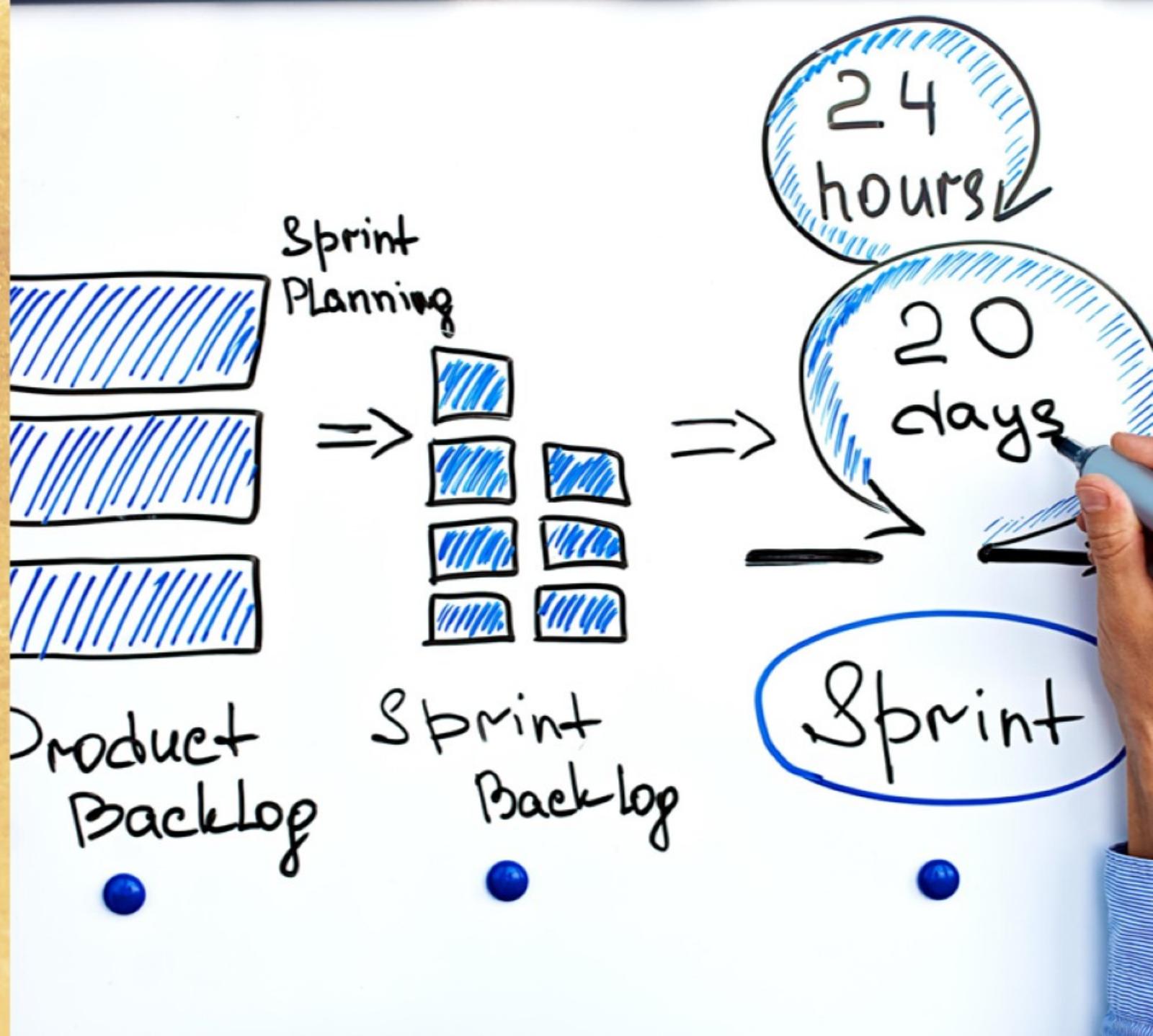


# Agile Requirements Gathering

- User stories – defines:
  - Role - who benefits from the feature
  - Goal – what the stakeholders aims to accomplish
  - Motivation – benefit to the stakeholder



# Managing Requirement Types

**1**

## Business requirements

Higher-level needs of the organization

**3**

## Solution requirements

Features, functions, and characteristics of the product, service

- Functional requirements describe the behaviors of the product.
- Nonfunctional requirements describe the environmental conditions or qualities

**5**

## Project requirements

Actions, processes, or other conditions

**2**

## Stakeholder requirements

Needs of a stakeholder or stakeholder group

**4**

## Transition requirements

From the current state to the future state

**6**

## Quality requirements

Validate the successful completion of a project deliverable or fulfillment

# Project Charter Versus Project Scope

## Project Charter

- Project purpose or justification
- Measurable project objectives
- High-level requirements
- High-level project description
- Overall project risks
- Summary milestone schedule
- Preapproved financial resources
- Stakeholder list
- Project approval requirements
- Assigned project manager, responsibility, and authority level
- Name and authority of the sponsor

## Project Scope

- Project scope description
- Project deliverables
- Acceptance criteria
- Project exclusions

# Creating the Work Breakdown Structure

- Decomposition of the project scope
- Subdivide the project work
- Smallest item is work package

# Create WBS

- Process of decomposing the project scope
- Deliverables-orientated
- Not the activities list
- Major component of the scope baseline
- Project planning tools
- Visualizes the project
- Defines what's in scope
- Deterrent to scope change

# Scope Baseline

- Project scope statement
- WBS
- WBS Dictionary

# Formally Accepting the Project Work

- Accepted deliverables for phases and the project
- Sign-off of deliverables
- Change requests are a possible output
- Scope validation and quality control

# Control Scope

- Are changes agreed upon?
- Has the change already happened?
- How to manage the existing change?
- How to incorporate approved changes?
- What baselines are affected by the change?

# Trends and Emerging Practices in Project Schedule Management

- Smaller projects make a single process of
  - Defining activities
  - Sequencing activities
  - Estimating activity durations
  - Developing the schedule model
- Consider knowledge, risk, value-added activities

# Tailoring Schedule Management Processes

## Life cycle approach

- Most appropriate life cycle approach for a detailed schedule

## Resource availability

- Factors influencing durations (Resources and their productivity)

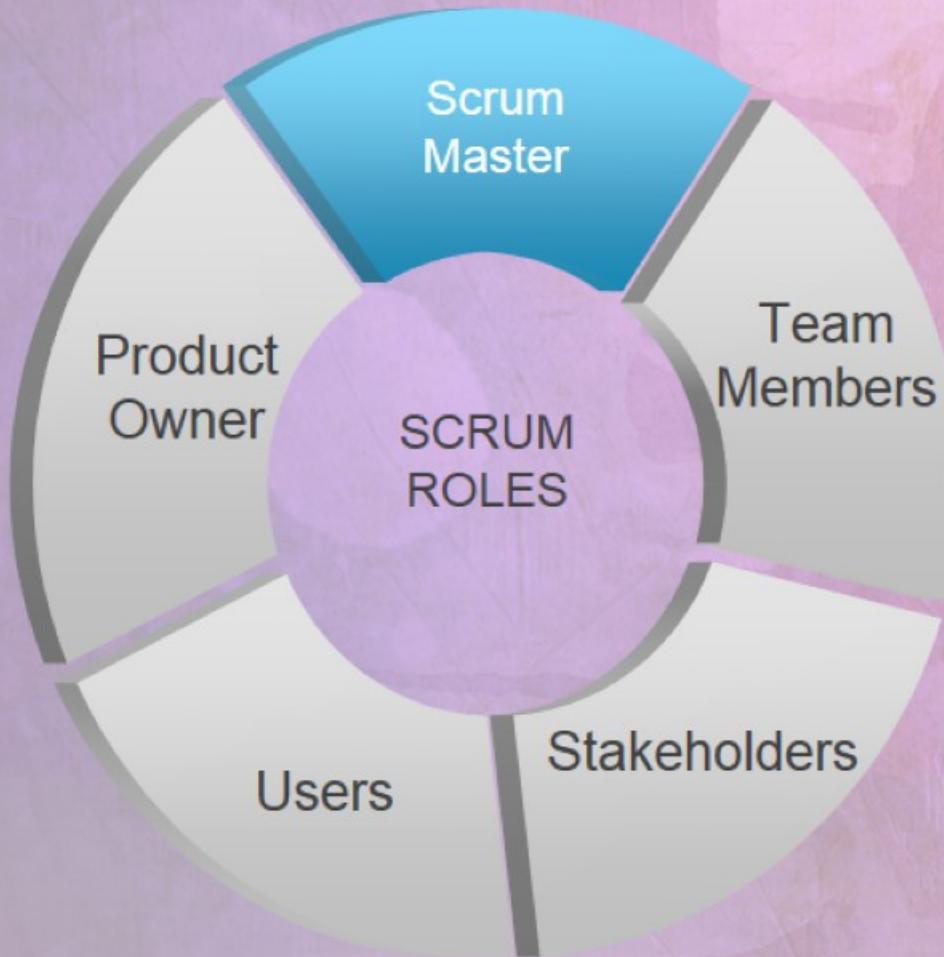
## Project dimensions

- Project complexity, technological uncertainty, product novelty, pace, or progress tracking

## Technology support

- Develop, record, transmit, receive, and store project schedule model

# Project Management Role in Adaptive (Agile)

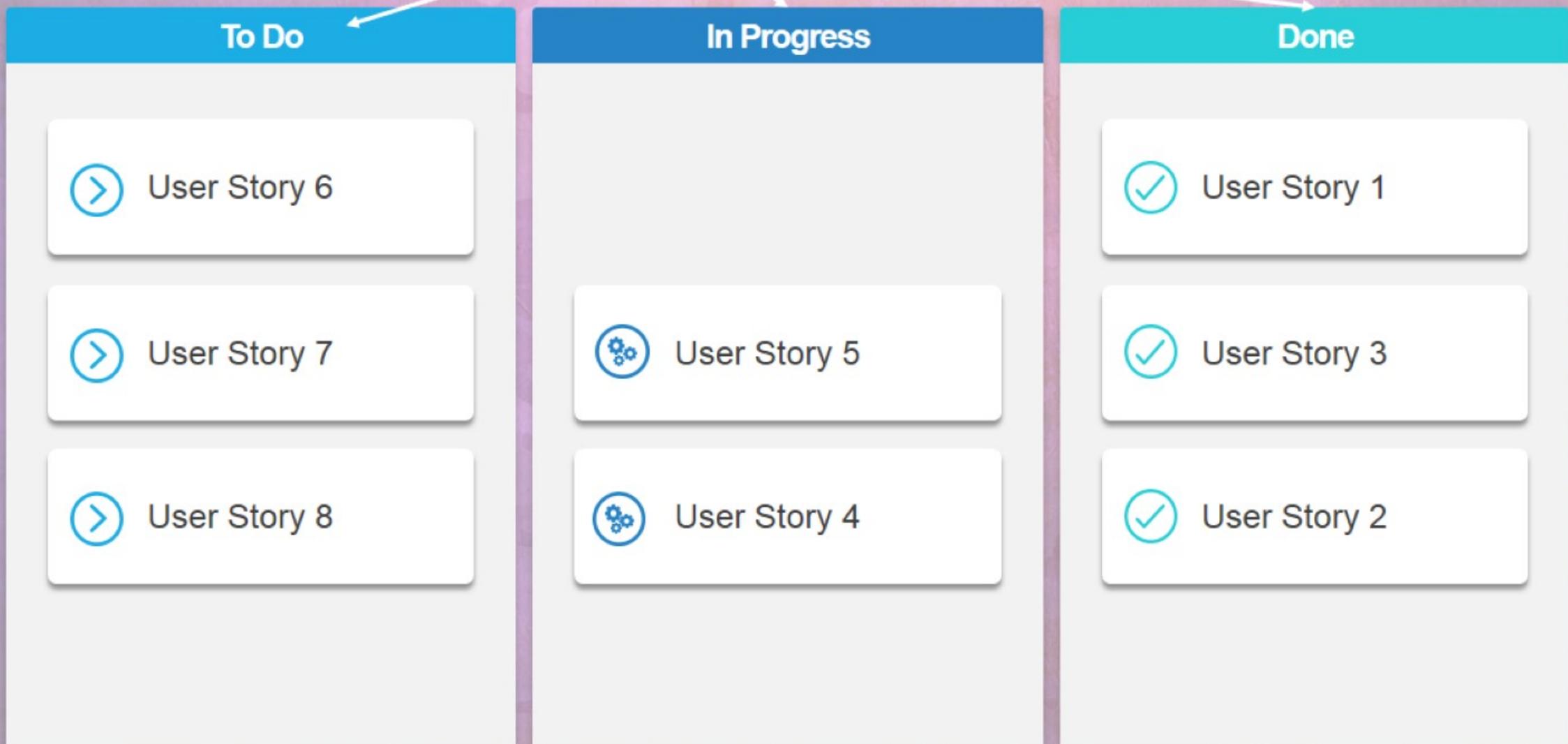


## SCRUM MASTER

- Same role (*PMBOK Guide*)
- Understand rules of adaptive approach selected
- Servant leadership
- Carry food and water for team



## Phases of work

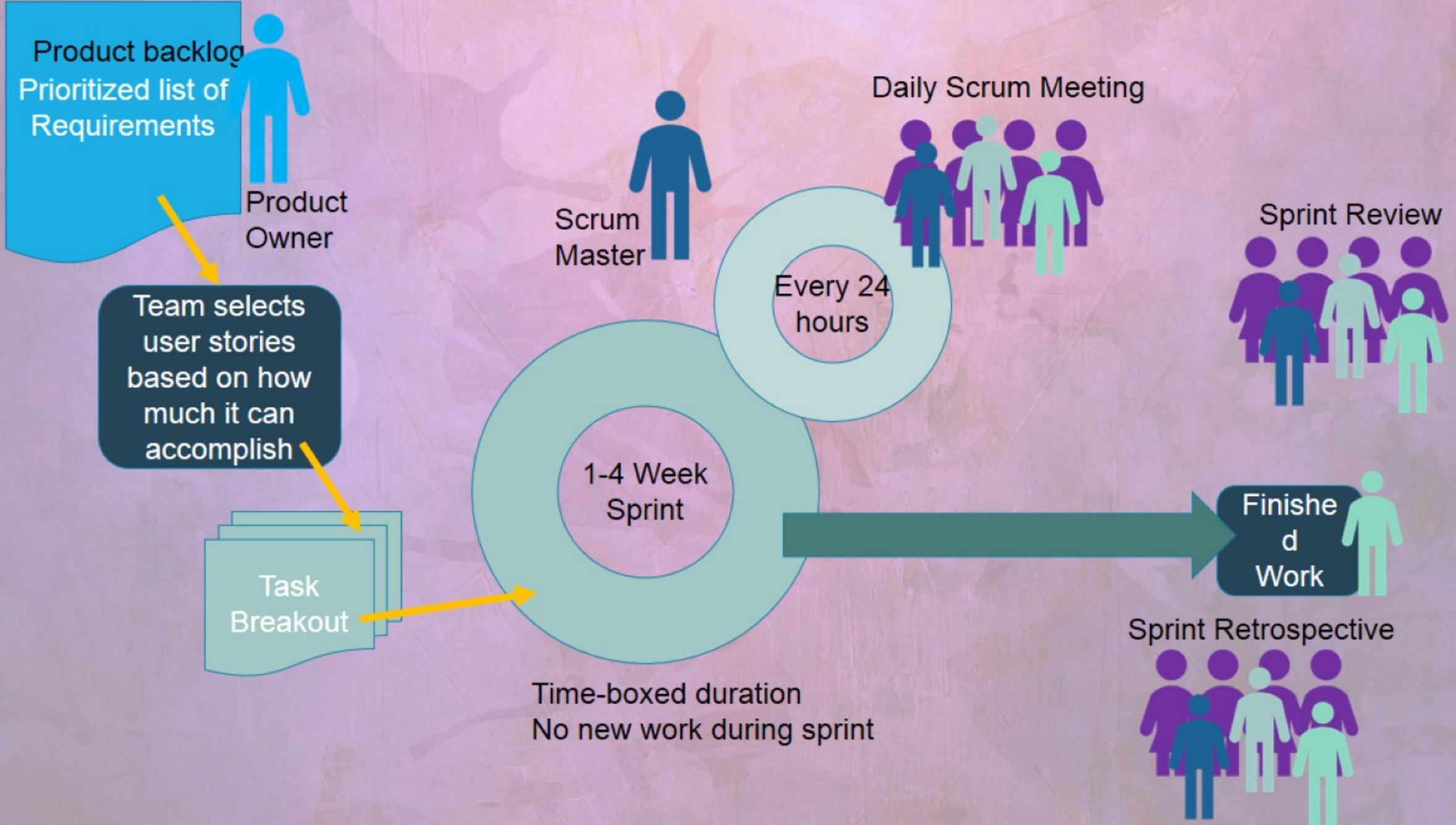




# Theory of Constraints

---

- Identifying the most important limiting factor
- Systematically improving that constraint until it is no longer the limiting factor
- Constraint is often referred to as a bottleneck
- Scientific approach to improvement
- Lean manufacturing
- Dr. Eliyahu Goldratt book *The Goal*



# What's in the Schedule Management Plan?

- Schedule management plan includes:
  - Project schedule model development
  - Level of accuracy
  - Units of measure (hours, days, weeks)
  - Organizational procedure links
  - Project schedule model maintenance
  - Control thresholds
  - Rules for performance measurements
  - Reporting formats

# Decompose Project Activities

- Activity list and work packages
- 8/80 Rule
- Requires three inputs:
  - Scope baseline
  - Enterprise environmental factors
  - Organizational process assets

# Rolling Wave Planning

- Imminent work is planned in detail
- Distant work is planned at a high level
- Future work approaches more planning
- Focus on most important
- Form of progressive elaboration

# Activity List

- Separate document
- Lists all project activities
- Activity identifier
- Scope of work description

# Effort and Project Activities

- Level of effort (LOE) activities are support activities
  - Reporting
  - Budgeting
- Discrete effort activities required to complete the project scope
  - Most activities are discrete effort activities
- Apportioned effort are the project management work
  - Quality assurance
  - Integrated change control
  - Communications

# Milestone Chart

- Up triangle is planned
- Down triangle is actual
- Line between shows variance

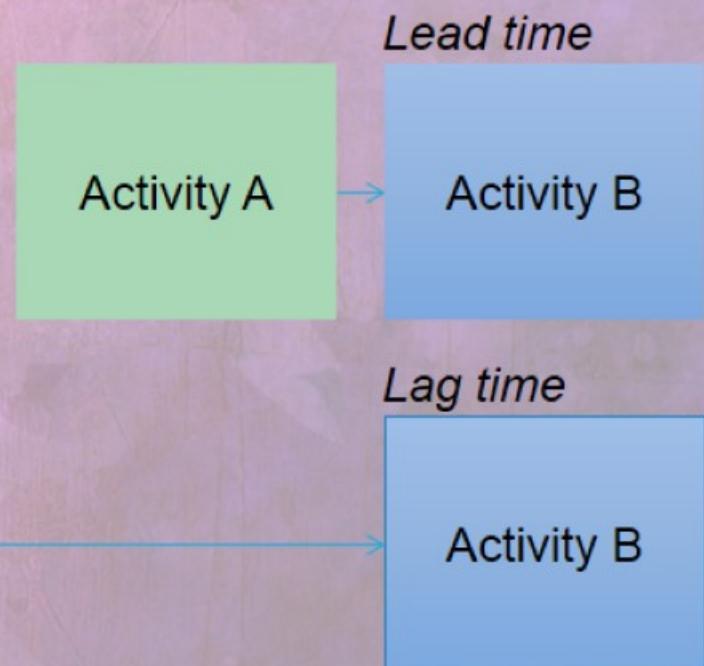


# Dependency Determination

- Mandatory dependencies – hard logic
- Discretionary dependencies – soft logic
- External dependencies – external constraint
- Internal dependencies – type of hard logic

# Leads and Lags

- Lead is accelerated time
- Lead allows activities to overlap
- Lag is waiting time
- Lag moves activities farther apart



# Creating Duration Estimates

- Tasks are first identified
- Sequencing of the activities
- Resources defined
- Durations are estimated
- Four activities are iterated

# Estimating Duration Considerations

- Law of diminishing returns
  - Increase in resources will eventually yield diminishing returns
- Number of resources
  - Adding resources doesn't necessarily reduce duration
  - Risk
  - Knowledge transfer/Learning curve
- Advances in technology
  - Faster equipment/Learning curve
- Motivation of staff
  - Student Syndrome/Parkinson's Law

# Duration and Effort

- Duration is how long an activity takes
- Effort is the billable time for the labor
- Example: Activity that is scheduled at 40 hours
  - Senior full-time engineer versus a part-time person at a lower cost
  - Senior engineer may be able to complete the activity in 40 work hours
  - Cost may be more than the value of the activity
  - Part-time employee will take two segments of 25 hours
  - Part timer is at a substantially lower rate

# Three-Point Estimates

- Finds an average of
  - Optimistic
  - Most likely
  - Pessimistic
  - Also called triangular distribution
- $(O+ML+P)/3=\text{Estimate}$
- $(25+45+75)/3=48.33 \text{ hours}$

# PERT Estimates

- Program Evaluation and Review Technique
- Also called beta distribution
- $(O+(4ML)+P)/6=\text{estimate}$
- $(25+(4 \times 45)+75)/6=46.66 \text{ hours}$

# Bottom-Up Estimating

- Usually a term associated with cost estimates
- Can use this for resource estimating
- Requires a fully-decomposed WBS for each work package
- Estimate how many and what type of resources you'll need to create that work package

# Considering Management Reserves

- Specified amount of the project budget
- Withheld for management control purposes
- Reserved for unforeseen work that is within scope of the project
- Address unknown-unknowns
- Not included in the schedule baseline
- Part of the overall project duration
- Contracts may require use of management reserves as a change to the schedule baseline.

# Develop Schedule

- Defines the sequence of events
- Durations of the activities and project
- Determines when resources are needed
- Establishes logical relationships between activities

# Consider Project Constraints

- When and how work can be implemented
- Opportunity to profit from a market window
- Work within the parameters of expected weather
- Adherence to government requirements
- Industry regulations, best practices, or guidelines
- Time frames that for delivery of materials

# Finding Float

1

## Free float

An activity can be delayed without delaying the early start of any successor activities

2

## Total float

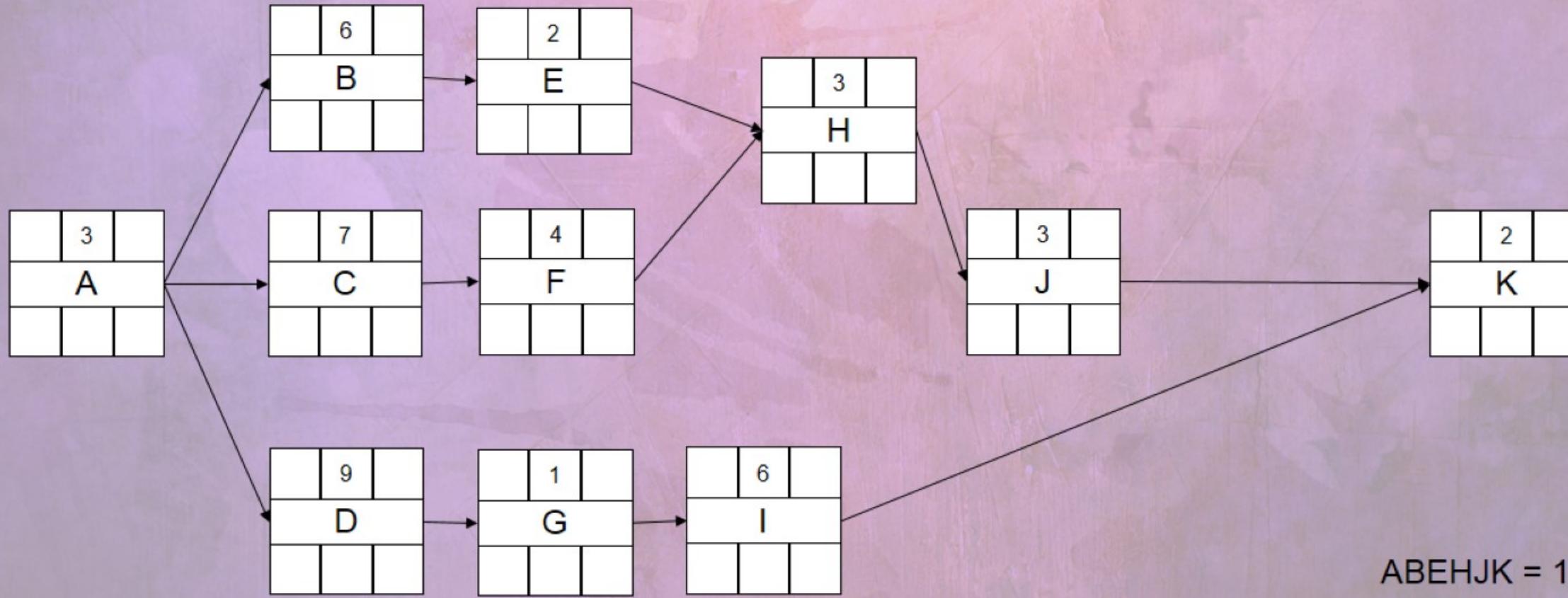
An activity can be delayed without delaying project completion

3

## Project float

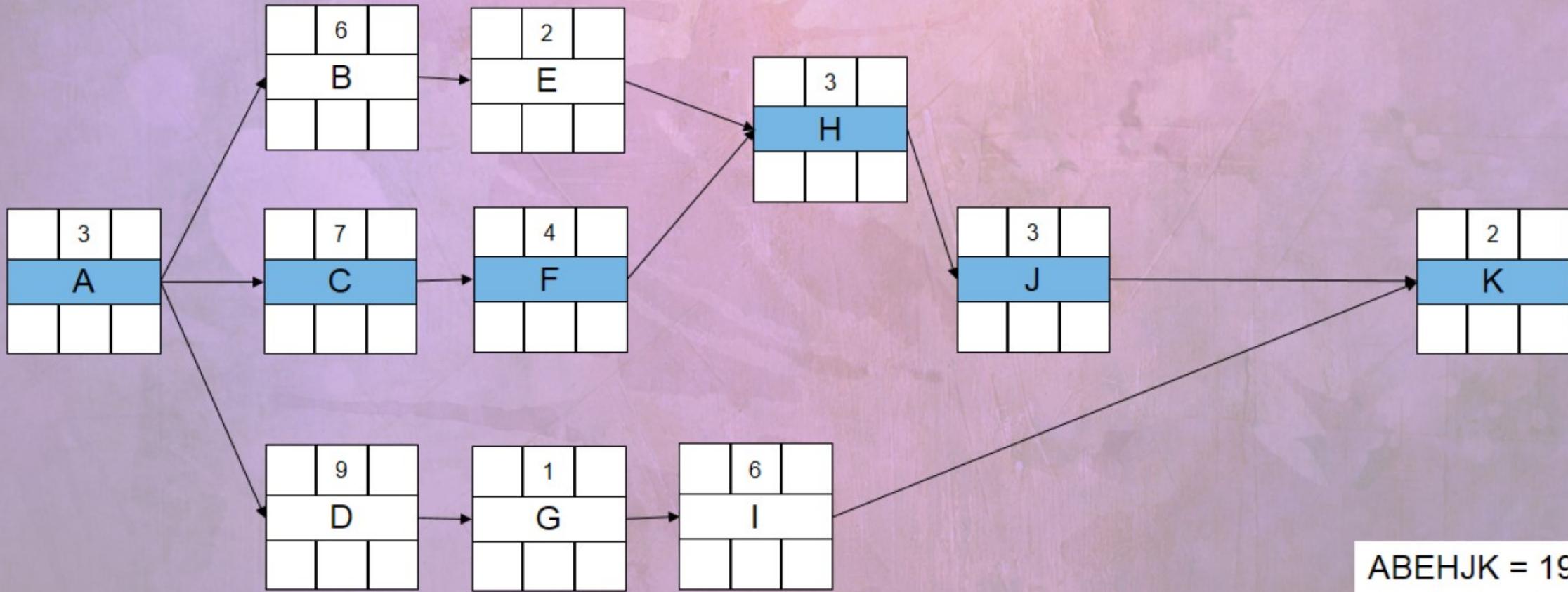
A project can be delayed without passing the customer-expected completion date

# Find Paths and Durations



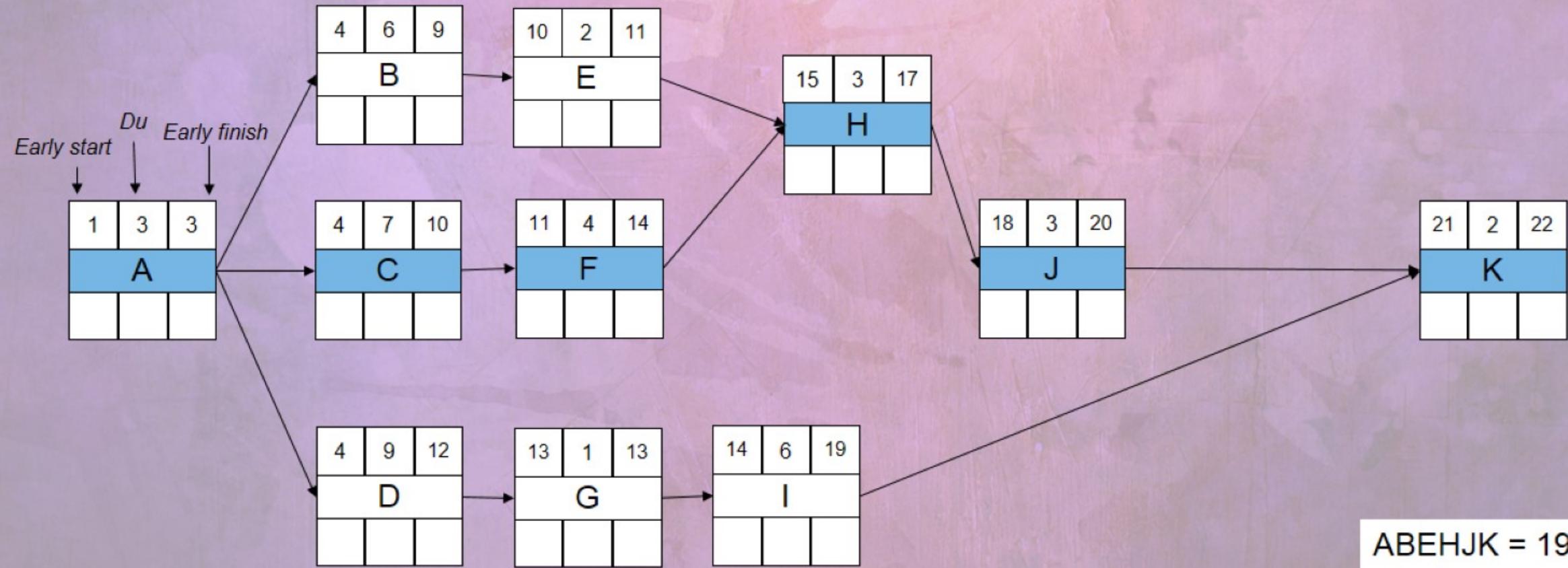
ABEHJK = 19 days  
ACFHJK = 22 days  
ADGIK = 21 days

# Critical Path is Longest



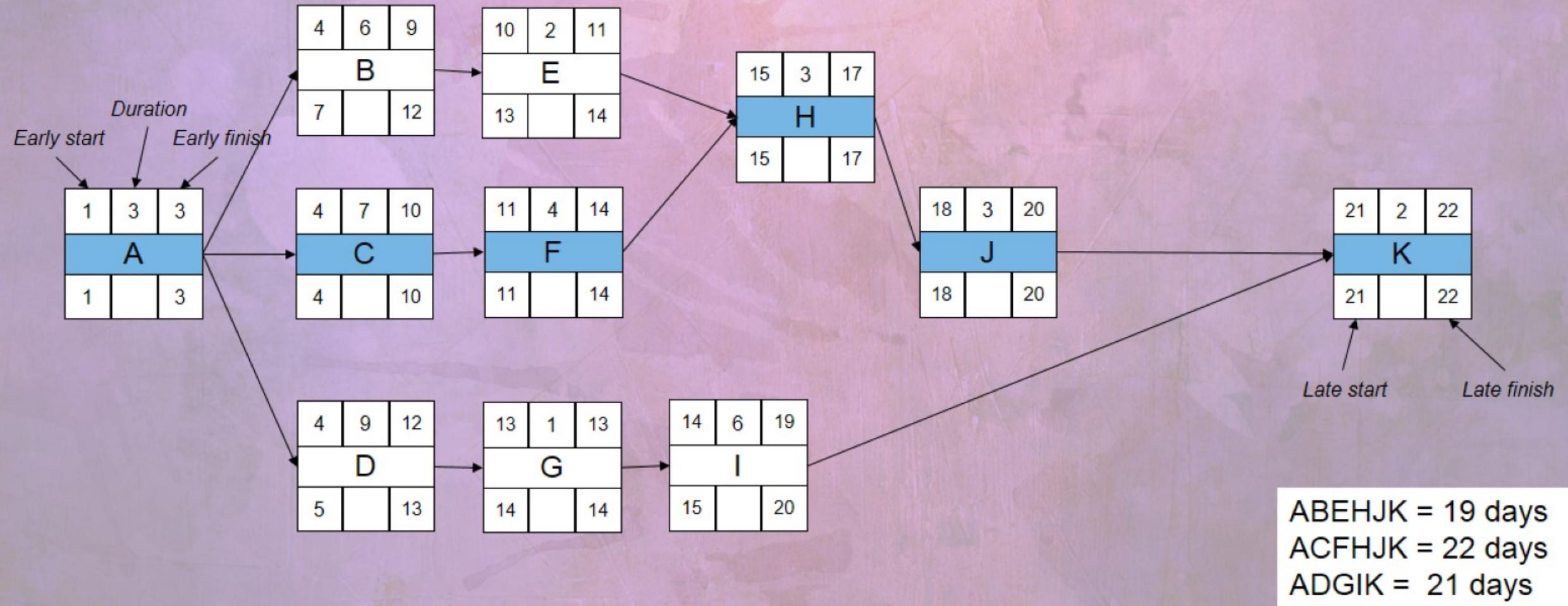
ABEHJK = 19 days  
ACFHJK = 22 days  
ADGIK = 21 days

# Forward Pass: $ES + du - 1 = EF$ Path

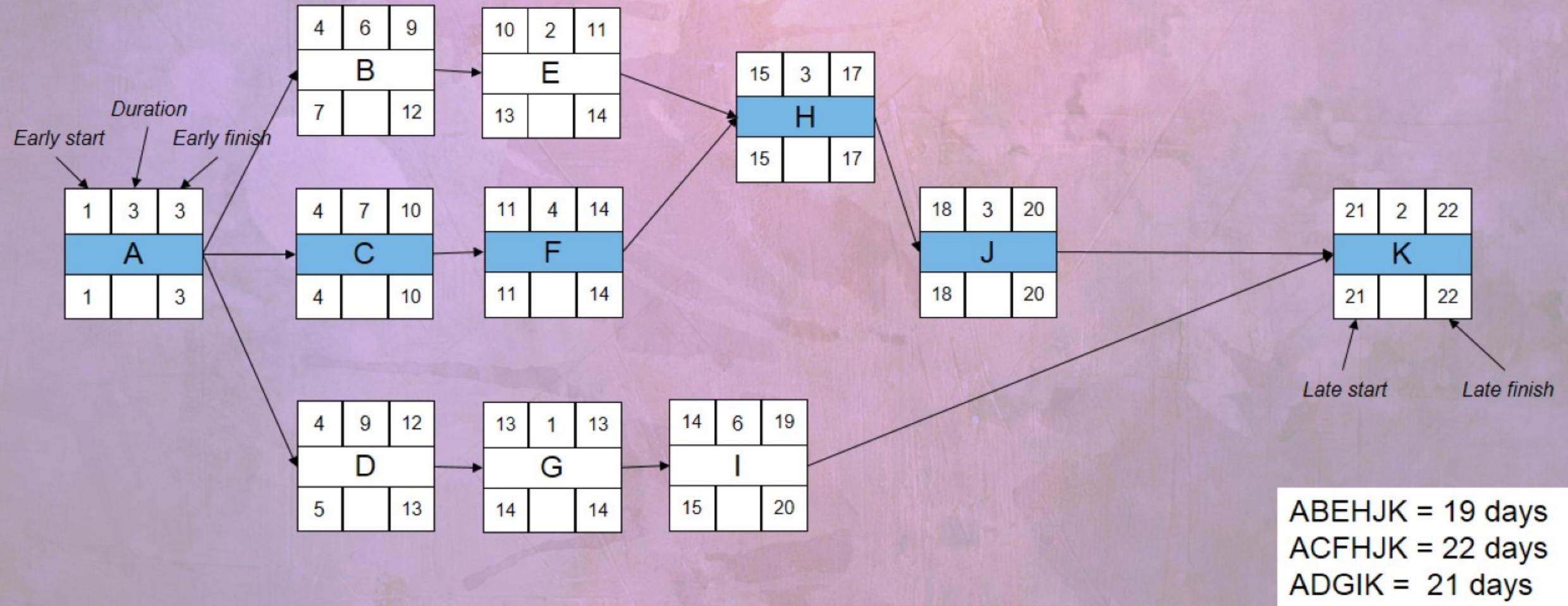


ABEHJK = 19 days  
ACFHJK = 22 days  
ADGIK = 21 days

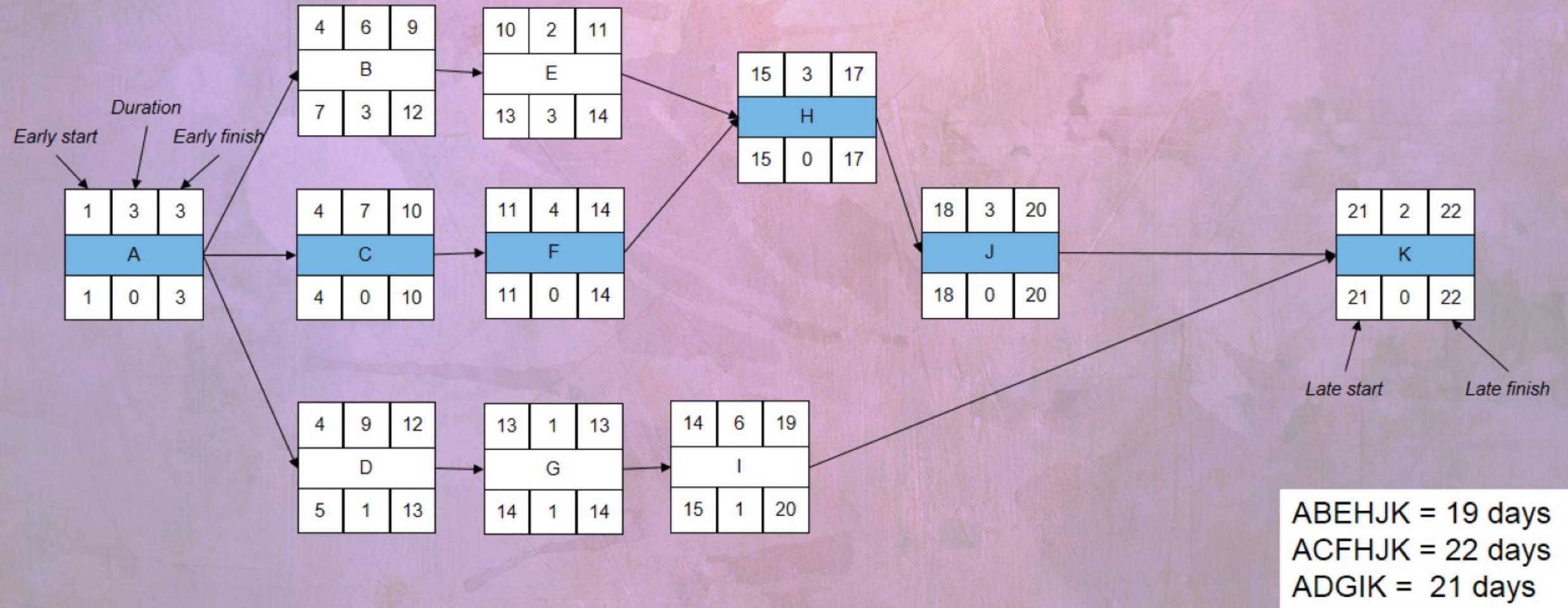
# Backward Pass: LF - du + 1 = LS



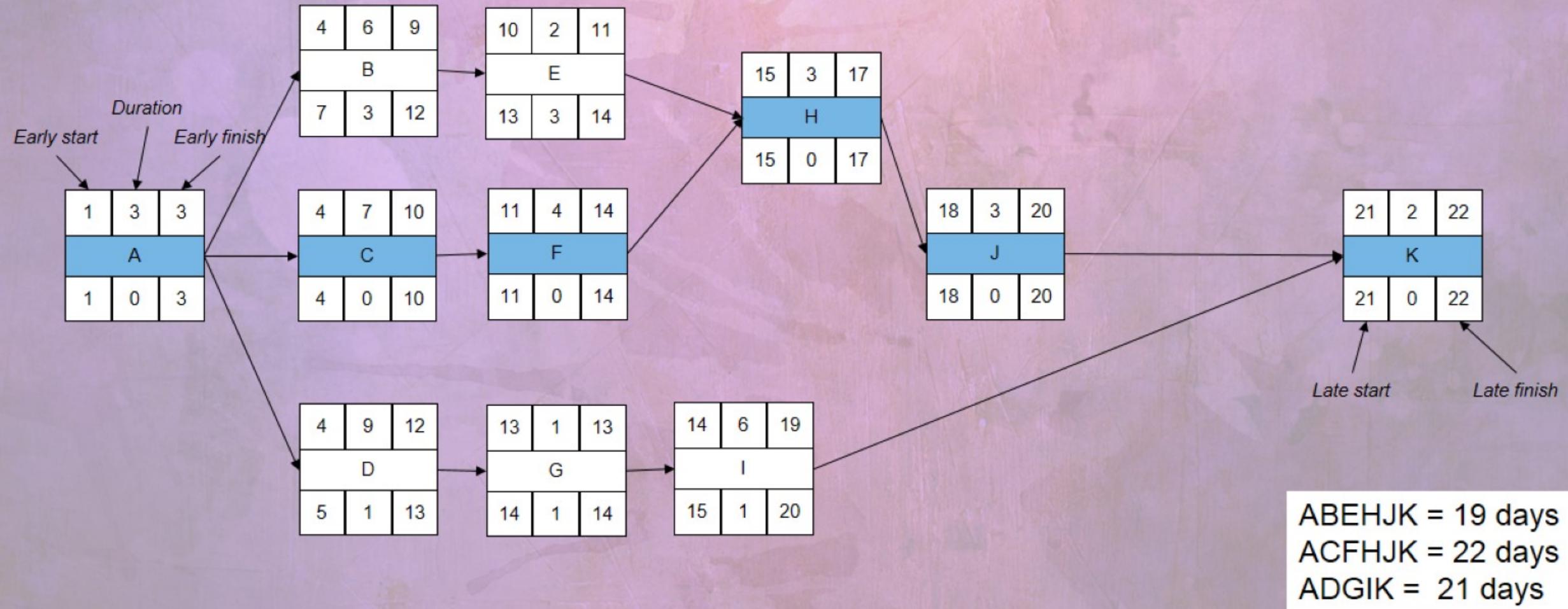
# Find Float: LF-EF or LS-ES



# Find Float: LF-EF or LS-ES



# Consider Exam Questions



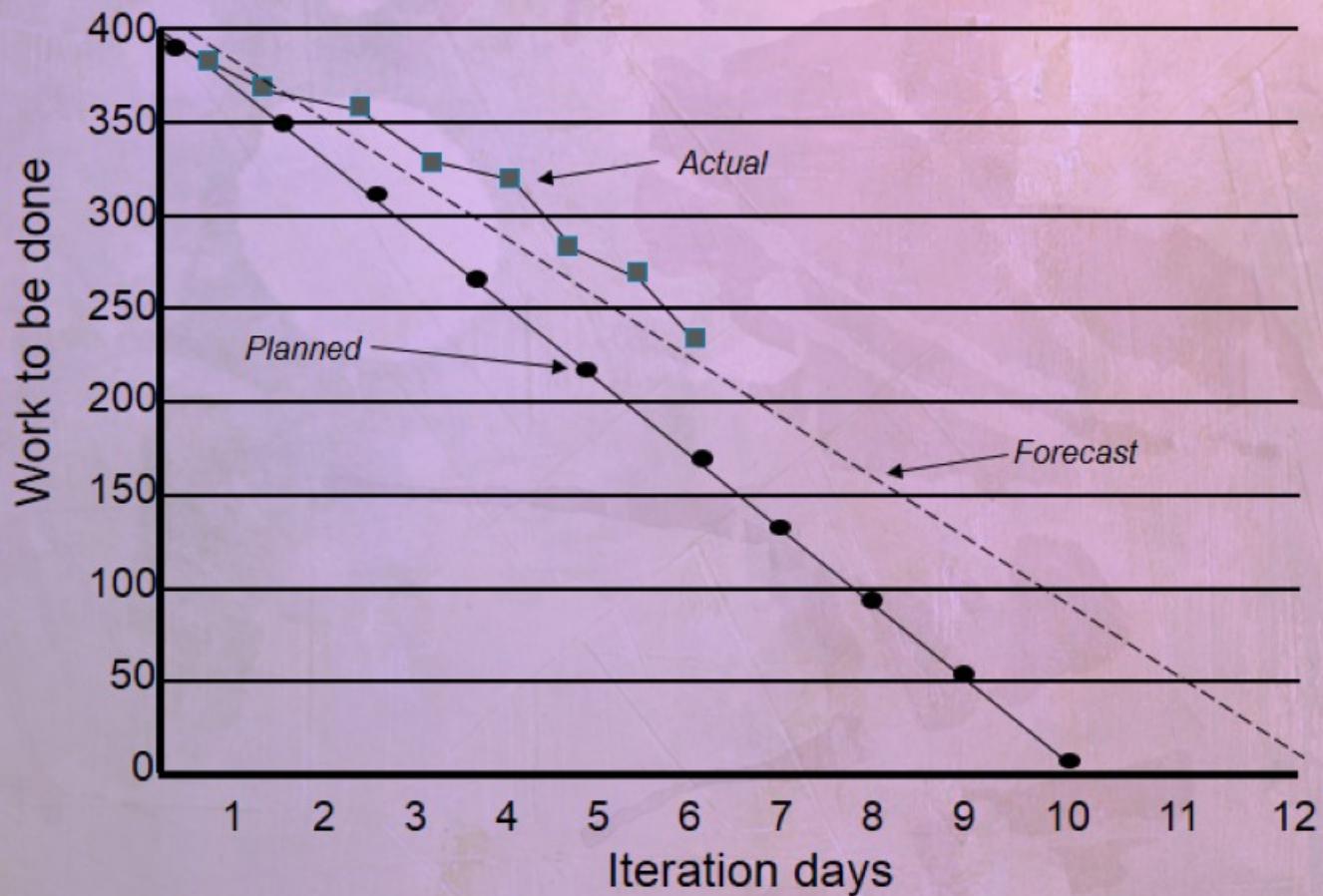
# Agile Release Planning

- High-level summary timeline of the release schedule
- 3 to 6 months
- Product roadmap and product vision
- Determines the number of iterations or sprints
- How much needs to be developed
- How long it will take to have a releasable product

# Applying Corrective Actions

- Ensure work packages complete as scheduled
- Ensure work packages complete with as little delay as possible
- Root-cause analysis of schedule variances
- Measures to recover from schedule delays

# Burndown Chart



# Trends and Emerging Practices in Project Cost Management

- Cost of the resources needed to complete project activities
- Recurring cost of using, maintaining, and supporting the product, service, or result of the project
  - Life cycle costing

# Plan Cost Management

- Subsidiary plan of the project management plan
- Addresses three other cost management processes:
  - How costs are estimates
  - How the project budget is managed
  - How costs will be controlled

# Estimating the Project Costs

- Predictions based on current information
- Cost tradeoffs and risks considered
  - Cost versus buy
  - Cost versus lease
  - Sharing resources
- Level of accuracy
  - Rough order of magnitude estimate
  - Budget estimate
  - Definitive estimate
- All categories of costs estimated

# Resource Requirements Cost



## Direct Costs

Attributed directly to the project work and cannot be shared among projects. Travel, materials.

## Indirect Costs

Shared to more than one project  
Facilities, project management software licenses.

## Variable Costs

Vary based on conditions in the project  
Number of meeting participants, supply and demand of materials.

## Fixed Costs

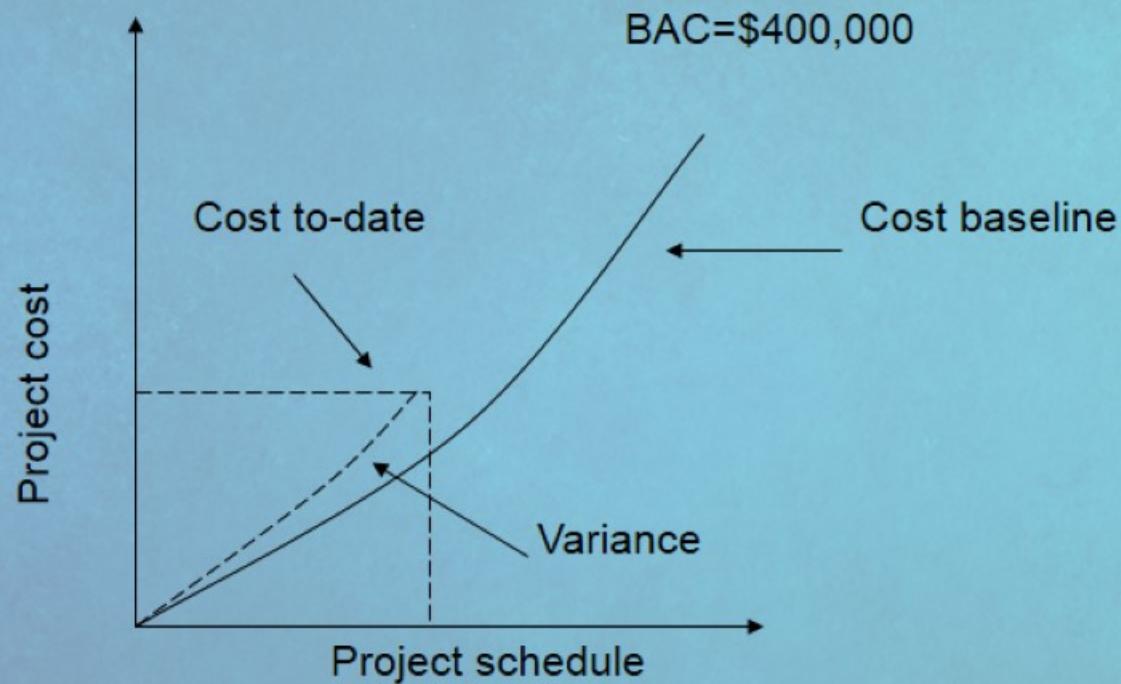
Constant throughout the project. Rented equipment, fixed-price consultant.

# Developing the Project Budget

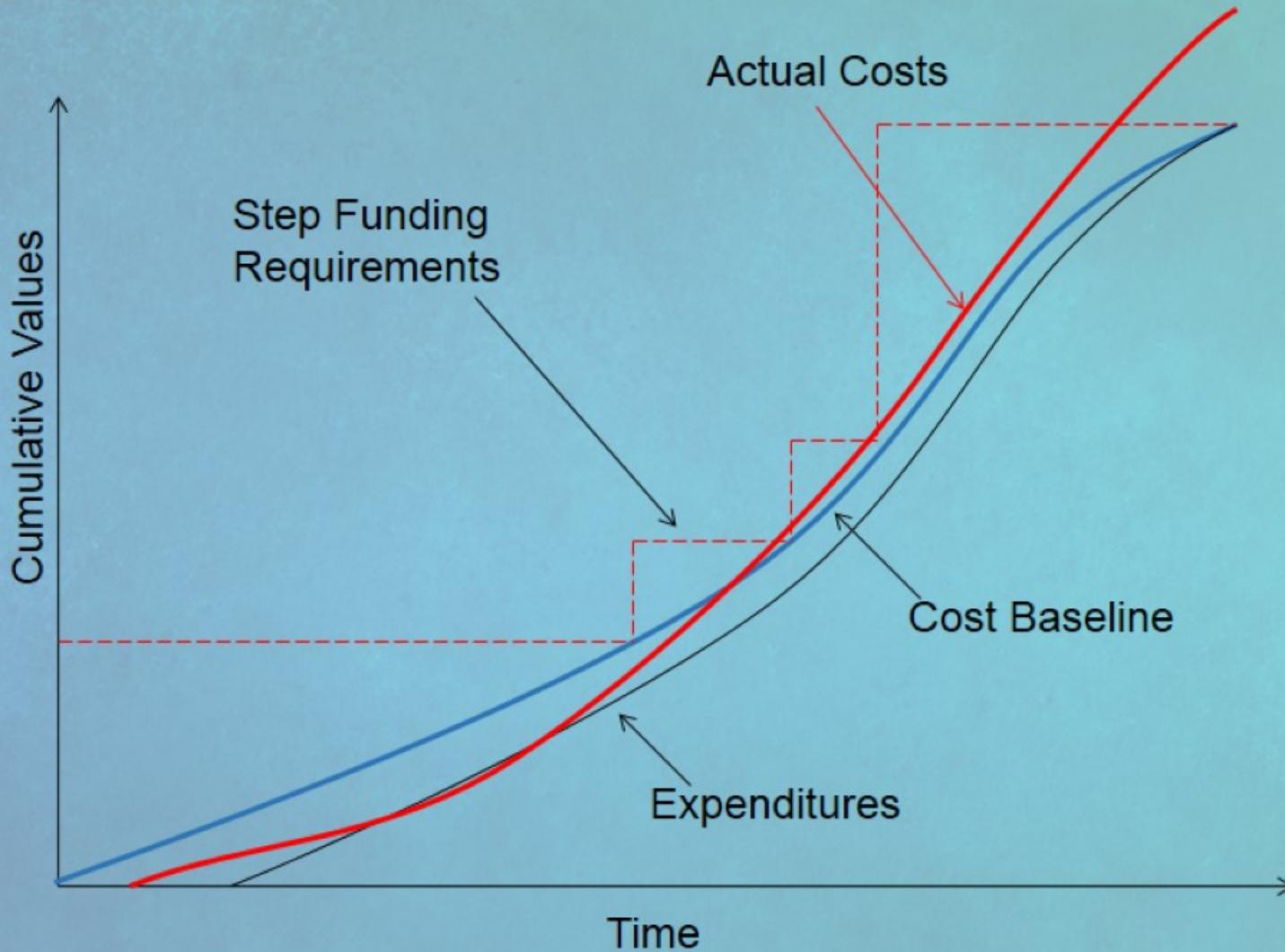
- Cost estimating happens first
- Cost budget happens based on reliable estimate
- Actual commitment of funds to project work
- Pre-assigned budget

# Creating the Project Budget

- Actual cost of the project



# Cost Performance Baseline



# Control Cost

- Influence change factors
- Change requests
- Managing changes (approved/unapproved)
- Tracking costs
- Isolate variances for study
- Earned value management
- Communicating cost status
- Cost overruns and allowed variances

# EVM Foundation



$$EV = \% \text{ Complete} \times BAC$$

$$EV = 40\% \times 250,000$$

$$EV = \$100,000$$

$$PV = \% \text{ Planned} \times BAC$$

$$PV = 75\% \times 250,000$$

$$PV = \$137,500$$

# Finding the Variances



Cost variance  
EV-AC  
 $\$100k - 112k = -12k$

Schedule variance  
EV-PV  
 $\$100k - 137,500 = -37,500$

# Measuring Performance



Cost Performance  
Index

EV/AC

$\frac{100k}{112k} = .89$   
Schedule Performance

Index

EV/PV

$\frac{100k}{137,500} = .73$

# Predicting the Future



Estimate at  
Completion  
BAC/CPI  
 $\$250k/.89 = \$280k$   
Estimate to Complete  
EAC-AC  
 $\$280k - \$112k = \$168k$

# EAC: Current Cost Performance

- Estimate at Completion (EAC)
- Future work at planned costs formula
- Forecasts final project costs based on current performance
- $AC + (BAC - EV)$

# Predicting the Future



Estimate at  
Completion

*Current performance*

AC + (BAC - EV)

\$112k + (250k - 100k)

\$262k

Estimate at  
Completion

*Standard formula*

BAC/CPI

\$250k/.89 = \$280k

# EAC: SPI and CPI factors

- Estimate at Completion (EAC)
- Same efficiency rate for time and cost
- Can make SPI or CPI weighted
- $EAC = AC + [(BAC - EV) / (CPI \times SPI)]$

# Predicting the Future



$$\begin{aligned}EAC &= AC + [(BAC-EV)/(CPI \times SPI)] \\& \$112k + [(250k-100k)/(.89 \times .73)] \\& \$112k + (150k)/(.65) \\& \$112k + \$230,769 \\EAC &= \$342,769\end{aligned}$$

Estimate at Completion  
*Standard formula*  
BAC/CPI  
 $\$250k/.89 = \$280k$

# To-Complete Performance Index

- Can you meet the BAC?
- Can you meet the EAC?
- $TCPI = (BAC - EV) / (BAC - AC)$
- $TCPI = (BAC - EV) / (EAC - AC)$

$$TCPI = (BAC - EV) / (BAC - AC)$$



$$TCPI = (BAC - EV) / (BAC - AC)$$

$$TCPI = (250k - 100k) / (250k - 112k)$$

$$TCPI = (150k) / (138k)$$

$$TCPI = 1.09$$

$$TCPI = (BAC - EV) / (EAC - AC)$$



$$TCPI = (BAC - EV) / (EAC - AC)$$

$$TCPI = (250k - 100k) / (280k - 112k)$$

$$TCPI = (150k) / (168k)$$

$$TCPI = .89$$



# Quality Management Terms

- Variable sampling: results rated on a continuous scale that measures the degree of conformity
- Tolerances: specified range of acceptable results
- Control limits: identify the boundaries of common variation in a statistically stable process or process performance

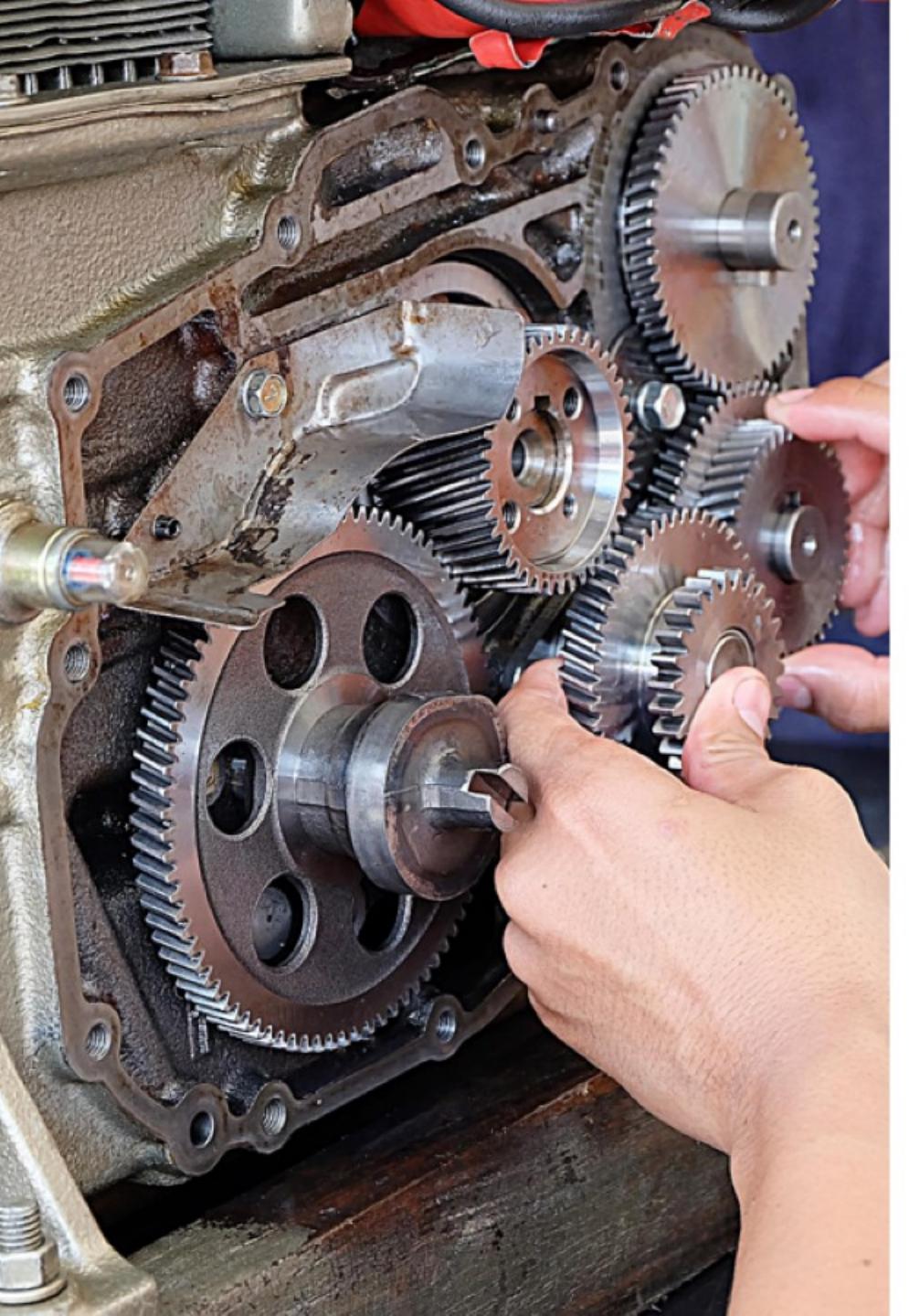
# Standards and Regulations

- Standards are optional
- Regulations are requirements



# Considerations for Adaptive Environments

- Product owner and the development team review the number of user stories that can be completed within the current iteration
- Team, product owner, and project manager, seek clarification on what exactly is required to deliver on the selected user stories



# Plan Quality Management

---

- Defines quality policy for the project
- Defines quality assurance requirements
- Defines how quality control activities will occur

# Types of Quality Costs



## PREVENTION

Quality assurance

Delivery the exact project scope and the expected quality.

Examples: training, safety measures, and right tools and equipment.



## APPRAISAL

Quality control:

Cost of measuring, testing, auditing, and evaluating  
Time for testing



## FAILURE

Internal failure:

Scrap and rework.

External failure:

Loss of sales, loss of customers, downtime, and damage to reputation.

# Quality Management Plan

- Control quality: results are monitored for quality standards
  - Poor results need root-cause analysis
  - Quality control is inspection-driven
- Managing quality: performance must meet quality standards
  - QA maps to an organization's quality policy
  - QA is typically a managerial process
- Quality improvement: corrective actions improve the project
  - Improvements depend on quality philosophy of the organization

# Quality Management Plan

- Quality standards
- Quality objectives
- Roles and responsibilities
- Deliverables and processes subject to quality review
- Quality control and quality management activities
- Quality tools
- Dealing with nonconformance, corrective actions procedures, and continuous improvement procedures



# Controlling Quality in a Project

---

- Monitor and measure project results
- Root-cause analysis follows the quality control
- Root-cause analysis enables determine the cause
- Apply corrective actions
- QC occurs throughout the life of a project

# Controlling Quality

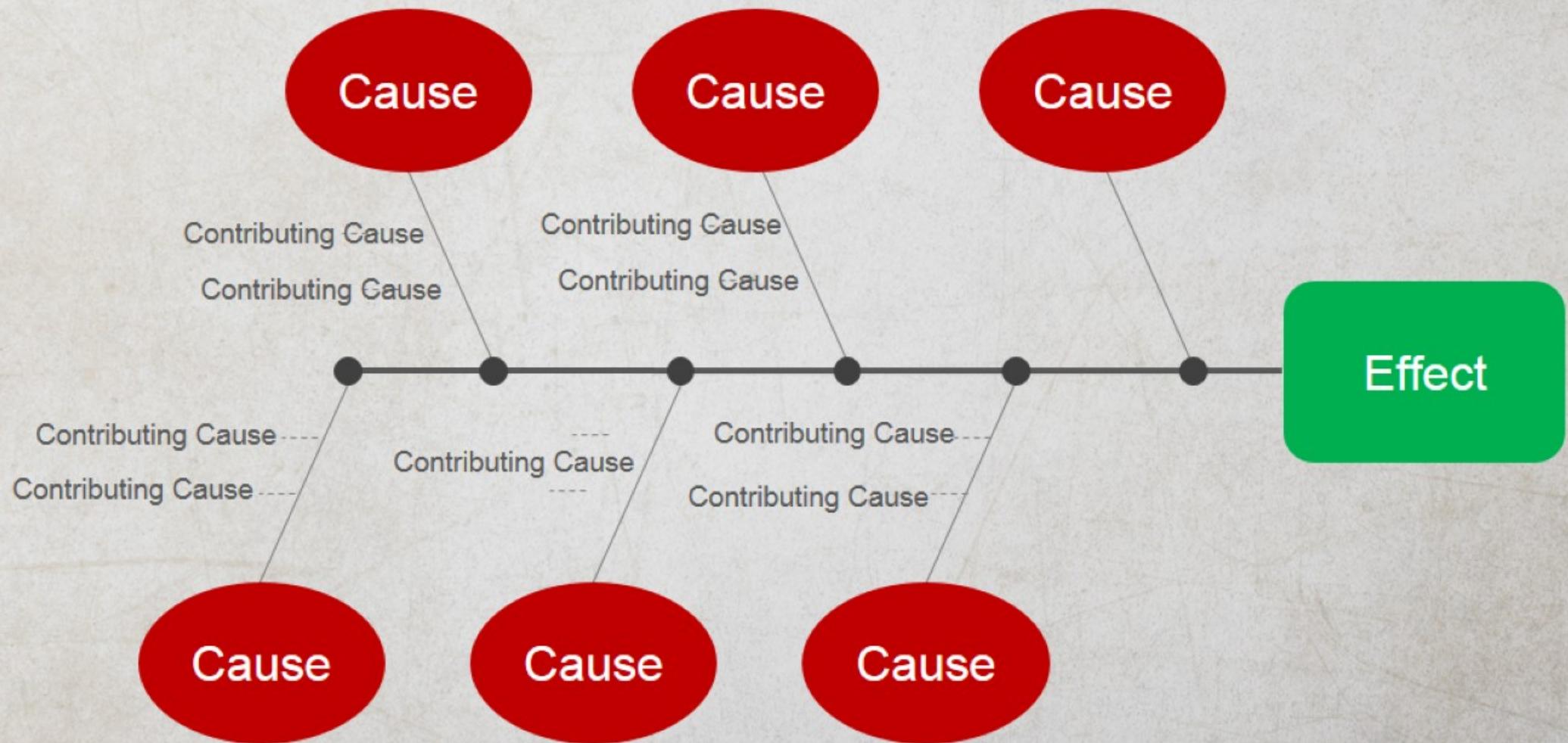
- Product and the project
- Project management processes
- Measures performance, scheduling, and cost
- Management of the project should be of quality

# Inspecting Results

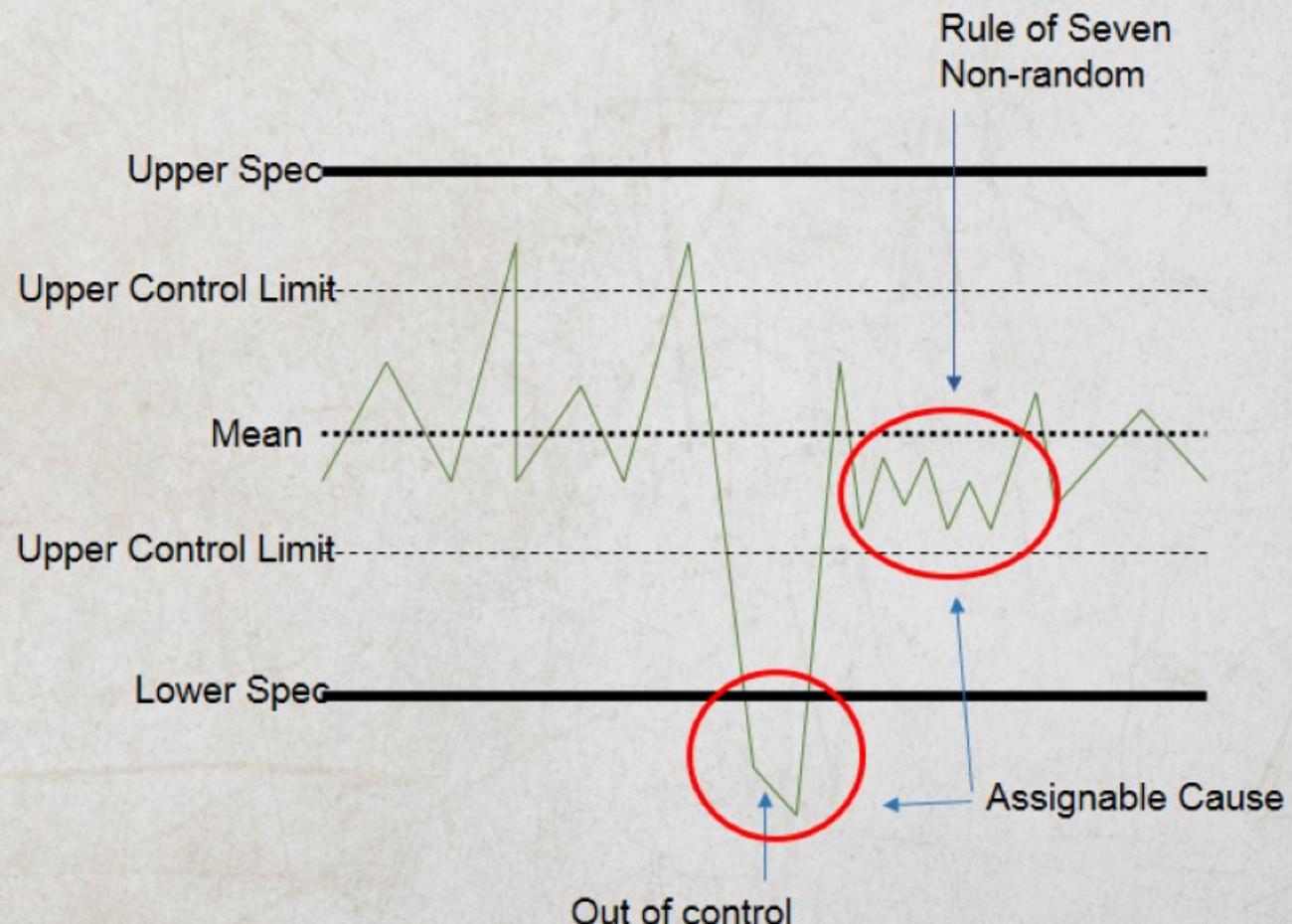
- Reviews
- Product reviews
- Audits
- Walkthroughs



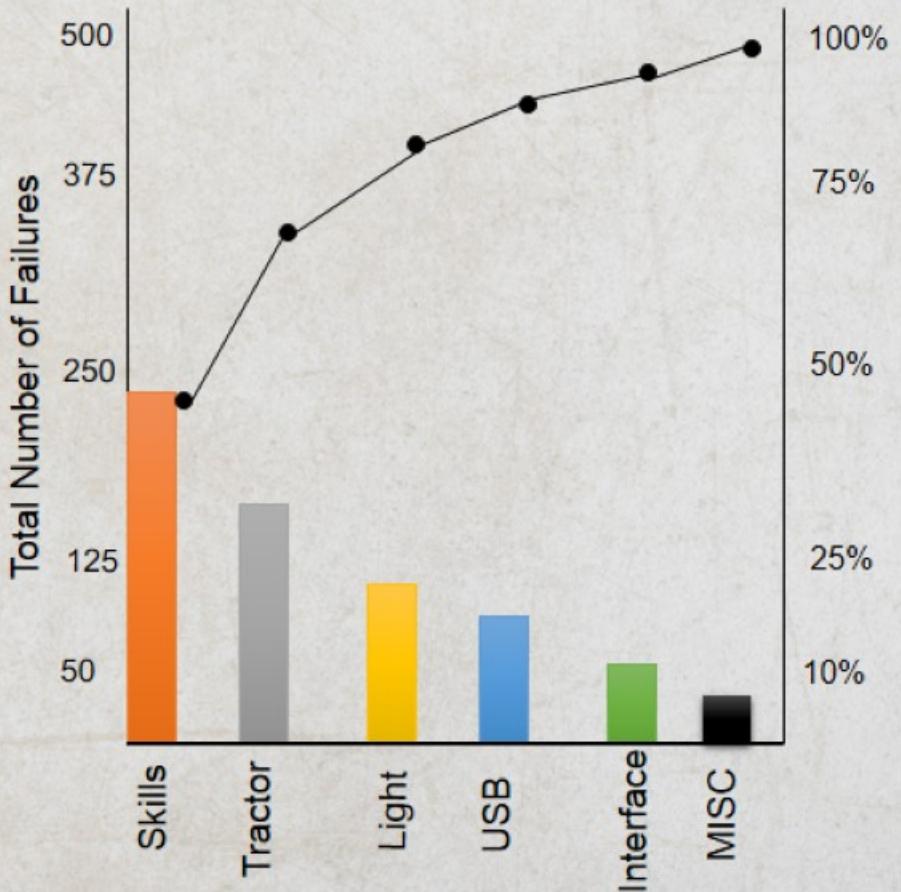
# Cause-and-Effect Charts



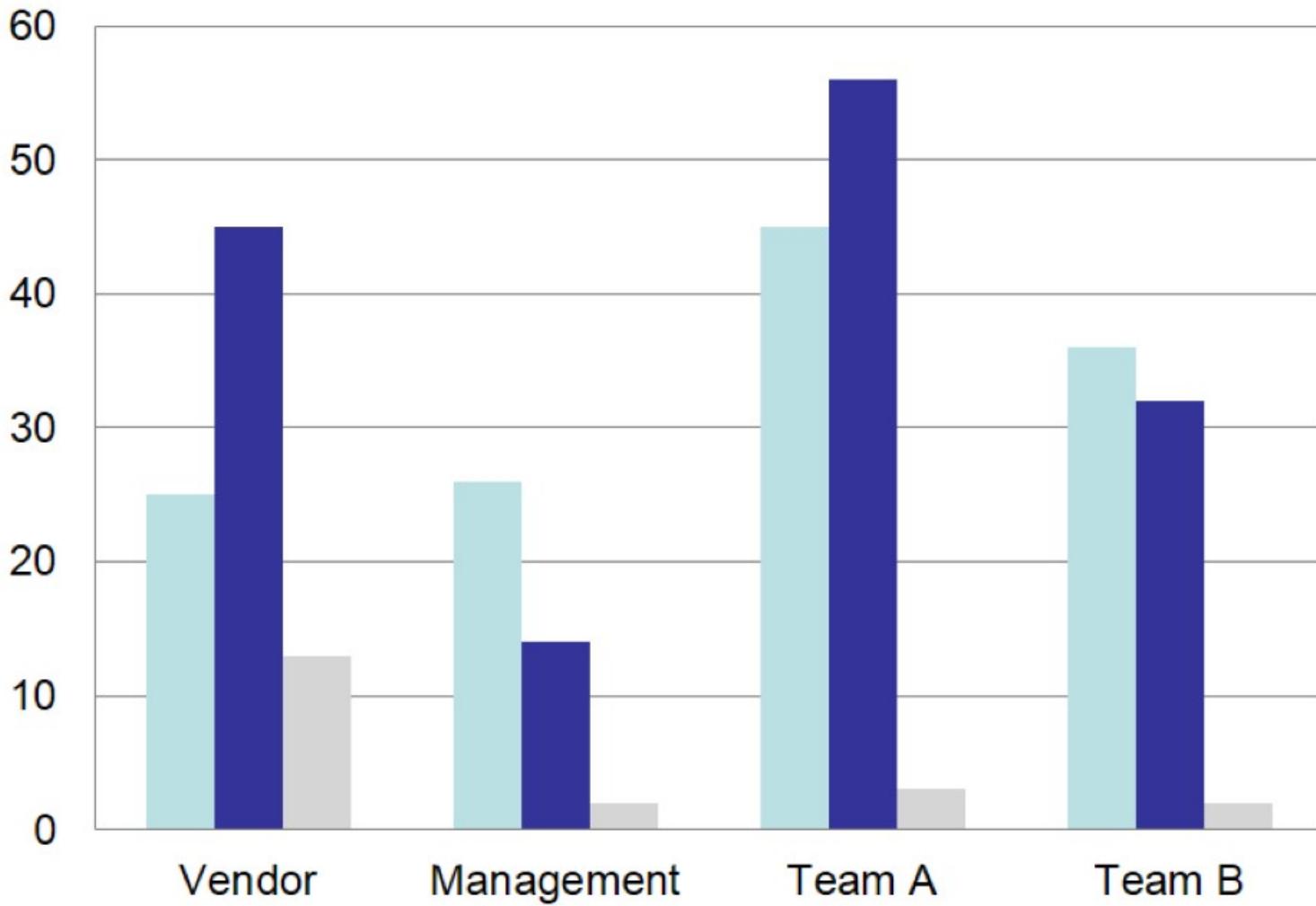
# Examining a Control Chart



# Creating Pareto Diagrams

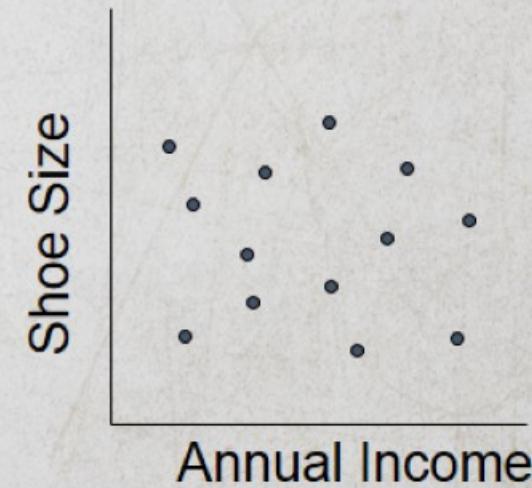
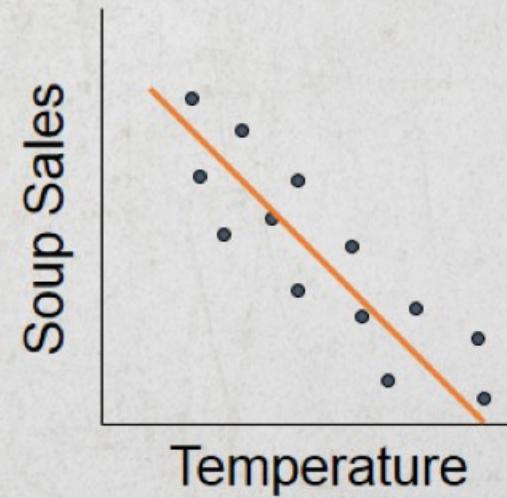
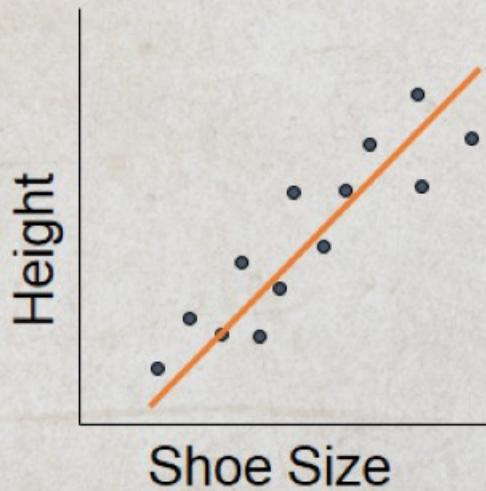


## Creating a Histogram

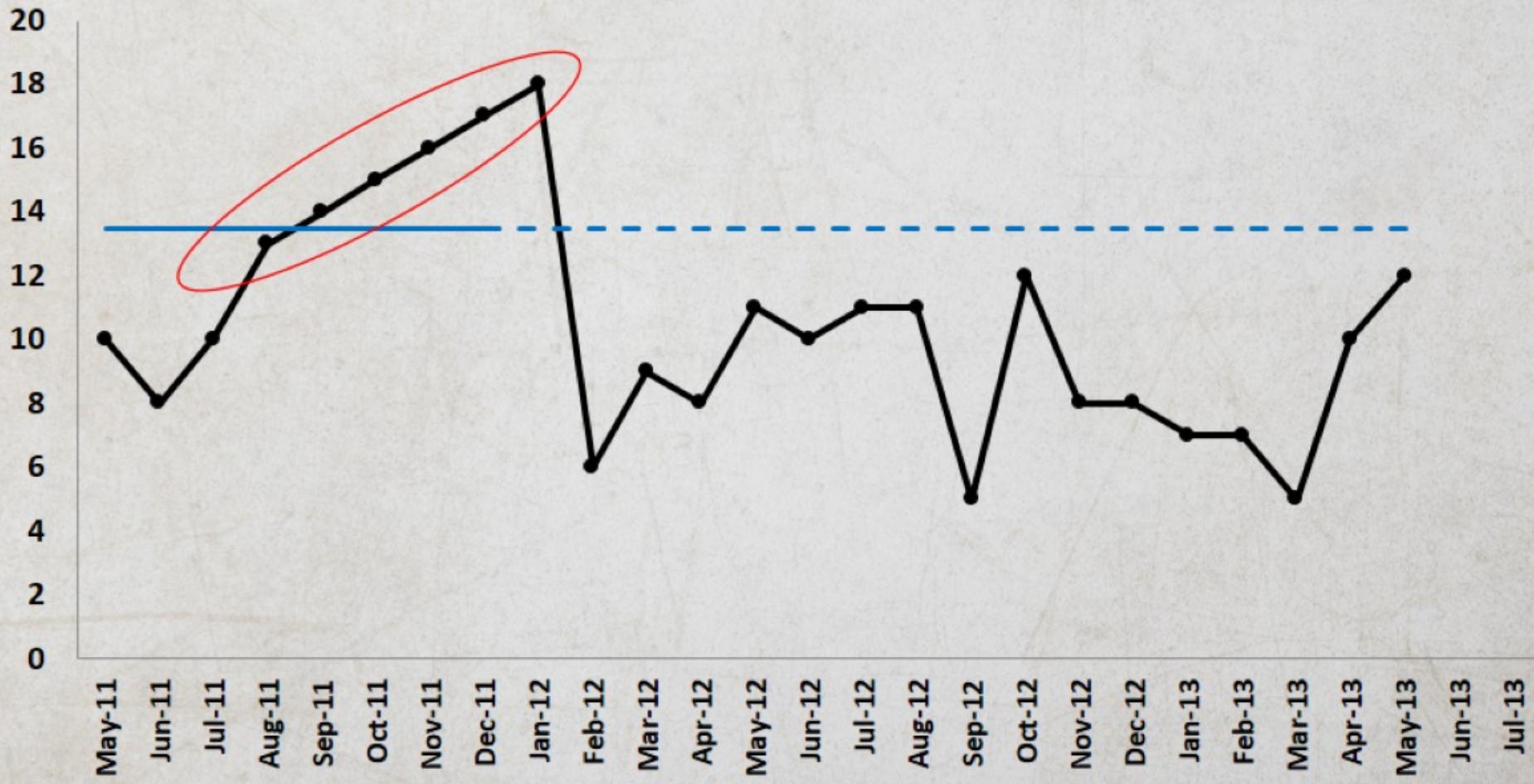


# Creating a Scatter Diagram

1. A positive correlation. As one quantity increases so does the other.
  2. A negative correlation. As one quantity increases the other decreases.
  3. No correlation. Both quantities vary with no clear relationship.



# Creating a Run Chart



# Completing a Statistical Sample

- Percentage of results at random
  - 20 percent of all units randomly selected to check quality
  - Must be completed on a consistent basis throughout the project
- Statistical sampling can reduce the costs of quality control
- Results can be mixed without adequate testing plan and schedule

# Emotional Intelligence

- Invest in personal EI by improving
  - Inbound: self-management and self-awareness
  - Outbound: relationship management
- Emotionally competent teams are more effective
- Reduction in staff turnover



# Self-Organizing Teams

- Agile approaches utilize a self-organizing team
  - Team functions with an absence of centralized control
- Project manager in self-organized teams:
  - Provides the team with the environment and support needed
  - Trusts the team to get the job done.
- Self-organizing teams:
- Generalized specialists, instead of SMEs
- Embrace constructive feedback

# Virtual Teams/Distributed Teams

- Virtual teams not collocated
- Communication technology: email, audio conferencing, social media, web-based meetings, and video conferencing
- Virtual teams advantage:
  - Remote expertise on a project team
  - Employees who work from home offices
  - Including people with mobility limitations or disabilities

# Resource Terminology

- Role is the generic project team name
  - Application developer
  - Technical writer
- Authority is the level of decision-making ability
- Responsibility are actions and expectations of to complete work
- Competency is the role's depth of skills, knowledge, and experience

# Matrix Chart

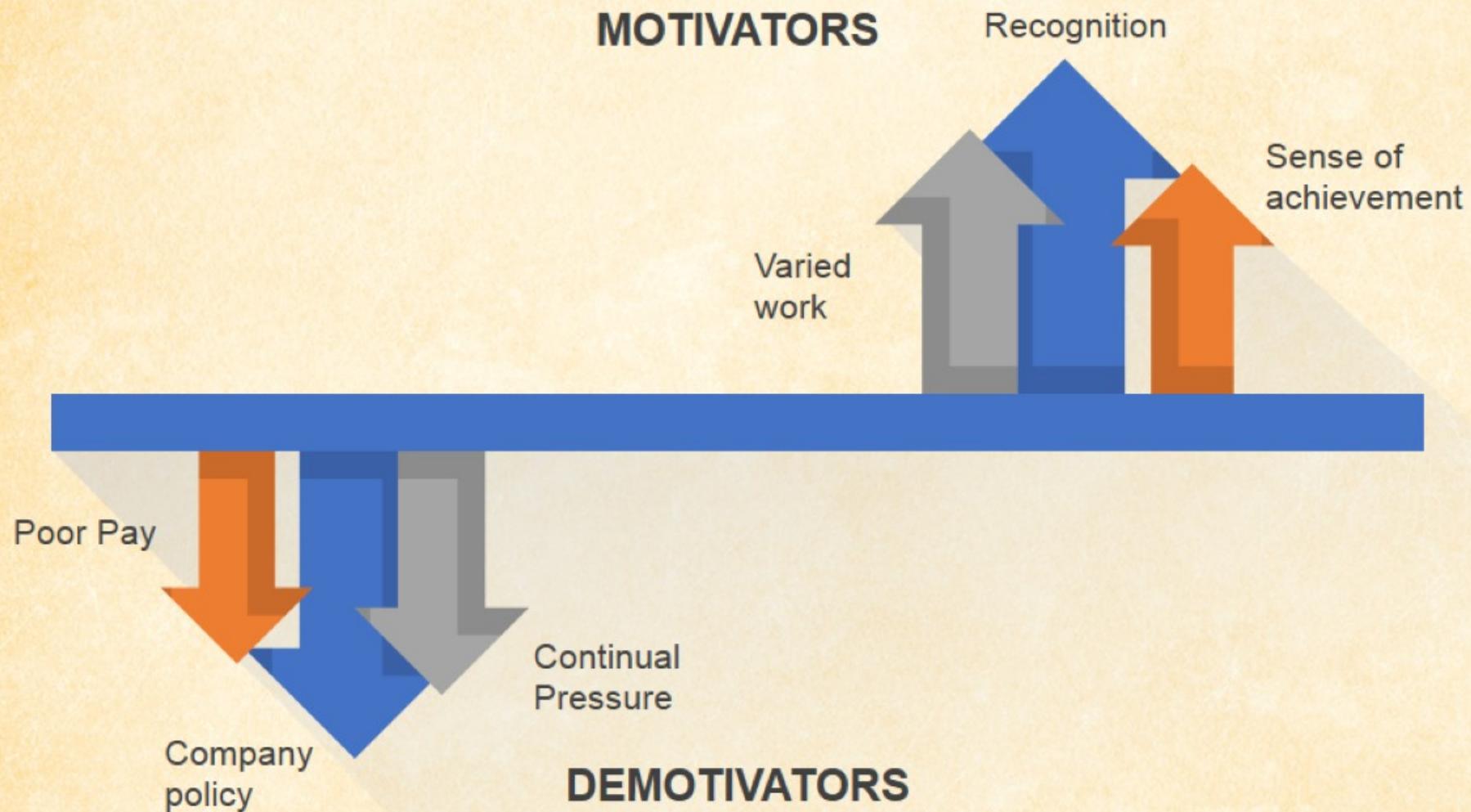
RACI Chart  
Responsibility Assignment Matrix  
Roles and Responsibilities

Activity	Team Member					
	Sam	Shelly	Ben	Frank	Lloyd	Mark
Web content	R	A		C	I	
Web design	A	R				
App development	I		A		R	
Security	I		R	I	I	A
Proofing				A		
Testing				R		
Payment system	I		I	I	I	R

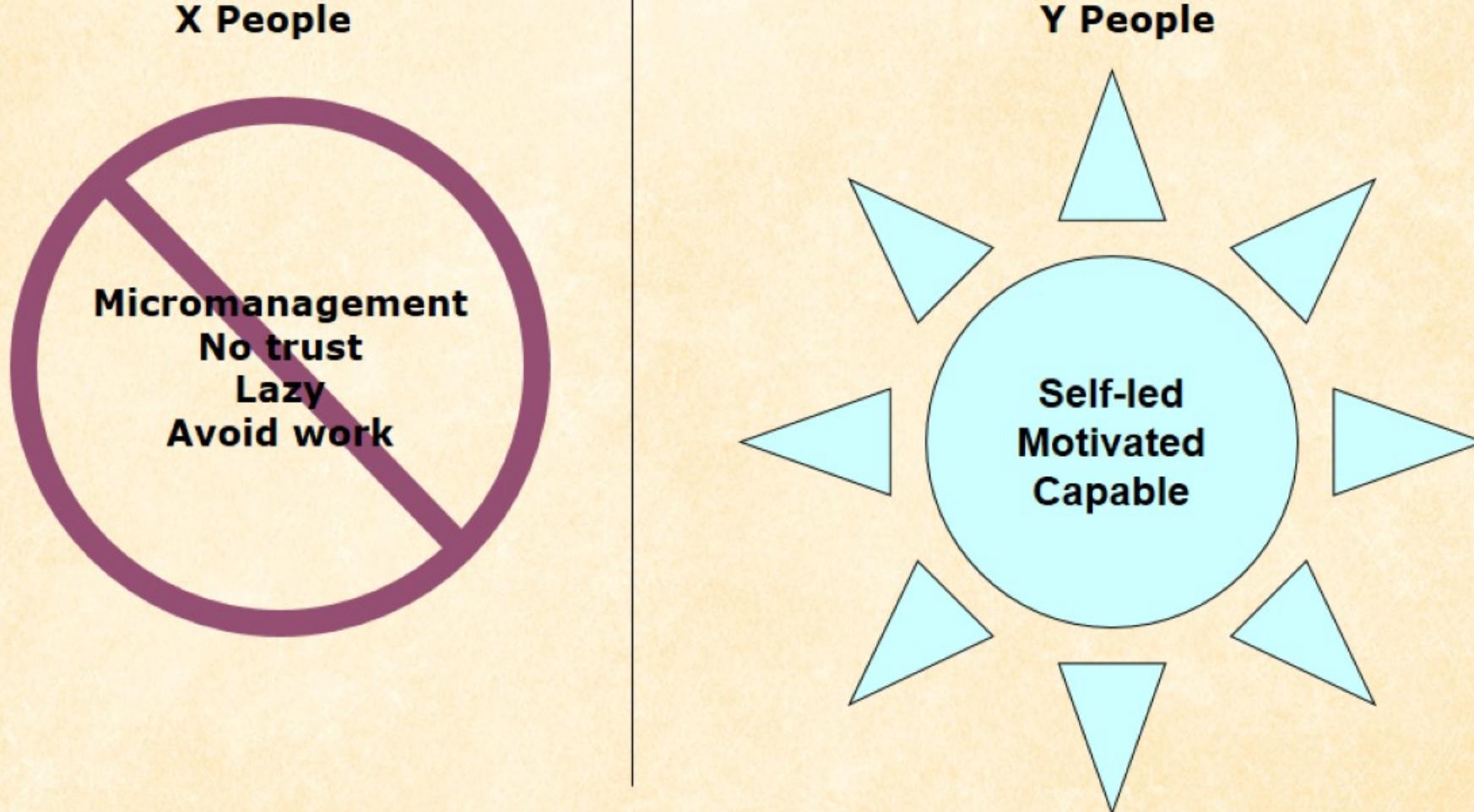
# MASLOW'S HIERARCHY OF NEEDS



# Herzberg's Theory of Motivation



# McGregor's X and Y



# McClelland's Theory of Needs

- David McClelland's Acquired Needs Theory
- Individual's needs are acquired over time
- Shaped by life experiences
  - Achievement – seeks to excel
  - Affiliation – harmonious, acceptance
  - Power – personal and institutional
- Thematic Apperception Test (TAT)

# Other Theories

- Ouchi's Theory Z
  - Japanese Management Style
  - Lifelong employment
- Vroom's Expectancy Theory
  - People behave based on what they believe their behavior will bring them

# Halo Effect

- One positive attribute of a person influences a decision based solely on perception
  - Jane is a great software developer
  - Jane would “naturally” be a great project manager for software projects
  - No evidence of project management abilities



# Resource Management Plan

- Identify human resources and physical resources
- How physical resources will be acquired for the project
- How project team members are brought onto and released
- Account for employees' time
- Use employees as needed and when needed
- Define timetables when team members are needed
- Provide resource calendars

# Resource Management Plan

- Define the training needs and plans for
- Remove or reduce worries about employment
- Project's reward and recognition system
- Compliance with government regulations, union contracts, and policies
- Procurement of:
  - Physical resources
  - Human resources
  - Lead time
  - Vendor fulfillment

# Creating a Project Team Charter

- Defines:
  - Team values
  - Communication guidelines
  - Decision-making process
  - Conflict resolution process
  - Meeting guidelines
  - Team agreements
  - Ground rules

# Activity Resource Needs

- Effort-driven activities
- Fixed-duration activities
- Effort can affect completion date
- Law of Diminishing Returns

# Working with Virtual Teams

- Geographically dispersed individuals
- Experts in different geographical areas
- Inclusion of workers from home offices
- Project members with varying schedules
- People with mobility handicaps
- The deletion or reduction of travel expenses

# Leading Team Development

- Interpersonal skills – soft skills
  - Communication
  - Emotional intelligence
  - Conflict resolution
  - Influence
- Training the project team
- Team building activities

# Team Development, continued

- Ground rules
- Colocation – tight matrix
- Recognition and rewards
  - Money
  - Throughout the project
  - Avoid zero sum rewards
- Personal assessment tools
  - Attitudinal surveys
  - Structured interviews

# Tuckman Team Development Model



# Solving Problems

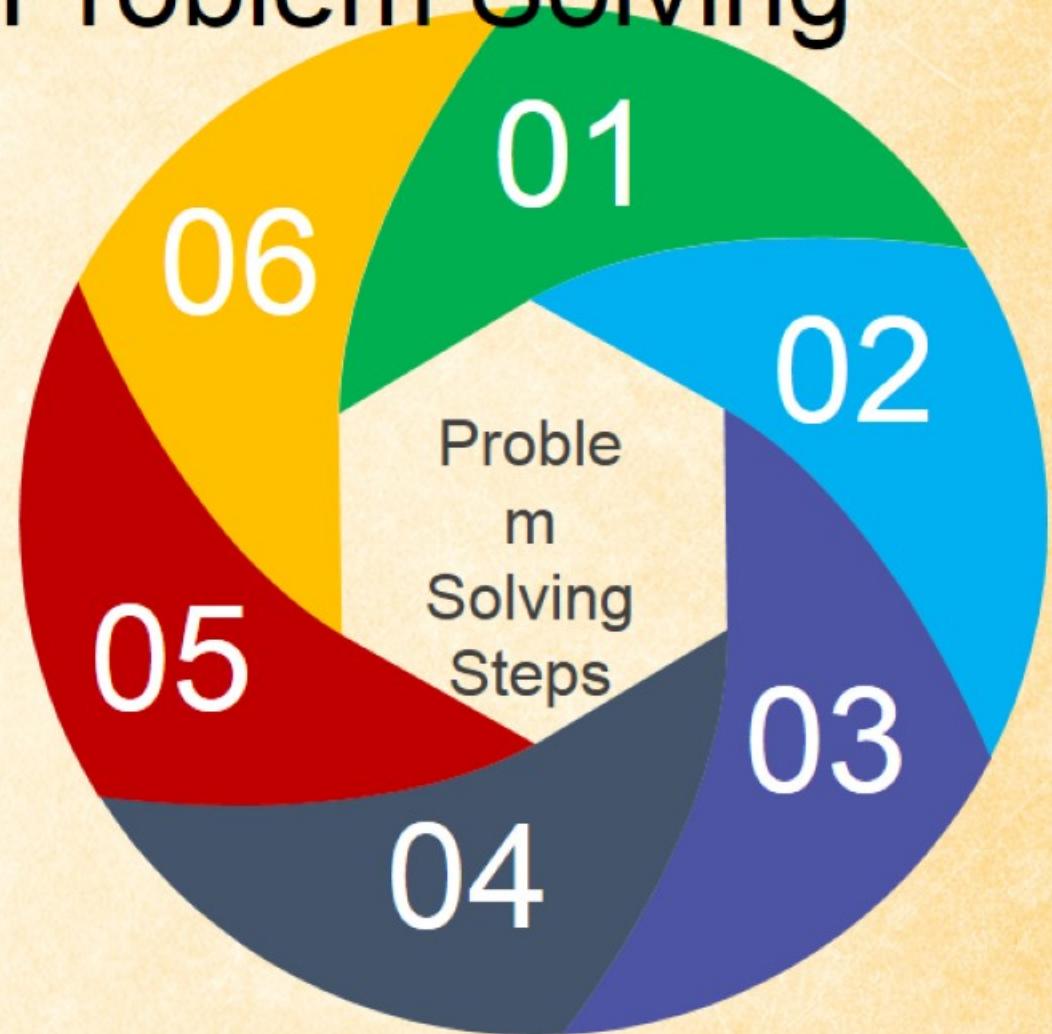
- Collaborative/Problem solving
- Forcing/directing
- Compromising/Reconcile
- Withdrawal/Avoiding
- Smoothing/Accommodating

# Management Styles

- Autocratic: The project manager makes all decisions
- Democratic: The project team is involved with the decisions
- Laissez Faire: the project manager allows the team to lead and make decisions
- Exceptional: the project manager manages by exception (reactive)

# Resource Management Problem Solving

1. Identify the problem: specify the problem
2. Define the problem: Break it into manageable problems
3. Investigate: gather data
4. Analyze data: root cause analysis
5. Solve: choose a solution from available ones
6. Check the solution: has problem has been fixed?



# Agile Communication Facts

- Face-to-face and informal
- Daily “scrum” meetings
- Sprint review
- Sprint retrospectives

# Plan Communications Management

- Communication is paramount in project management
- Creates project communications management plan
- Defines how communication will be managed and controlled
- Linked to stakeholder management and engagement

# Goal of Communications Planning

- Who needs the information
- When the information will be needed
- The expected modality
- Security, archive, and access
- Communication influences  
(time zones, languages, working hours, technology, and cultural considerations)

# Communication Technology

- Urgency of the need for information
- Availability of technology
- Ease of use
- Project environment
- Sensitivity and confidentiality of the information



# Communications Channel Formula

- $N(N-1)/2$
- $10(10-1)/2$
- $90/2=45$
- How many more communication channels?

# Status Report

- Provide current information:
  - Cumulative cost
  - Budget
  - Scope
  - RAG rating
  - Schedule
- Tell the project story

# Creating the Communications Plan

- Communications requirements by the stakeholders
- What is to be communicated, format, content, and detail
- How information flows through the project
- Modality and security
- Methods: e-mails, memos, reports, press releases
- Schedules of communication, status meetings

# Creating the Communications Plan

- Escalation processes and time frames
- Methods of retrieving information
- How the communication management plan can be updated
- Flowchart of how the communication flow
- Communication constraints
- Project glossary

# Two Levels of Risk

- Individual project risks
- Overall project risk
- Looking for risk exposure
  - Threats
  - Opportunities

# Non-event Based Risks

---

- Variability risks: uncertainty surrounding a project activity or decision.  
Fluctuations in productivity
  - Number or errors and defects
  - Weather



# Tailoring Risk Management Processes

- Project size
  - Budget, duration, scope, or team size
- Project complexity
  - Innovation, new technology, commercial arrangements, interfaces, or external dependencies
- Project importance
  - Strategic importance, breakthrough opportunities, product innovation
- Development approach
  - Waterfall project or agile

# Identify Risks

- Identifying and documenting risks
- Creates a risk register
- Ongoing activity throughout the project
- Individual risks and overall risks

# Risk Questions Examples

- Can you give me some examples?
- Would you mind talking me through an example?
- Can you show me?
- How many times has that happened so far this year?
- Then what?
- What do you do if XYZ happens?

# Analyzing SWOT

- **Strengths** The technology to be installed in the project has been installed by other large companies in our industry.
- **Weaknesses** We have never installed this technology before.
- **Opportunities** The new technology will allow us to reduce our cycle time for time-to-market on new products. Opportunities are things, conditions, or events that allow an organization to differentiate itself from competitors and improve its standing in the marketplace.
- **Threats** The time to complete the training and simulation may overlap with product updates, new versions, and external changes to our technology portfolio.

# Perform Qualitative Risk Analysis

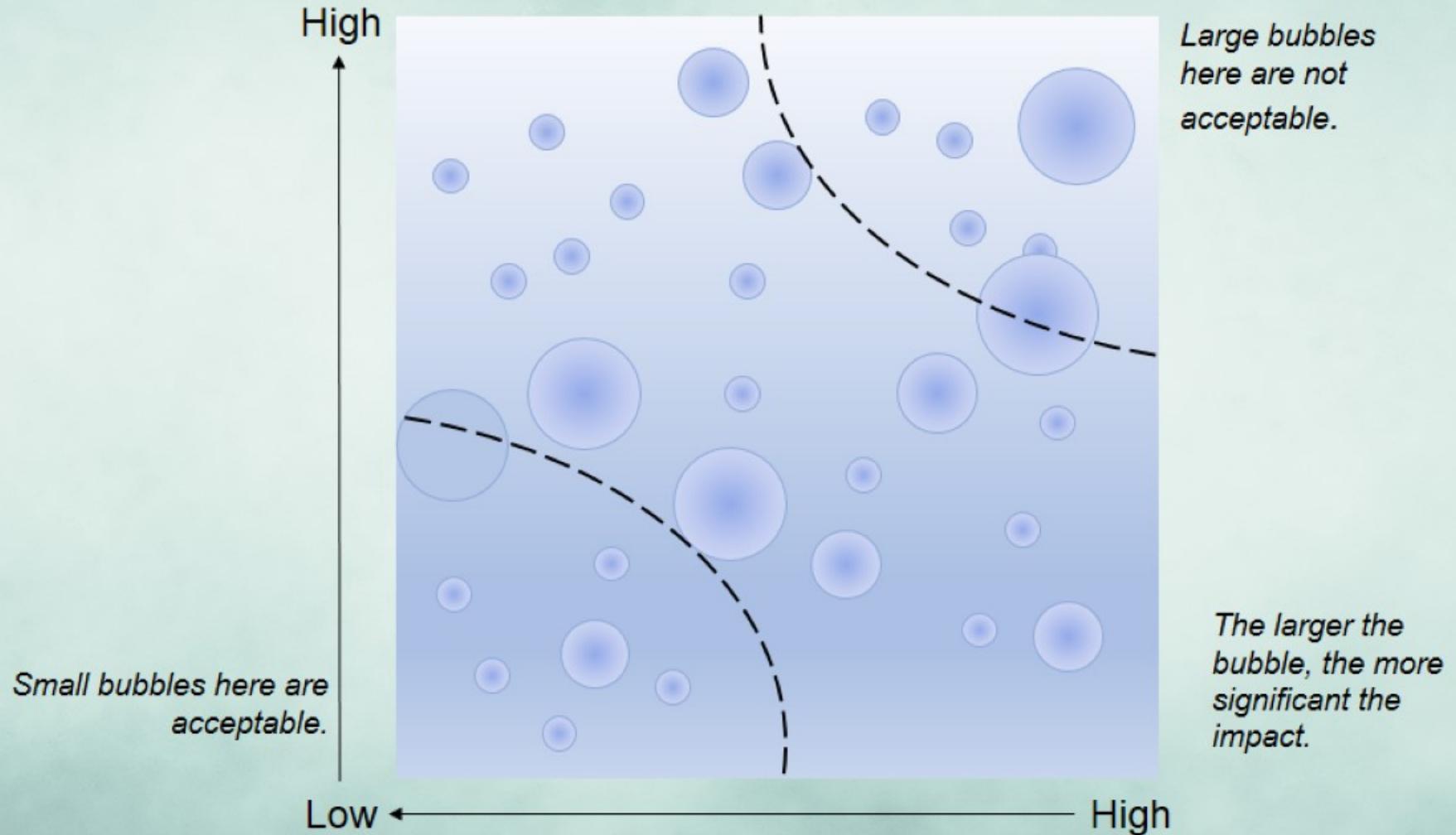
- Prioritizing individual project risks for further analysis or action
- Assessment of probability of occurrence and impact
- Focuses efforts on high-priority risks
- Fast and quick
- Not all risks need qualitative risk analysis

# Probability-Impact Matrix

Risk	Probability	Impact	Risk Score
Data loss	Low	High	Moderate
Network speed	Moderate	Moderate	Moderate
Server downtime	High	Low	Moderate
Email service down	Low	Low	Low

Each identified risk      Subjective score

# Charting Risk Acceptability and Response



# Finding the Expected Monetary Value

- Based on the probability of outcomes that are uncertain
- A risk may cost an additional \$10,000 if it occurs
- 20 percent chance of occurring
- Expected monetary value of is \$2000

# Probability-Impact Matrix

- Cardinal scale
- Risk exposure
- Sum of contingency reserve
- “Hedging bets”

# Probability-Impact Matrix

Risk event	Probability	Impact	Ex\$V
A	.60	-10,000	-6,000
B	.20	-75,000	-15,000
C	.10	25,000	2,500
D	.40	-85,000	-34,000

*Contingency reserve =  
\$52,500*



# Responding to Negative Risks

---

- Escalate
- Avoidance
- Transference
- Mitigation
- Acceptance

# Managing Positive Risks

- Escalate
- Exploiting
- Sharing
- Enhancing
- Accepting



# Risk Monitoring

- Risk responses are effectiveness
- Change in overall project risk
- Status of individual project risks
- New individual project risks

# Results of Risk Monitoring

- Work performance information
- Change requests
  - Corrective actions
  - Preventive actions
- Project management plan updates
- Project document updates
- Organizational process assets updates

# Key Concepts for Procurement Management

- Purchasing the products and services for the project
- Planning
- Acquiring the products or services
- Choosing a source
- Administering the contract
- Closing out the contract

# Key Concepts for Procurement Management

- Point of view of the buyer or the seller and/or buyer
- Purchase order
- Memoranda of agreements (MOA)
- Service level agreement (SLA)
- Contracting

# Contracting Overview

- Contracts clearly state the deliverables and results expected
- Anything not in the contract cannot be legally enforced
- International contracts and local law
- Terms and conditions for what the seller is to perform or provide
- Must confirm procurement meets the project need

# Seller Participation

- Buyer becomes the customer to subcontractors, suppliers, and service providers and is a key stakeholder
- Seller's project management team may be concerned with all the processes involved in performing the work
- Terms and conditions are inputs to seller's management processes
- Contract can limit the project team's options
- The seller may become a buyer of lower-tiered products, services, and materials from subcontractors and suppliers

# Evaluating the Market Conditions

- Sole source
- Single source
- Oligopoly



# SOW and TOR

- Statement of work (SOW)
- Terms of reference (TOR)
- Define the work to be accomplished within the project
- Does not define the product description as a whole
- Entire project is to be procured from a vendor, the SOW and the product description are the same
- Reference the requirements documentation

# Firm Fixed-Price Contracts (FFP)

- Most common contract
- Seller carries risk of cost overruns
- Buyer specifies what's to be purchased
- Changes to the scope

# Fixed-Price Incentive Fee Contracts (FPIF)

- Financial incentives for performance
- Cost, schedule, technical performance
- Price ceiling
- Seller carries risk of overruns

# Fixed Price with Economic Price Adjustment Contracts (FP-EPA)

- Long-term contracts
- Pre-defined financial adjustments
- Inflation, cost increases, decreases
- External conditions

# Cost Reimbursable Overview

- Cost plus a fee
- Scope of work can't be defined early
- High risks may exists in the project
- Buyer carries risk of overruns

# Cost Plus Fixed Fee Contracts (CPFF)

- All allowable costs
- Fixed fee of the initial estimated costs
- Fee paid for completed work
- Fee is constant unless scope changes

# Cost Plus Incentive Fee (CPIF)

- All allowable costs
- Fee based on performance goals
- Incentive sharing (often 80/20)
- Contract defines measurements

# Cost Plus Award Fee Contract (CPAF)

- All allowable costs
- Performance criteria for fee to seller
- Subjective review by buyer
- Award is determined by the buyer

# Time and Materials Contract (T&M)

- Seller is paid an hourly fee
- Seller is paid for materials
- Not-to-exceed clause
- Time limits for contract

# Build v. Buy Decisions

Build  
\$65,000

Build monthly  
\$52,000

Difference  
Buy v. Build  
\$13,000

Build Monthly  
Fees  
\$8,500

Buy Monthly  
Fees  
\$10,500

Difference  
Monthly Fees  
\$2,000

Divide Differences  
 $\$13,000/\$2,000 = 6.5$  months

# Determine to Build or Buy

Your team can create a solution for \$245,600 and it will cost \$23,500 per month to support. A vendor promises that you can purchase their solution for \$12,000, but you'll have a monthly fee of \$49,000. When could your solution be a better financial decision than the vendor's offer?

Build

Buy

Difference  
Buy v. Build

Build Monthly  
Fees

Buy Monthly  
Fees

Difference  
Monthly Fees

Divide Differences

# Answer: Determine to Build or Buy

Your team can create a solution for \$245,600 and it will cost \$23,500 per month to support. A vendor promises that you can purchase their solution for \$12,000, but you'll have a monthly fee of \$49,000. When could your solution be a better financial decision than the vendor's offer?

Build  
\$245,600

Buy  
\$12,000

Difference  
Buy v. Build  
\$233,600

Build Monthly  
Fees  
\$23,500

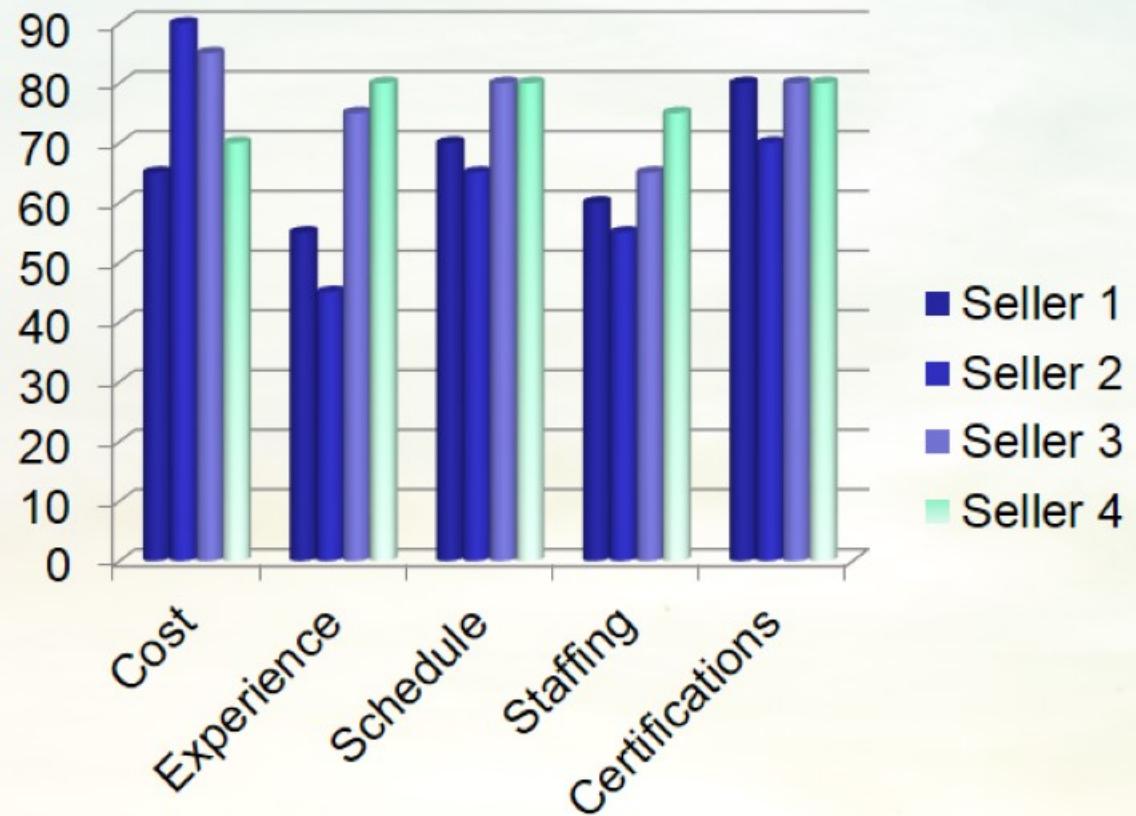
Buy Monthly  
Fees  
\$49,000

Difference  
Monthly Fees  
25,500

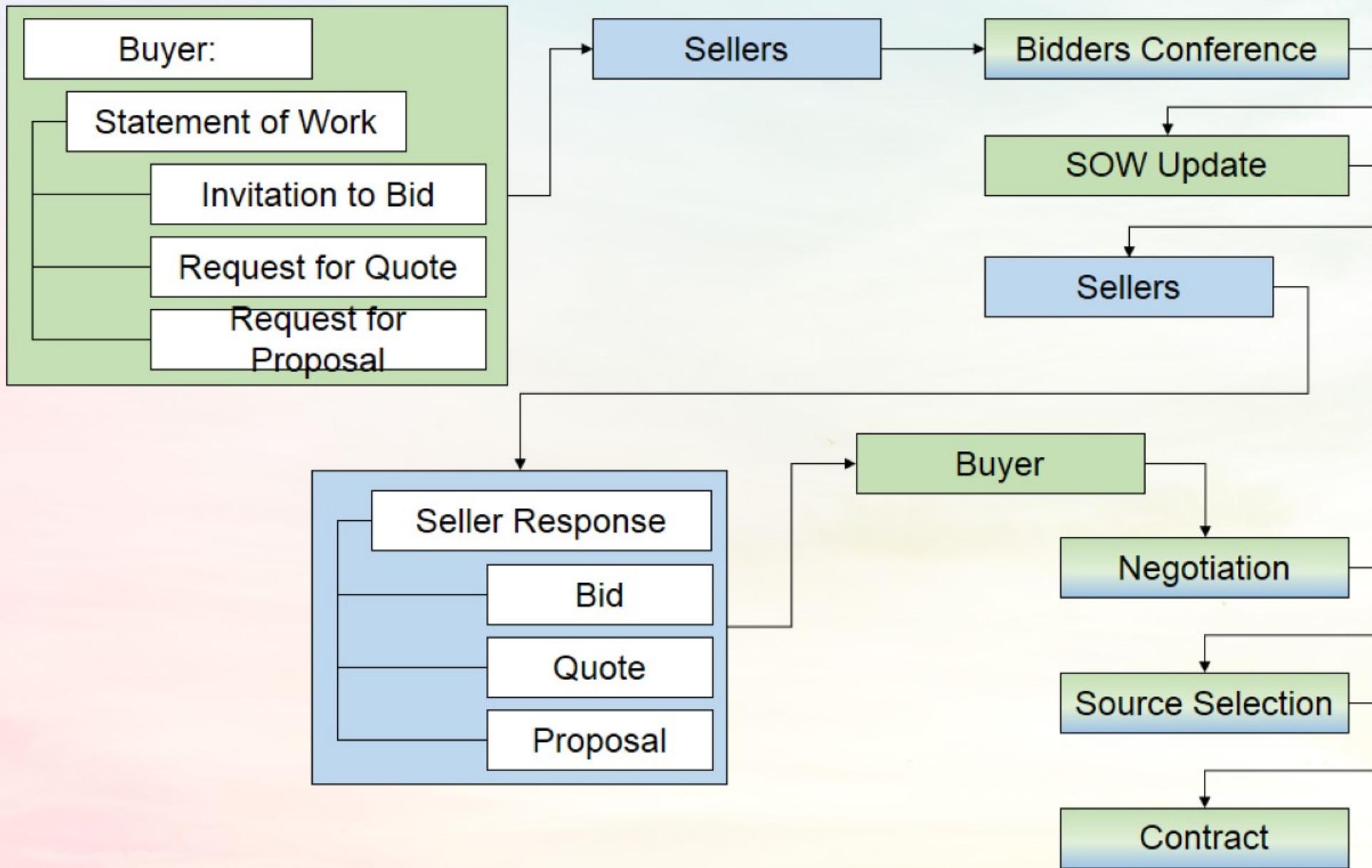
Divide Differences  
 $\$221,100/\$25,500 = 9.1 \text{ months}$

# Seller Selection

- Weighting system
- Independent estimates
- Screening systems
- Contract negotiation
- Seller rating systems
- Expert judgment
- Proposal evaluation



# Procurement process



# Contract Details (Agreement)

- SOW/TOR and requirements
- Schedule baseline
- Performance reporting
- Period of performance
- Roles and Responsibilities
- Where work is to occur
- Pricing
- Payment terms
- Inspection and acceptance criteria
- Warranty
- Product support
- Limitation of liability
- Fees and retainage
- Penalties
- Incentives
- Insurance and performance bonds
- Subordinate subcontractor approvals
- Change request handling
- Termination/alternative dispute resolution

# Letter of Intent

- From the buyer to the seller
- Indicating that the seller will be awarded the contract
- Buyer intends to do business with the seller
- Not a legally-binding contract

# Cancelling the Contract

- Quality or performance issue
- No longer needed
- Terms of contract

# Claims Administration

- Claims, disputes, or appeals
- Contested changes
- Disagreements
- Terms of the contract
- Alternative dispute resolution (ADR)
- Negotiation is preferred method

# Negotiated Settlements

- Cancelled contract
- Agreement on work to payment amount
- Avoid litigation

# Completing Contract Closeout

- Sign-off on complete work
- Certificate of contract closure
- Archive procurement file

# Four Processes of Stakeholder Management

- Identifying the project stakeholders
- Planning for stakeholder engagement
- Managing the stakeholder engagement
- Monitoring the stakeholder engagement

# Identify Stakeholders

- Identifying the people, groups, organizations
- Documenting stakeholder information
- Defining how the stakeholders could affect the project



# Three Steps of Stakeholder Identification

1

Identify the project stakeholders and their:

- Interest
- Influence
- Project contributions
- Contact information
- Expectations

2

Prioritize the identified stakeholders based on their:

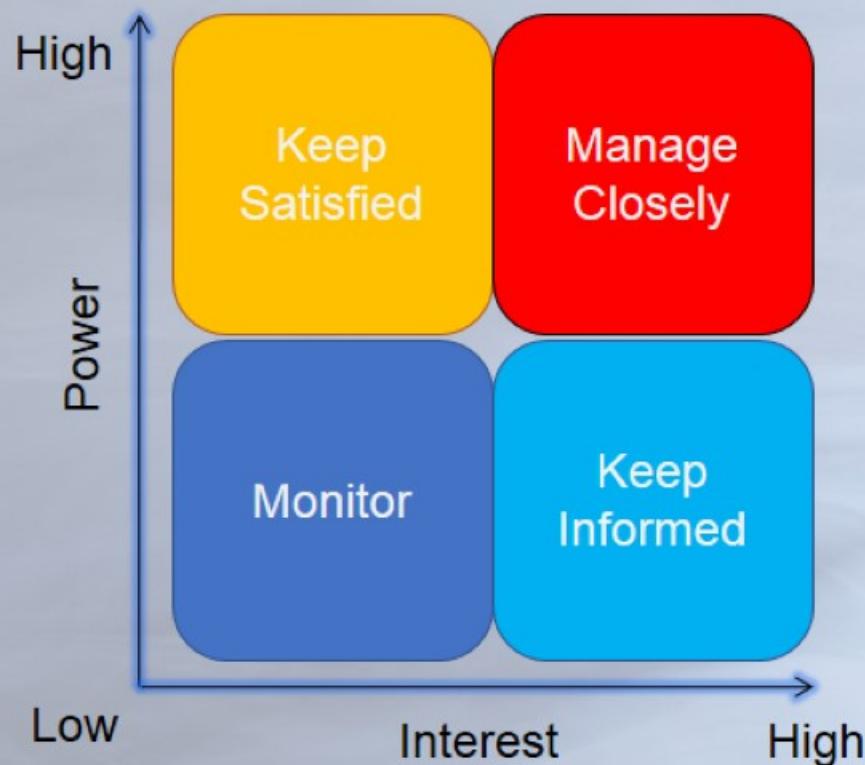
- Power
- Influence
- Impact

3

Anticipate and plan how stakeholders will respond in different project scenarios.

# Stakeholder Analysis

- Power/Interest Grid
- Power/Influence Grid
- Influence/Impact Grid
- Salience model
  - Power
  - Urgency
  - Legitimacy



# Stakeholder Analysis: Influence

## Upwards

Senior management,  
customer, or steering  
committee

## Downwards

Project team, SME, or  
consultant

## Outwards

Suppliers, vendors,  
government agencies,  
customers, or public

## Sideways

Other project managers  
or middle management  
who need the same  
resources

## Prioritization

Some stakeholders  
have greater priority  
than others

# Stakeholder Register

- Stakeholder name and classification
- Geographic location
- Project role and contribution
- Project requirements and expectations



# Stakeholder Register

- Project influence
- Phase of the project the stakeholder is most concerned with
- Details on the stakeholder's role—for example, internal or external, supporter of the project, negative stakeholder, or neutral

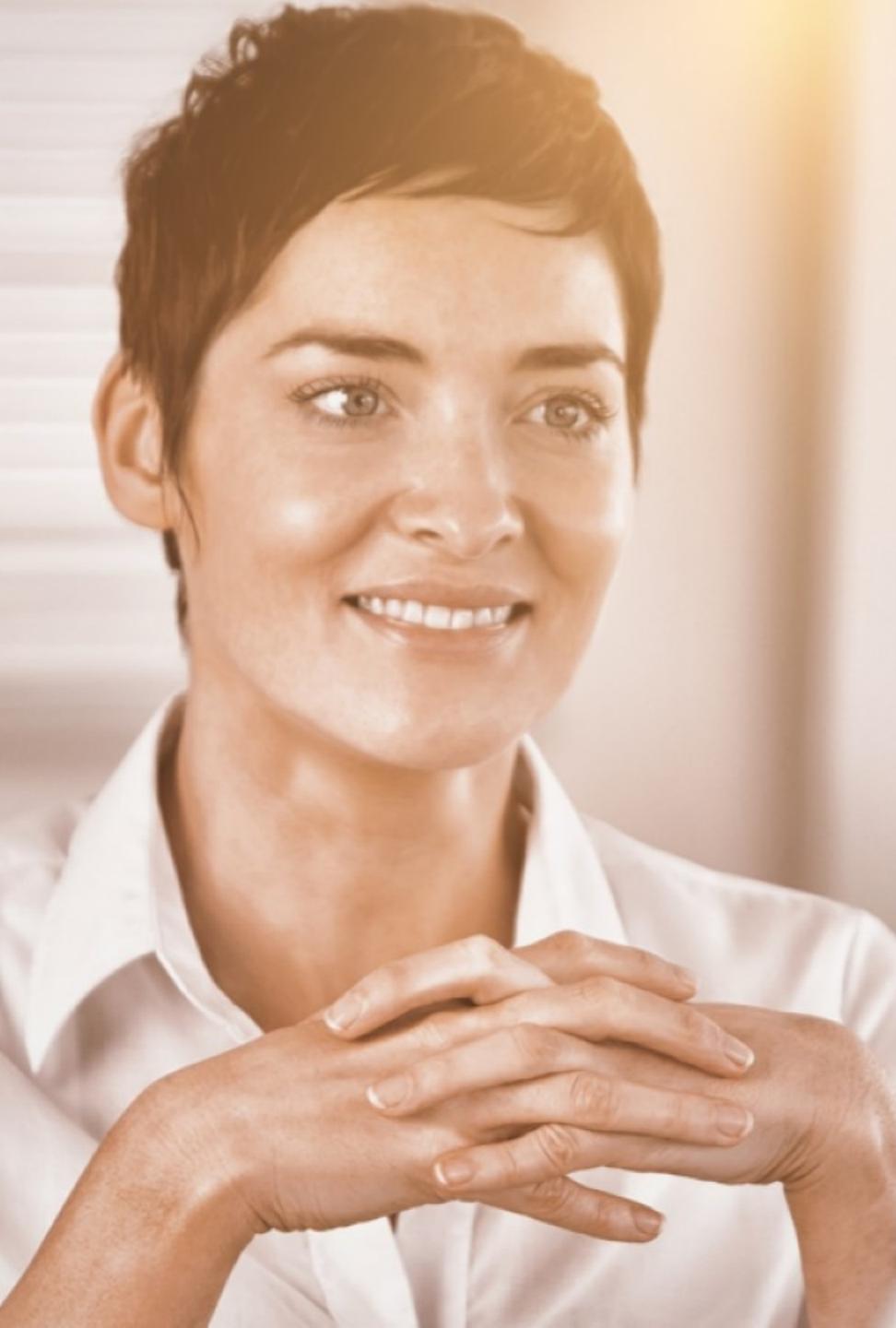




# Stakeholder Engagement Levels

---

- Unaware
- Resistant
- Neutral
- Supportive
- Leading



# Interpersonal and Team Skills

---

- Active listening
- Cultural awareness
- Leadership
- Networking
- Political awareness

# PMI Code of Ethics and Professional Conduct

- PMI document that is part of all PMI certification applications
- Must agree to its terms
- Available through [www.pmi.org](http://www.pmi.org)

# Responsibilities to the Profession

- Organizational rules and policies
  - Exam application
  - Test items
  - Answer sheets
  - Continuing certification reporting (PDUs)

# Responsibilities to the Profession

- Clear and factual evidence:
  - Report violations
  - Cooperate with PMI on their queries
  - Disclose appearance of conflict of interest

# Professional Practice

- Truth in advertising and sales
- Comply with laws, regulations, ethical standards of country where project management is held

# Advancement of Profession

- Intellectual property
- Disperse the code

# Responsibility to Customers and to the Public

- Qualifications and experience
  - Truthful in experience
  - Truthful in estimates (no sandbagging)
- Customer is in charge
- Confidentiality (privity)

# Responsibility to Customers and to the Public

- Avoid Conflict of Interest
- Refrain from accepting inappropriate compensation
  - Follow the laws and customs of the country

# Code of Conduct Extras

- Sapir-Whorf Hypotheses
  - understand the language
- Culture shock
  - Initial reaction to foreign environment
- Ethnocentrism
  - Measure other cultures by your own

# Exam Tips

- Laws of the country
- Company policies
- Customs
- Ethics
- Be an angel

