reserve

Known Unknowns

Not identified

Work around → Use Management Reserve

Unknown Unknowns

Audits determine the effectiveness of risk management strategies.

Crisis Meetings

Facing a critical issue → Immediate resolution

Procurement Management - Contracts

- ① **Fixed Price**
 - Lump sum
 - or price (labor + materials)
 - Firm fixed price
 - Fixed price incentive fee
 - Fixed price with economic adjustment
 - ② **Cost-reimbursable**
 - Cost + fixed fee
 - Cost + incentive
 - Cost + award
 - satisfaction
 - ③ **Time and Material**
 - Base buys material + hourly price per labor
- when the work is not decided
- Buyer buys materials
- RISK ↑
- Time and Material Contract → when cost of one activity can be estimated but number of activities is not clear
 - Bidding Documents → Request for Info (RFI), Invitation for Bid (IFB), Request for Proposal (RFP), Request for Quote (RFQ)
 - Procurement Management plan → Bidding Documents → Proposals → Conduct Procurements Process
 - Procurement Statement of Work
 - What will be outsourced?
 - Specifications
 - Desired quality
 - Procurement Strategy
 - Phases
 - Types of contracts
 - Delivery methods
 - Agreements
 - Pricing, payment terms
 - Insurance and performance bonds

Communication Management

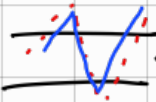
- Number of channels →
$$\frac{N \cdot (N-1)}{2}$$

number of people
- Written
 - Formal → contract
 - Informal → email
- Verbal
 - Formal → presentation
 - Informal → call
- Models ⇒
 - Paralingual → Tone of voice
 - Nonverbal → Gestures
 - Blockers → Noise
- Push Communication → Sending one way → emails
- Pull Communication → Information is available, self-service → websites

Knowledge Management

- Project Knowledge
 - Explicit → Formally Documented
 - Tacit → Inside the heads
- Output is Lessons Learned Register
- Past experience → Corporate Knowledge → OPA

1. QUALITY MANAGEMENT

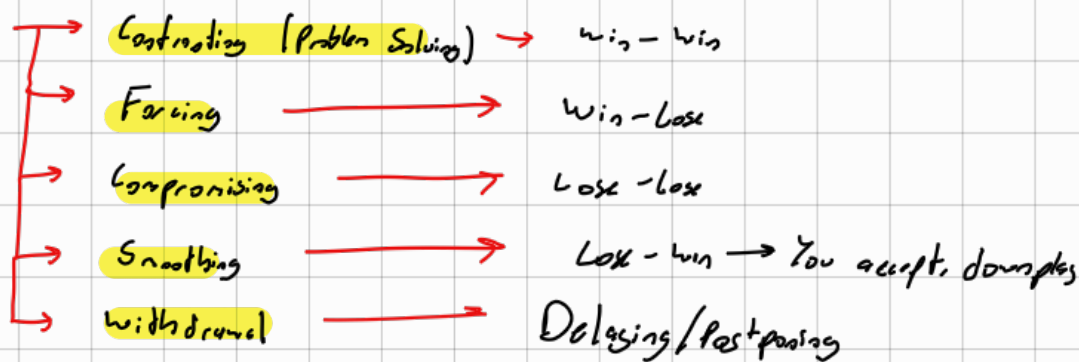
- Audits → Done by the Organisation's **Internal Audit Department** → External to the project
- **Design for X** → $X = \text{Cost, Safety etc.}$
- **Cost of Quality (COQ)** →
 - ① **Cost of Conformance** → **proactive measures**
 - ② **Cost of non-conformance** → **reactive measures**
- **Total Quality Management (TQM)** → Involvement of all parties **Top Management** to **floor level**
↓
responsible for quality as well
- **Requirements Documentation** → Includes quality req.
- **Quality vs Grade** ⇒ A basic phone → High Quality - Low Grade
↓ Meeting req. ↓ Features
- **Control Charts** → 
 - Points points crossing limits
 - Non-random patterns

2. TEAM DEVELOPMENT

- **Tuckman's Ladder** →
 - Forming → Introduction
 - Storming
 - Norming
 - Performing
 - Adjourning → Release
- **Herzberg's Theory of Motivation** →
 - Hygiene Agents → expected
 - Motivation Agents
- **McGregor's Theory of X and Y** →
 - X → micromanaged X
 - Y → Self-led, motivated ✓
- **Theory Z** → Increased Loyalty (Japan)
- **Expectancy Theory** → Expected → Not Happening → Demotivation
- **McClelland's 3 Needs Theory** →
 - Achievement
 - Power
 - Affiliation
- **Forms of Power** →
 - Reward Power** → ability to reward
 - Expert Power** → SME
 - Legitimate Power** → formal power
 - Referent - Respect/Personality**
 - Punishment**

1. TEAM MANAGEMENT

↳ Conflict Resolution



↳ Steps to follow

- ① Define the cause
- ② Analyse
- ③ Identify Solutions
- ④ Implement selected solution
- ⑤ Review
- ⑥ Confirm

↳ Facilitation → Building consensus and overcoming obstacles

2. CHANGE CONTROL

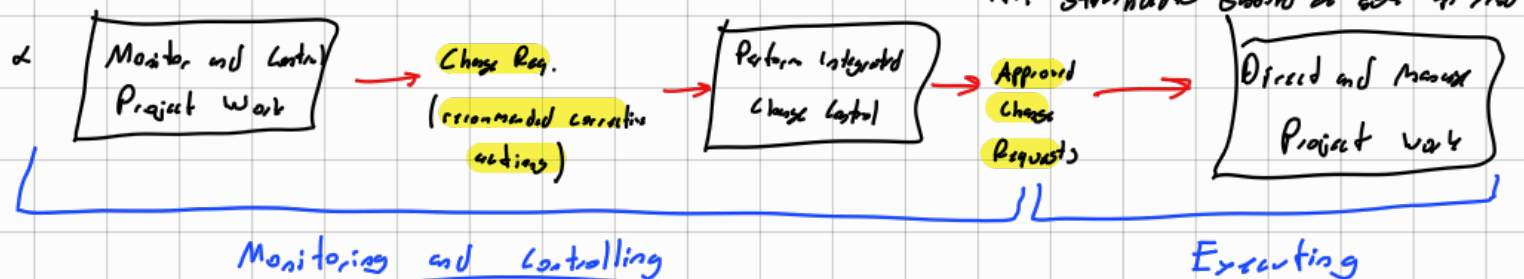
↳ Changes are not part of a specific stage → changes happen from initiating to closing (whole lifecycle)

↳ Perform Integrated Change Control (PICC) → Integration Process in Monitor and Control

↳ Process for making change:

- ① Stakeholder identifies a need for change
- ② Written change request is submitted to PM
- ③ PM assess
- ④ Change request is submitted to Change Control Board (CCB)
- ⑤ Either approved or rejected
- ⑥ If approved → PM will adjust the Project Management Plan
- ⑦ If rejected → Change Log is updated → Teams develop new req.

↳ Keeps track
↳ All stakeholders should be able to read



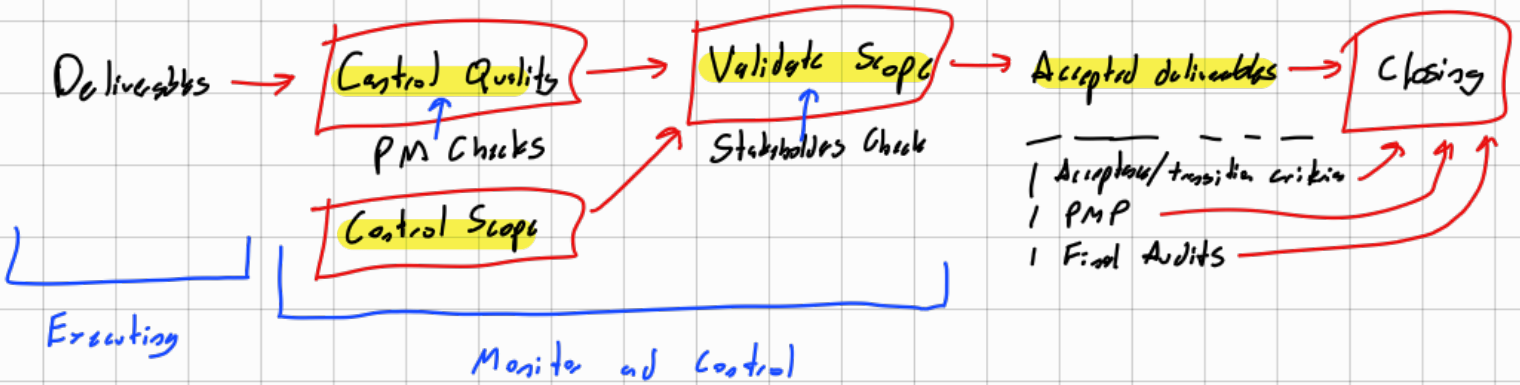
Q6 Control Process

- Control Scope
 - Control Schedule
 - Control Costs
- } Planned work vs Actual work

- Control Quality $\longleftrightarrow$ Validate scope
- Done in parallel or immediately after.
- Rule of 7 $\rightarrow$ AM $\rightarrow$ upper $\rightarrow$ lower $\rightarrow$ on one side $\rightarrow$ fix the process

Q7 CLOSING

- THE WAY TO CLOSING:



CONTROL COSTS PROCESS

EARNED VALUE MANAGEMENT (EVM)

- < Series of formulas to calculate the cost and schedule progression.
- < Plan vs Actual work.

E.P. Bill manages a project. Budget of 100\$, duration of 5 days.
Today is the end of 3rd day. Team has completed 75% and has spent 70\$

① Summary

Budget $\rightarrow$ 100\$
Duration $\rightarrow$ 5 days
Now $\rightarrow$ 3rd day completed
Completed $\rightarrow$ 75%
Spent $\rightarrow$ 70\$

②

$$\begin{aligned} BAC &= 100\$ \\ PV &= 3/5 \cdot 100 = 60\$ \\ EV &= 75/100 \cdot 100 = 75\$ \\ AC &= 70\$ \end{aligned}$$

③

$$\begin{aligned} CV &= 75\$ - 70\$ = 5\$ \rightarrow \text{Project is under budget} \checkmark \\ CPI &= \frac{75\$}{70\$} = 1,07 \rightarrow 7\% \text{ under the budget} \end{aligned}$$

$$\begin{aligned} SV &= 75\$ - 60\$ = 15\$ \rightarrow \text{we are ahead 15\$ worth of work} \\ SPI &= \frac{75\$}{60\$} = 1,25 \rightarrow \text{we are ahead of schedule 25\%} \end{aligned}$$

④

$$EAC = \frac{100\$}{1,07} = 93,46\$ \rightarrow \text{we will be done at 93,46\$}$$

$$ETC = 93,46\$ - 70\$ = 23,46\$ \rightarrow \text{How much more needs to complete}$$

$$VAC = 100\$ - 93,46\$ = 6,54\$ \rightarrow \text{How much left of completion.}$$

$$TCPI = \frac{(100\$ - 75\$)}{(100\$ - 70\$)} = 0,83 \rightarrow 83\% \text{ effort is enough to complete on budget}$$

Ex 2

Budget: 4000\$

Duration: 4 year

Now: 12th month completed $\rightarrow$ 35,4%

Completed: 35%

Total Spent: 1500\$

① $BAC = 4000\$$

$PV = 35,4\% \cdot 4000\$ = 1416\$ \rightarrow$ Planned! (Work should have done)!!

$EV = 35\% \cdot 4000\$ = 1400\$ \rightarrow$ Earned! (Work Done)!!

$AC = 1500\$$

②

$CV = 1400 - 1500 = -100\$ \rightarrow EV - AC$

$CPI = \frac{1400}{1500} = 0,93 \rightarrow EV/AC$

$SV = 1400\$ - 1416\$ = -16\$ \rightarrow EV - PV$

$SPI = \frac{1400}{1416} = 0,99 \rightarrow EV/PV$

} COST

} SCHEDULE

③ $EAC = \frac{4000}{0,93} = 4301\$ \rightarrow \frac{BAC}{CPI} \rightarrow$ Estimate at completion.

$ETC = 4301\$ - 1500\$ = 2801\$ \rightarrow EAC - AC \rightarrow$ How much more?

$VAC = 4000 - 4301 = -301\$ \rightarrow BAC - EAC \rightarrow$ Variance

$TCPI = \frac{4000 - 1400}{4000 - 1500} = 1,07 \rightarrow \frac{BAC - EV}{BAC - AC} \rightarrow$ How hard to work?

$CPI = \frac{EV}{AC} \rightarrow TCPI = \frac{BAC - EV}{BAC - AC}$

④

$SPI > 1 \rightarrow$ Ahead of Schedule

$CPI < 1 \rightarrow$ Over budget

} Being Crashed

Adding Resources (cost)

INITIATION

Develop Project Charter

Identify Stakeholders

PLANNING

Scope Management Plan

Collect Requirements
↓
Define Scope
↓
Create WBS

Schedule Management Plan

Define Activities
↓
Estimate Durations
↓
Sequence Activities
↓
Develop Schedule

Cost Management Plan

Estimate Costs
↓
Determine Budget

Resource Management Plan

Estimate Activity Resources

Develop Project Management Plan

Communication Management Plan

Procurement Management Plan

Quality Management Plan

Stakeholder Engagement Plan

Risk Management Plan

Identify Risks
↓
Qualitative Analysis
↓
Quantitative Analysis
↓
Plan Risk Responses

EXECUTING

Acquire Resources

Develop Team

Manage Team

Manage Stakeholder Engagement

Manage Communication

Manage Quality

Conduct Procurements

Implement Risk Responses

Direct and Manage Project Work

Manage Project Knowledge

MONITORING & CONTROLLING

Monitor Stakeholder Engagement

Monitor Communications

Monitor Risks

Monitor and Control Project Work

Perform Integrated Change Control

Control Resources

Control Procurements

Control Costs

Control Schedule

Control Quality

Control Scope

Validate Scope

Tips:

Stakeholder Engagement

Communications

Risks

External Causes

Monitor

Tips:

Procurements

Risk Responses

PM is responsible

CONDUCT

⑥ AGILE

Agile Manifesto in 2001

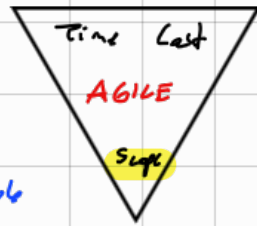
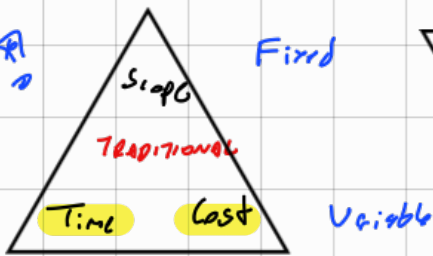
Approach	Requirements	Activities	Delivery	Goal
Predictive	Fixed	Performed once	Single	Cost
Iterative	Dynamic	Repeated	Single	Correctness
Incremental	Dynamic	Performed once	Frequent	Speed

AGILE

Iterative → Release → Feedback → Optimize → Release

Incremental → Releasing as increments

Agile offers early risk identification



Agile project ends when time is done / money is spent fully

Traditional → Funded in the beginning

Agile → Funded incrementally

AGILE METHODS

- Scrum → most used, Scrum = Meeting
- Extreme Programming (XP)
- Kanban Development
- Lean Software Development
- Scaled Agile (SAFe)

3 PILLARS OF SCRUM

- Transparency
- Inspection
- Adaptation

SCRUM ACTIVITIES

- Sprint Planning Meeting
- Sprints → Includes daily stand-ups
- Sprint Review Meeting
- Sprint Retrospectives

SCRUM ROLES

- Product Owner → Represents Customer
- Scrum Master → = Agile PM
- Development Team → Manages own work

SCRUM ARTIFACTS

- Product Increment
- Product Backlog
- Sprint Backlog

Interaction Matrix

Product Roadmap

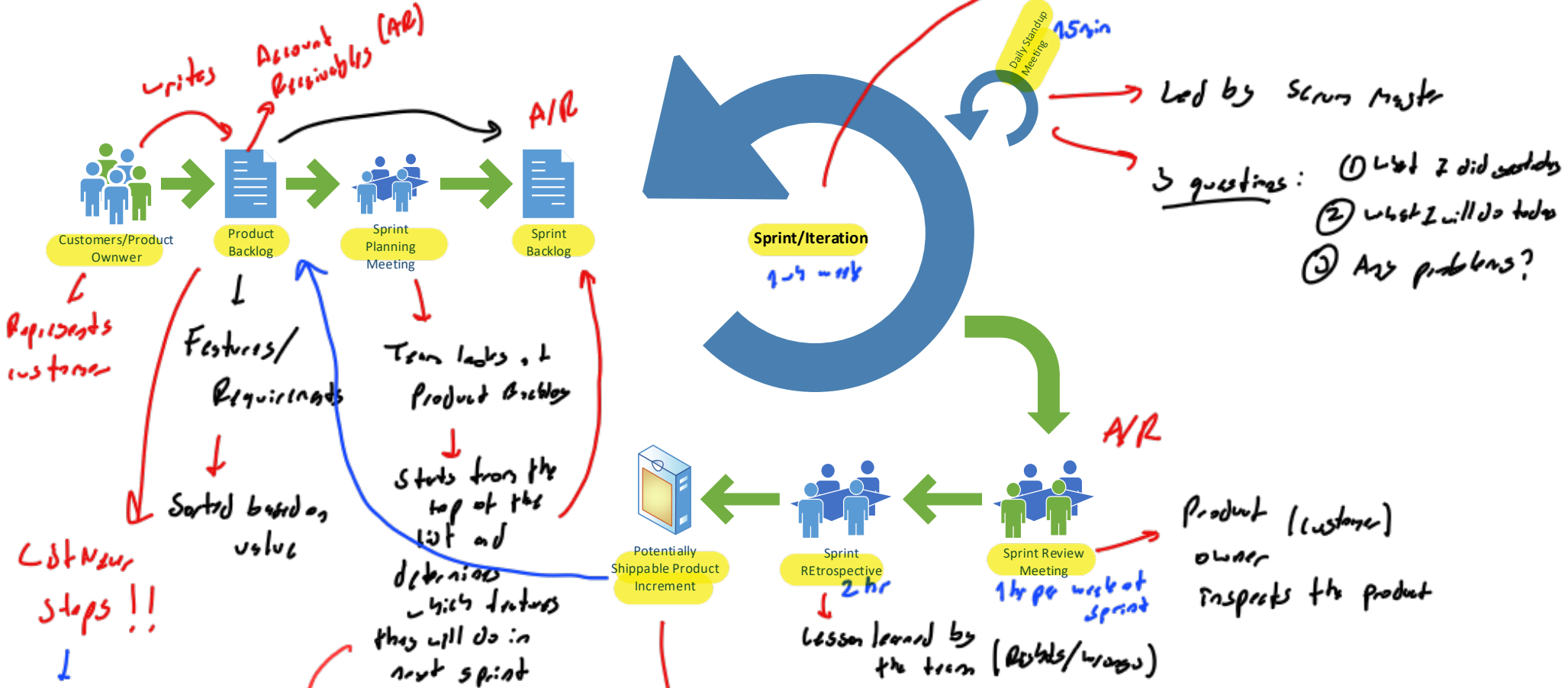
Temporary Artifact
Establishes relationship
and dependencies

includes

- Releases
- Milestones
- Success Criteria
- Market Forces

- Release: Series of sprints (scrums) that result in a shippable product.
- Stakeholder engagement and satisfaction is the most important aspect!

Technical Institute of America Agile Scrum Process



Agile Project Management, ©TIA Education Group. DO NOT SHARE.

- They know how fast they was (team velocity)
- **Velocity** → Amount of fully completed work in a sprint. Partially done work is not included.
- **Cadence** → Rhythm of activities conducted throughout the project

1. Extreme Programming (XP)

↳ Software development centric agile method.

↳ Finding the simplest thing that could possibly work.

↳ Roles → Coach = Scrum master

Customer = Product owner

Programmers

Testers

↳ Iteration Planning → Develops big function into tasks → Estimate work → Based on previous

↳ Metaphor and simile → simplifying terms

↳ Test-Driven Development (TDD)

↳ Scrum has roles and ceremonies

XP has engineering practices

2. Lean Software Development

↳ Eliminate waste → Partially done work, Delays, Unnecessary Functions, Motion without value

3. KANBAN DEVELOPMENT

↳ Low tech - High Tech

↳ Limiting WIP (work in progress)

Items	In Progress	Testing	Done
□ □ □ □ □ □	□ □ □ □	□ □ □	□ □ □ □

Limits → 6 cards 4 cards
Team determines the limits

4. Other Agile Methods

↳ Feature-Driven Development → First developing an overall model

↳ Crystal → Methodologies coded by colors → Crystal Clear → Small teams - non critical work

↳ Crystal Moments → Larger teams - critical work

↳ Scalable Agile Framework (SAFe) → Scrum at enterprise level
Big global teams
Lean + Agile + System Thinking

Economic View
System Thinking

Variability + Options

↳ Disciplined Agile (DA) → Guide that helps teams choose their way of work (Agile, Lean, DevOps)
Distribution and complexity

5. Prioritization Techniques

① Simple Scheme → 1-, 2-, 3-

② MoSCoW → Must Have, Should Have, Could Have, Would like to have

③ Dot Voting or Multi Voting } Same Principle

④ Monopoly Money

⑤ 100-point Method

⑥ Kano Analysis

⑦ Cost of Delay → Assigning numerical values

Delighters/Exciters
Satisfiers
Dissatisfiers
Indifferent

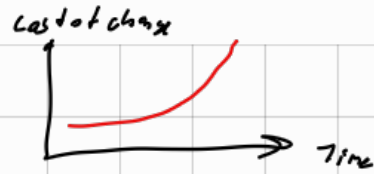
Understand satisfaction

Not this time



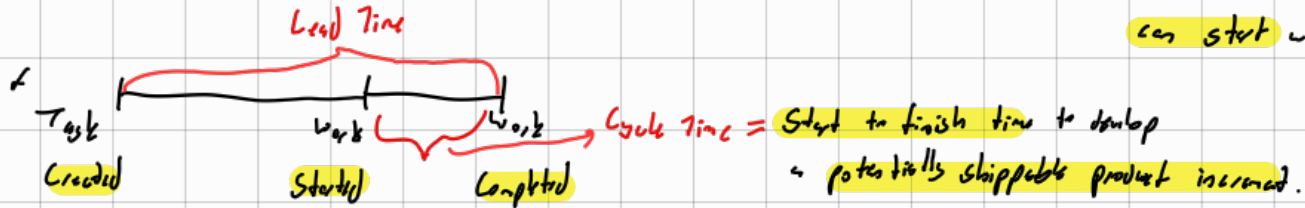
DELIVERING VALUE INCREMENTALLY

Time ↑ Cost of Change ↑



MINIMUM VIABLE PRODUCT

- Minimum product the customer can use and generate value
- Definition of Ready → Conditions agreed by the team to be complete before the team can start working on the next.



Little's Law → $WIP = Throughput \times CT$ (WIP = Work in Progress)

AGILE MODELING

- 1 Case Diagrams → Use cases of users
- 2 Data Models → Grouping data (customer data, address data etc.)
- 3 Screen Designs → Simple screenshot sketches
- 4 Wireframes → Mock-up prototype
- 5 Personas → Quick guide of stakeholders
- 6 Product Box → Most valuable aspects

CONFLICT RESOLUTION

- Level 1: Problem to solve → Sharing info
- Level 2: Disagreement → Personal protection
- Level 3: Contest → Must win
- Level 4: Crusade → Protecting the group
- Level 5: World War → Must destroy the other (Physical harm) → No solving → Break the groups

PARTICIPATORY DECISION MODELS

- 1 Simple Voting → Vote for or against it
- 2 Thumbs up/down/sideways
- 3 Fist of five → Based on number of fingers

MODELS OF TEAM DEVELOPMENT

- Shu - Ha - Ri Model of mastery → Shu - Obey, Ha - Moving away from rules, Ri - Finding own path
- Dravos Model of Adult Skill Acquisition → Novice, Advanced Beginner, Competent, Proficient, Expert
- Tuckman's Ladder

1. Team Space

- < Agile teams are no more than 12 people
- < Lots of low touch - high touch
- < Caves (personal) and Connos (group) spaces
- < Osmotic Communication → Learning by overhearing
- < Tacit knowledge → Collective group information not written down

2. Timeboxing

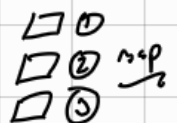
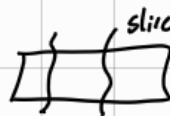
- < Daily stand up → 15 minutes
- < Retrospectives → 2 hours
- < Sprints → 1-4 weeks
- < Parkinson's Law → Work tends to expand and fill the given time

3. Decomposing

- < Themes → Epics → Features → Stories → Tests

4. User Stories

- < User story = backlog
- < Every requirement is a user story
- < Common structure → As a <user type> I want/need to <goal>. So that <value>
- < 3 cls of user stories
 - Card
 - Conversation
 - Continuation
- < INVEST →
 - I ndependent
 - N egotiable
 - V aluable
 - E stimatable
 - S mall
 - T estable
- < If Sponsor requests added feature → PM creates user story → Product owner decides priority
- < Story Slicing → Breaking down large stories
- < Story Mapping → Prioritization technique for features, epics and stories
- < Product owner rejects user story → story is updated with the reason



Product Backlog

- Refining (grooming) → high priority ↑ → modeled in greater detail
low priority ↓ → modeled in lesser detail
- Story points → Assigning Fibonacci numbers to stories
- Triplet sizing → Giving S, M, L, XL to stories
- Wideband Delphi → Group based estimation
- Detailed
Emergent
Estimable
Prioritized
- Prevents →
 - Badman Effect → Herd Behavior
 - Hippo → Highest paid person's opinion
 - Groupthink → we want individual decisions

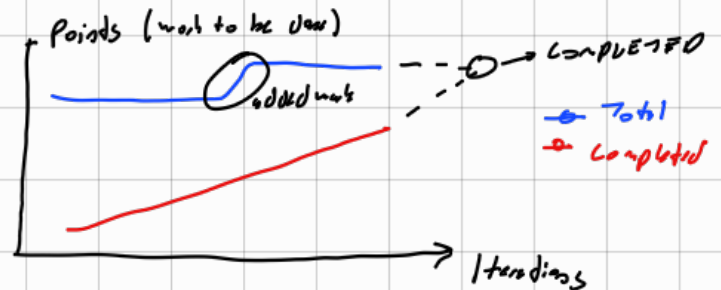
Product Backlog		
Story 1		21
S 2		13
S 3		8

Product Roadmap

- Story map → convert → Product Roadmap
- When features will be delivered and what is included in each release
-
- Spike → Time-based effort to learn and better understand → helps estimate better
- Spikes →
 - Architectural Spike → Period of time dedicated to proof of concept → Testing
 - Risk-Based Spike → Team investigate to reduce risk

Tracking Team Performance

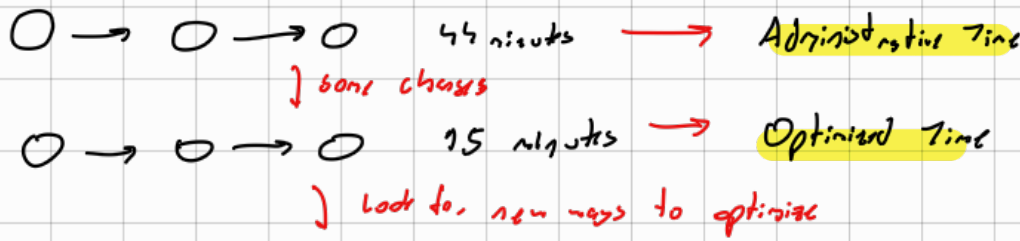
- Burn Charts →
 - Burn up (work done)
 - Burn down (work remains)



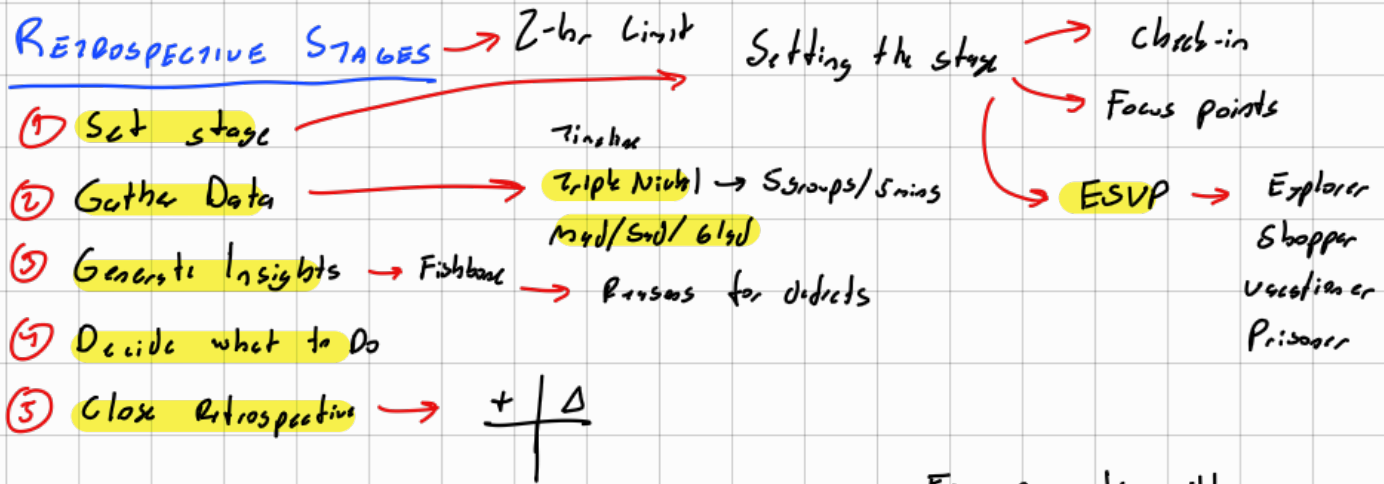
- Velocity Charts → (work per iteration/sprint)



1. VALUE STREAM MAP



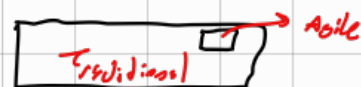
2. RETROSPECTIVE STAGES



~ ⑤ HYBRID PROJECTS ~

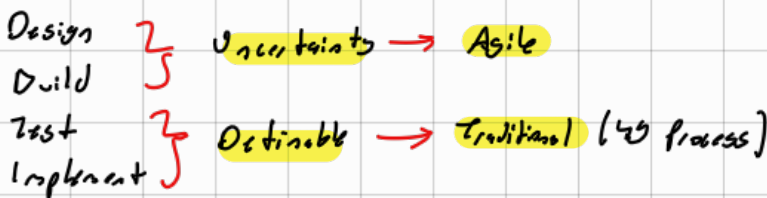
For projects with varying degrees of complexity

or vice versa



3. HYBRID METHOD 1

Software Project



4. HYBRID METHOD 2

Using some components of both simultaneously

5. HYBRID METHOD 3

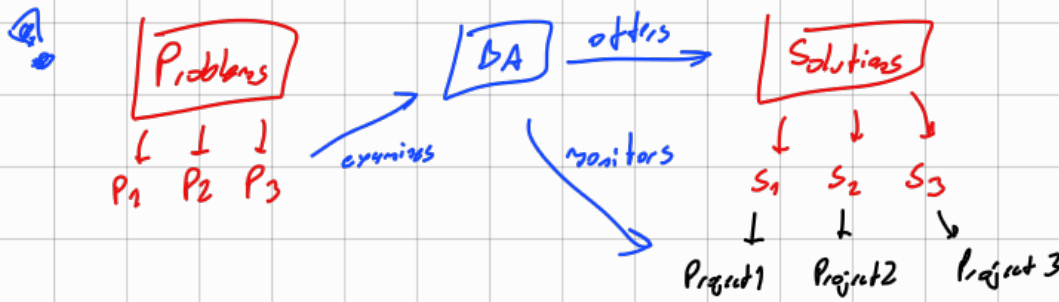
• Predominantly Traditional, some agile
 • Not a phase, just a tiny part

6. HYBRID METHOD 4

• Predominantly Agile, some traditional
 • Usually for 3rd party work

8 Business Analysis

ELICITATION

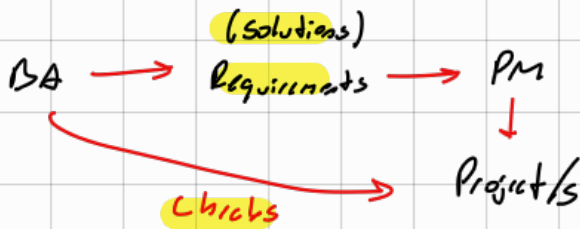


BA is the application of knowledge, skills, tools and techniques to;

- Determine problems
- Identify needs
- Elicit, analyse, specify and communicate requirements
- Define criteria for analysing results

Requirements are gathered by User Stories

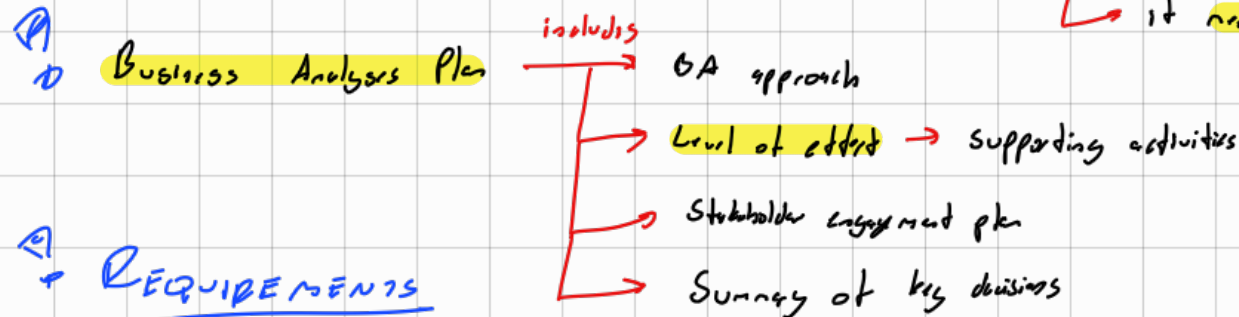
BA vs PM



- BA → Product
- PM → Project

Business Analyst → Helps Quality Control (QC) Team by reviewing test cases
Do they cover all the scenarios?

Main responsibility of BA in project team is ensuring the delivery of product
it needs business goals



REQUIREMENTS

① Business Req.

② Stakeholder Req.

③ Solution Req.

Func. Req.

what system does

Non-Functional Req.

(Quality)

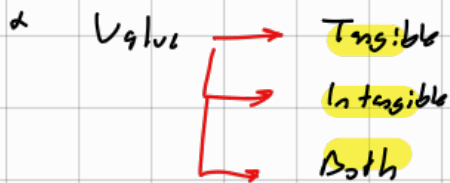
How system performs

④ Transition Req.

High Level

Detailed

1. BUSINESS VALUE



BA → what is the value we are going to get?

2. BA Process Groups

1. Defining and Aligning → Clarify problem, align strategy
2. Initiating → Authorize and scope work → Supporting charter
↓
authorities
3. Planning → Plan BA activities
4. Executing → Perform BA activities
5. Monitoring and Controlling → Track and control performance
6. Releasing → Transition solutions to operations

3. BA KNOWLEDGE AREAS

1. Needs Assessment → Why we need this?
2. Stakeholder Engagement → Engagement Plan
3. Elicitation → Gather requirements → BA → Gathers req.
Stakeholders → Verifies req.
4. Analysis → Analysing requirements
5. Traceability and Monitoring → Are req. met? → Traceability: Origin and relationships of requirements
6. Solution Evaluation → Actually solved?

4. ELICITATION

Focus Groups → Bringing Subject Matter Experts together
Bringing customers together → direct feedback

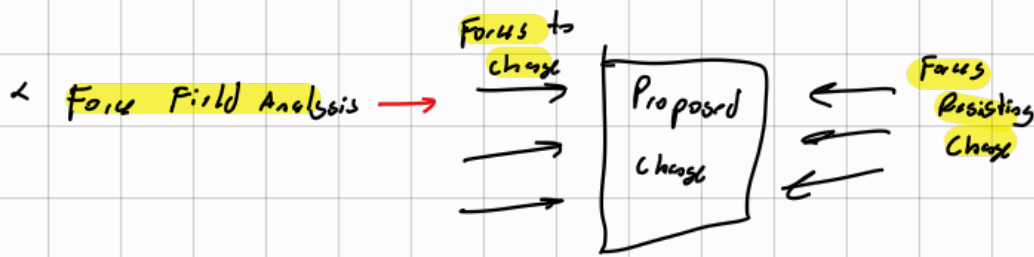
- Brainstorming techniques
- Idea Mapping → Ideation technique to quickly structure ideas
 - Round-Robin → Taking turns
 - Starbursting → Based on asking questions (5W1H)

Interviews

BA TECHNIQUES

< **5 Whys** → Root cause analysis. Asking why? 5 times

< **Impact Analysis** → Assess effects of a change



< **Wireframes** → Visualization →

< **Use Case** → Models user-system interaction



< **Context Diagram** → How a system interacts with outside world. →



< **Validation** → Confirming requirements, deliverables, solutions

< **Proof of Concept** → Verifies feasibility via testing

< **Creative Thinking** → Generates large number of ideas through brainstorming.

< **Definition of Done** → Review project req. → Ensuring they are clear, concise, unambiguous.

BA BENEFITS EVALUATION

< **ROI: Return of Investment** →

$\frac{\text{Invest}}{100.000}$	$\frac{\text{Get}}{130.000}$	→ ROI = 30%
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< **Payback Period** →

$\frac{\text{Invest}}{100.000}$	$\frac{\text{Get (per year)}}{25.000}$	→ Payback Period = 4 years
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< **NPV: Net Present Value** → Accounts for time value of money (NPV > 0 → ✓)

< **IRR: Internal Rate of Return** → Discount rate at which NPV = 0