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भारत सरकार
GOVERNMENT
OF INDIA



FC for MES Officers

Military Engineer Service, Ministry of Defence, Govt of India



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Case study on: Project Management

9.30 to 11.30 am/ 28th Dec 2023
Rudrama Hall # 215,
Main Block, MCHRDIT, Hyderabad

CFO LEDGER

Fresh takes, in-depth analysis and opinions from our esteemed panel of industry leaders



Kishore NK - Kishore NK, Director BEKEM Infra Projects Pvt. Ltd.

Interest rate & Inflation challenges

Markets are prepared to see RBI rising its policy rates in its monetary policy committee meeting schedule between 6 th to 8 th June 2022. But the markets are eager about how much would the increase be.

Search Funds: A new venture-entrepreneurship

Growth funding is critical to sustain and grow a business even after it breaks even and gains brand image. For most of the products, growth funding is difficult. Should a potential business perish for want of growth funding? Not necessarily. Innovations in entrepreneurship have a solution in the name of Search Funds. Search Funds bypass

10 days ago

The Ascent & Assent of Cryptocurrencies

The launch of cryptocurrency exchange platform by TCS and association of other IT majors such as Infosys and Wipro with block chain technology increased attention towards block chain technology and also cryptocurrencies. It may be funny yet interesting that the Reserve Bank of Kailasa, the central bank of the new nation Kailasa

236 days ago

Have masala bonds become less spicy?

Pecking order imbues fund mobilisation. Companies prefer exhausting their debt sources before examining equity funds. However, the debt equity limit imposed by



- Views are for discussion with no obligation on Speaker, host or sponsoring organizations, or the one speaker is associated with.
- The details are compiled from the publicly available lead data /tentative data, and are not recommendations or any advices.



Contribution of Dr. Kishore Nuthalapati in ABN TV with analysis on Economy & Financial Markets

About MES

- 200 plus years old.
- Has 600 stations across mainland & islands of India.
- MES is the Defence Infrastructure Development Agency
- Only agency with both army and civil team employed
- Creates strategic & operational infra except major roads.
- Has an annual budget of Rs. 13,000 crs, executes all constructions.
- Contracts work load (Order book) size of Rs. 40,000 crs
- Engineering support to Army, Air Force, Navy and DRDO.

Defence Ministry owns > 17 lakh acres, largest landowner in India. Any development on any land parcel will be by MES only.

Project Management - Select Statistics

- 37% of projects fail due to lack of defined project objectives & milestones
- 70% of projects are prone to failure
- 44% of projects fail due to lack of alignment between revenue model and objectives
- 27% of projects have project cost overruns
- 87% success of projects is due to Team cohesion
- 35% of projects delivered almost full benefits
- 56% of projects that succeeded owe their success to intermediate change
- 94% of projects that succeeded has proper project management.

Project & Essentials

A Project is a specific activity with a defined scope, objectives, and timeline. It requires team effort to deliver the required outcome. Projects are characterized by their distinct start and end dates, clear deliverables, and the utilization of resources to achieve predefined goals.

- Project Scope
- Business Case
- Project Budget
- Project Creep
- Project Resources
- Project Risks & Management
- Project Approvals
- Project management ERP
- **Contingency Plan**
- **Iterative components**
- **Earned Value & Management**
- **Key Performance Indicators**
- **Organization Chart**
- **Alarm Contacts**
- **Review Schedules**
- **Insurance**

Concept of Project Management

- Project management is the application of processes, methods, skills, knowledge and experience.
- Purpose is to achieve specific project objectives according to the project acceptance criteria within agreed parameters.
- It can involve a one-time project or an ongoing activity, and resources include personnel, finances, technology, and intellectual property.
- Project management is often associated with fields in engineering and construction and, more lately, healthcare and information technology, which typically have a complex set of components that have to be completed and assembled in a set fashion to create a functioning product.

Project Management Essentials

- Work Breakdown Structure (WBS)
- Waterfall Model
- Milestone
- Dependencies
- WIP, and WIP limits
- Bottleneck
- Sprint (time for specific tasks)
- Kick off meeting
- Meeting minutes
- Resource Breakdown Structure
- Bug – Story – Tasks - Epic
- Critical Path Method
- GANTT chart
- PERT
- Crashing

Project Management Process Phases

Initiation Phase

Designing Phase

Implementation Phase



Definition Phase

Development Phase

Closing & Follow-up Phase

Project Management Techniques & Tools

Techniques:

- Classique Technique (charts & matrix)
- Waterfall Technique (chain)
- Agile Technique (Scrum, Kanban, FDD, DSDM, etc)
- Rational Unified Process (stagewise feedback)
- Program Evaluation & Review Technique (PERT)
- Critical Path Method (CPM) Technique
- Critical Chain Technique (priority basis)
- Extreme Project Management Technique
- Kanban Technique

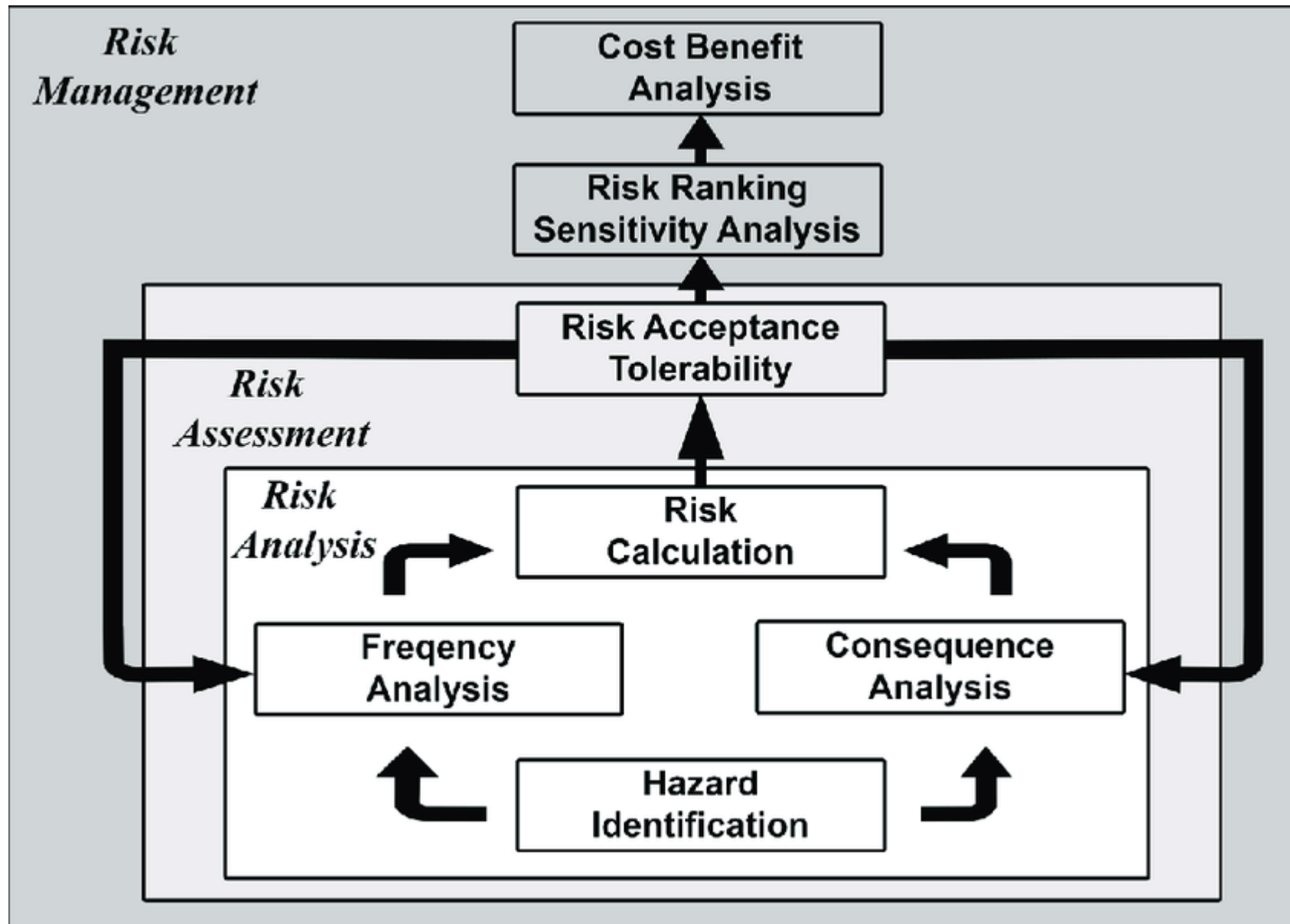
Tools:

- Organization Workflow & Planning
- Communication
- Scheduling & Time Management
- Milestones & Sprints

Project cost estimation

- Material cost & fluctuations (special materials & regulatory impact)
- Execution cost based on components and BOQ
- Escalation and levelized prices
- Prices of imported items – forex, hedging, etc
- Factor in the testing & inspection costs
- Factor in the cost of compliance – HR, Enviro, & PPE, etc
- Consultancy, supervision, and legal costs
- Branding, Promotion, and user concessions / subsidies
- Factor in the cost of O&M post COD
- Factor in reinstatement costs (mining, infra, etc projects)

Risk Analysis, Assessment, & Management



Methods of Risk Analysis

Probability and Impact Assessment: This method involves assessing the probability of a risk occurring and the potential impact it would have on the project or organization. Risks are typically rated on a scale (e.g., low, medium, high) for both probability and impact.

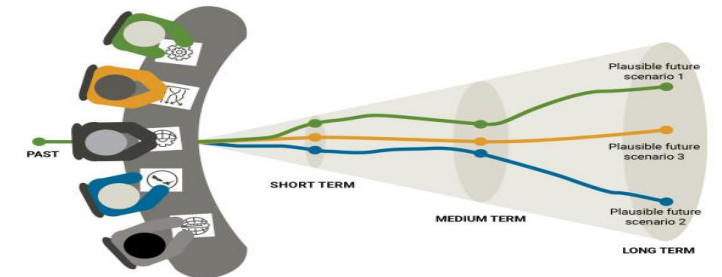
	Consequences				
	Insignificant (1) No injuries / minimal financial loss	Minor (2) First aid treatment / medium financial loss	Moderate (3) Medical treatment / high financial loss	Major (4) Hospital / large financial loss	Catastrophic (5) Death / massive financial loss
Almost Certain (5) Often occurs / once a week	Moderate (2)	High (15)	High (15)	Catastrophic (25)	Catastrophic (25)
Likely (4) Could easily happen / once a month	Moderate (4)	Moderate (8)	High (12)	Catastrophic (16)	Catastrophic (20)
Possible (3) Could happen or known to happen / once a year Likely (2)	Low (3)	Moderate (6)	Moderate (9)	High (12)	High (15)
Unlikely (1) Hasn't happened yet but could / once every 10 years	Low (2)	Moderate (4)	Moderate (6)	Moderate (8)	High (10)
Rare (1) Conceivable but only on extreme circumstances / once in 100 years	Low (1)	Low (2)	Low (3)	Moderate (4)	Moderate (5)

Failure Mode and Effects Analysis (FMEA): FMEA is a structured approach used to identify and prioritize risks by analyzing potential failure modes, their causes, and their effects. It involves assigning severity, occurrence, and detection ratings to each failure mode.

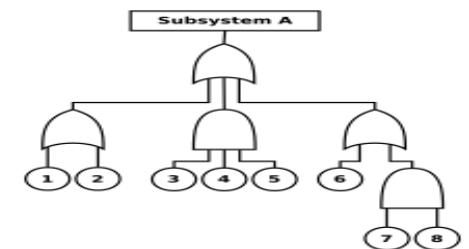
Item/Function	Functional Requirement(s)	Potential Failure Mode	Potential Effect(s) of Failure	Classification Severity	Potential Cause(s)/Mechanism(s) of Failure	Occurrence	Current Design Controls Prevention	Current Design Controls Detection	Detection	RPN
FUNCTION STATEMENT	SPECIFICATION	DISRUPTION OF FUNCTION	IMPACT OF DISRUPTED FUNCTION		CAUSE OF DISRUPTION		PREVENTION CONTROL	DETECTION CONTROL		

Scenario Analysis: This method involves creating hypothetical scenarios and analyzing the potential risks and impacts associated with each scenario. It helps in understanding the range of possible outcomes and their likelihoods.

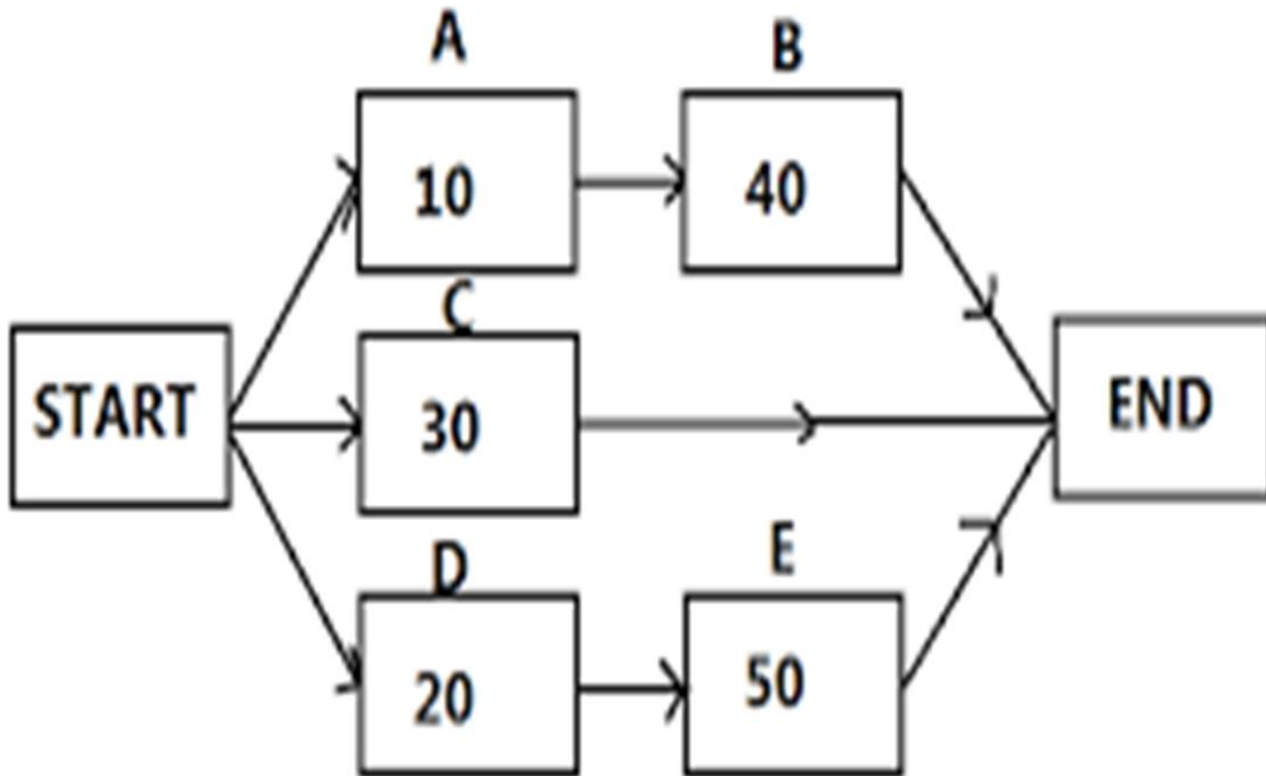
Scenario Analysis



Fault Tree Analysis (FTA): FTA is a graphical technique used to analyze the causes and consequences of an undesired event. It identifies the potential failures or events that can lead to the undesired outcome and quantifies their probabilities.



PERT and Critical Path Method



PERT estimates the time;
CPM estimates the critical path.

Analysis:

- Total 5 work components
- Shortest is 70 days
- Longest is 150 days (sum of all)
- Critical Path is Start-D-E-End
- Comfort = B (20 days) and C (40 days)
- Crash need may arise for:
 - D work
 - E work

Crashing Critical Path time

- Crashing is finding new plan to reduce project timelines with least incremental costs. Crashing is not fast tracking or catch-up program.
- It is by adjusting tasks, alternative modes, technologies, scope, for execution.

Objectives of crashing:

- prevent project delays
- receive incentives / bonus for early completion
- handle multiple projects effectively
- use resources optimally (shift in excess resources)
- free up critical resources (stuck in this project)

How to crash the Critical Path:

- Allocating additional resources to critical tasks
- Offering additional incentives to team members / agencies
- Outsourcing some of the project tasks as suitable

Steps

- Reflect on the critical path
- Evaluate benefits & costs involved
- Determine possible project solutions
- Create budget and select most cost effective solution
- Implement new project schedule

Contract & Teams

Contract:

- Scope determination
- Request for Information
- Scoping of potential contractors
- Bundling and/or unbundling of work components
- Floating tenders
- Tender process and LOI
- Contract Agreement
- Commencement Order

Project Team:

- Authority Independent Engineer
- Lenders Independent Engineer
- Third Party Inspection Engineer
- Project Management Consultant
- Contractor & Project Team
- Sub-Contractors
- Plant Suppliers
- AMC Agencies
- Legal Consultant
- Insurance Consultant
- Safety Consultant
- Quality Consultant

Project Commissioning & Capitalization

- Once the project is completed, all the costs related to the project should be effectively capitalized
- Soft deliverables of the project should be meticulously verified
- The 'As Built Drawings', 'Service Lines', Maintenance SOPs, Manuals, Warranties, Life Estimate Records, etc., shall be preserved.
- The Preventive Maintenance Guidelines / checklists should be handed over to the maintenance team
- Value of the project persists only with proper commissioning and capitalization exercise. It could be monetary or functional value, and both are interrelated.

....time for a case study

