Professional Certificate in Project Planning And Scheduling

Project Resource Management

A

Activity Resource Breakdown – A hierarchical list that details the types and quantities of resources required for each activity in the schedule. Related terms: Resource dictionary, work breakdown structure (WBS). This breakdown helps planners identify resource needs early, avoid overallocation, and support capacity planning. Example: For a “foundation pour” activity, the breakdown may list 5 m^3 of concrete, 2 excavators, and 4 laborers.

Acquisition Management Plan – A document that outlines how external resources (materials, subcontractors, equipment) will be procured, including selection criteria, contract types, and procurement timelines. Related terms: Procurement strategy, vendor management. It ensures that needed resources are secured in alignment with the project schedule.

Allocation Curve – A graphical representation showing the distribution of a particular resource over time, often used to visualize peak demand periods and identify smoothing opportunities. Related terms: Resource histogram, leveling. By reviewing the curve, a manager might shift non-critical tasks to reduce a labor peak.

Assumption Log (Resource) – A record of assumptions made about resource availability, skill levels, or cost that affect planning. Related terms: Risk register, constraints. Example entry: “Assume two certified welders will be available for the steel framing phase.”

Availability Buffer – Extra time or capacity added to a resource schedule to accommodate unforeseen absences, equipment downtime, or delays. Related terms: Contingency reserve, slack. A typical buffer might be 10 % of total labor hours for a construction project.

Baseline Resource Plan – The approved version of the resource plan against which actual usage is measured. Related terms: Performance measurement baseline, earned value management. Deviations from the baseline trigger variance analysis.

Benchmarking (Resource Performance) – Comparing a project's resource productivity or cost against industry standards or similar projects. Related terms: Key performance indicators (KPIs), best practices. Benchmark data can guide target setting for labor efficiency.

Capacity Planning – The process of determining the amount of resources needed to meet project demand within schedule constraints. Related terms: Resource leveling, demand forecasting. Example: Forecasting that 120 person-days of design work will be required in the next month and confirming that the design team can absorb this load.

Cost of Resource – The monetary rate associated with a resource, including salary, equipment rental, or material price per unit. Related terms: Cost baseline, rate card. Knowing the cost per hour for a senior engineer enables accurate budgeting for schedule-driven cost estimates.

Critical Resource – A resource whose availability directly influences the project's critical path. Related terms: Critical path method (CPM), bottleneck. If a specialized CNC machine is critical, any delay in its use will extend the overall project duration.

Cross-Training – Developing multiple skill sets within team members to increase flexibility and reduce single-point-resource risk. Related terms: Resource smoothing, skill matrix. An example is training a junior analyst to also perform data entry tasks.

Current Resource Allocation – The real-time assignment of resources to active tasks, often displayed in a resource histogram. Related terms: Resource usage, assignment matrix. Monitoring current allocation helps detect overallocation early.

Demand Forecasting (Resource) – Predicting future resource needs based on schedule trends, scope changes, and known constraints. Related terms: Capacity planning, rolling wave planning. Accurate forecasts prevent last-minute hiring or equipment rentals.

Dependency Constraints (Resource) – Limitations that arise when a resource is required before another can start, creating a logical relationship beyond the schedule logic. Related terms: Finish-to-start, resource dependency. For instance, a test engineer cannot begin verification until the prototype is assembled.

Earned Value Management (EVM) – Resource Component – Applying EVM metrics (PV, EV, AC) specifically to resource consumption, enabling performance analysis of labor and equipment usage. Related terms: Cost performance index (CPI), schedule performance index (SPI).

Enterprise Resource Planning (ERP) Integration – Linking project resource data with an organization's ERP system for unified financial, procurement, and HR information. Related terms: Data synchronization, system interoperability.

Equipment Utilization Rate – The proportion of time a piece of equipment is actively used versus its total available time. Related terms: Productivity, idle time. A 75 % utilization rate for a crane suggests room for improvement or reassignment.

External Resource – Any resource not part of the core project team, such as subcontractors, suppliers, or rented equipment. Related terms: Internal resource, third-party. Managing external resources often requires formal contracts and performance monitoring.

Fixed-Price Contract (Resource) – A procurement agreement where the total cost for the resources is predetermined, regardless of actual usage. Related terms: Cost-plus contract, contract type. This arrangement places usage risk on the supplier.

Functional Authority – The power to assign resources based on functional organization lines, often exercised by department heads. Related terms: Line authority, matrix organization.

Human Resource Management Plan – A component of the overall resource management plan that defines roles, responsibilities, staffing, and team development strategies. Related terms: Organizational breakdown structure (OBS), staffing management plan.

Impact of Resource Constraints – The effect that limited availability of personnel, equipment, or materials has on schedule, cost, and quality. Related terms: Constraint analysis, trade-off. Understanding impact guides mitigation strategies such as overtime or alternate sourcing.

Individual Resource Calendar – A calendar that records the working days, holidays, and planned time-off for a specific person or piece of equipment. Related terms: Resource calendar, availability.

Indirect Cost Allocation – Distributing overhead expenses (e.G., Utilities, administrative support) to resources based on predetermined drivers. Related terms: Cost allocation, overhead rate.

Influence Diagram (Resource) – A visual tool that maps the relationships between resource decisions, risks, and project outcomes. Related terms: Decision tree, risk modeling.

In-House Resource – Personnel, equipment, or materials owned and managed directly by the organization executing the project. Related terms: External resource, asset.

Iterative Resource Planning – Re-evaluating and adjusting the resource plan at regular intervals as the schedule evolves. Related terms: Rolling wave planning, agile resource management.

Job Description (Resource) – A documented statement of duties, required skills, and performance expectations for a project role. Related terms: Role definition, competency matrix.

Just-In-Time (JIT) Resource Delivery – Coordinating material or equipment arrivals to coincide closely with the moment they are needed, minimizing inventory. Related terms: Lean, pull scheduling.

K
Key Performance Indicator (KPI) – Resource Efficiency – A measurable value that indicates how effectively resources are used, such as labor hours per deliverable. Related terms: Metric, performance baseline.

Knowledge Transfer Plan – A strategy for ensuring that expertise moves from departing or external resources to the project team. Related terms: Succession planning, training.

L
Labor Burden Rate – The total cost of employing a worker, including wages, taxes, benefits, and overhead, expressed as a percentage or multiplier. Related terms: Fully-burdened rate, cost of resource.

Labor Productivity Index – A ratio comparing actual output to standard or planned output for labor, often expressed as units per hour. Related terms: Efficiency, performance measurement.

Level of Effort (LOE) Activity – An activity that consumes resources continuously over a period without producing a tangible deliverable, such as project management support. Related terms: Duration-driven activity, effort estimate.

Leveling (Resource Leveling) – Adjusting activity start and finish dates to resolve overallocation while maintaining the project's logical dependencies. Related terms: Smoothing, critical path. Example: Delaying a non-critical task by two days to free a specialist for a critical task.

Learning Curve Effect – The phenomenon where resource productivity improves as personnel gain experience, reducing time per unit. Related terms: Productivity gain, cumulative average.

Logistics Management (Resource) – Coordinating the movement, storage, and distribution of physical resources. Related terms: Supply chain, material handling.

Long-Lead Item – A resource (often equipment or material) that requires a longer procurement period than other items, influencing schedule sequencing. Related terms: Lead time, critical path.

M

Material Requirement Planning (MRP) – A systematic approach to calculating the quantities of materials needed, based on the schedule and BOM, and timing their delivery. Related terms: Inventory control, just-in-time.

Matrix Organization – A structure where individuals report both to functional managers and to project managers, sharing resource authority. Related terms: Functional authority, dual reporting.

Mean Time Between Failures (MTBF) – A reliability metric indicating the average operating time between equipment breakdowns. Related terms: Reliability, maintenance planning.

Mean Time to Repair (MTTR) – The average time required to restore a failed resource to operational status. Related terms: Downtime, corrective maintenance.

Milestone Resource Allocation – Assigning specific resources to achieve a key project milestone, often with heightened focus on quality and timeliness. Related terms: Checkpoint, deliverable.

Mitigation Plan (Resource Risk) – Actions designed to reduce the probability or impact of resource-related risks, such as cross-training to address skill shortages. Related terms: Risk response, contingency.

Monte Carlo Simulation (Resource) – A statistical technique that runs numerous schedule scenarios with varied resource availability to assess risk exposure. Related terms: Probabilistic analysis, risk modeling.

Multi-Project Resource Management – Coordinating resources across several concurrent projects to optimize utilization and avoid conflicts. Related terms: Portfolio management, resource pool.

N

Need Analysis (Resource) – Determining the quantity, type, and skill level of resources required to meet project objectives. Related terms: Demand forecasting, staffing plan.

Non-Billable Resource – Resources whose effort is not charged directly to the client or project budget, often internal support staff. Related terms: Chargeable, overhead.

O

Obligation Management – Tracking and controlling commitments made to external resources, such as contracts and purchase orders. Related terms: Contract administration, procurement.

Off-Peak Scheduling – Planning resource usage during periods of lower demand to reduce costs or avoid

congestion, common with utilities or shared facilities. Related terms: Leveling, time-phased planning.

On-Site Resource Coordination – Managing the daily activities, safety, and logistics of resources physically present at the project location. Related terms: Site management, field supervision.

Optimistic, Pessimistic, and Most Likely Estimates (Resource) – Three-point estimates used in probabilistic scheduling to capture uncertainty in resource duration or effort. Related terms: PERT, range-based estimating.

Organizational Breakdown Structure (OBS) – A hierarchical representation of the organization's functional units, used to map resource responsibility. Related terms: WBS, responsibility assignment matrix.

Outsourcing Strategy – The plan for delegating specific resource functions to external providers, often to access specialized expertise or reduce costs. Related terms: Procurement, vendor management.

P

Peak Demand Period – A timeframe when resource usage reaches its highest level, potentially causing overallocation.

Performance Baseline (Resource) – The approved plan for resource usage against which actual performance is measured. Related terms: Earned value, variance analysis.

Person-Hour – A unit of effort representing one person working for one hour. Related terms: Labor hour, effort estimate.

Physical Resource – Tangible assets such as machinery, tools, or materials required for project execution. Related terms: Human resource, asset.

Planning Horizon – The future time span for which detailed resource planning is performed, often the first 12 months of a multi-year project. Related terms: Rolling wave, forecast window.

Portfolio Resource Management – Aligning resource capacity across a collection of projects to meet strategic objectives. Related terms: Program management, resource pool.

Pre-Assignment – Reserving resources for future activities before detailed scheduling is completed, based on anticipated need. Related terms: Placeholder, provisional allocation.

Primary Resource – The main resource type driving the execution of a task, such as a specialist engineer for a design review. Related terms: Secondary resource, support resource.

Procurement Lead Time – The elapsed time from the initiation of a purchase request to the receipt of the resource. Related terms: Long-lead item, schedule impact.

Project Resource Management Plan – The comprehensive document that defines how resources will be estimated, acquired, allocated, monitored, and controlled throughout the project lifecycle. Related terms: Scope baseline, schedule baseline.

Project Staffing Management – The process of identifying, acquiring, and managing the human resources needed for the project. Related terms: Human resource plan, recruitment.

Qualification Matrix – A table that matches required skill levels for each activity with the qualifications of available personnel. Related terms: Skill matrix, competency mapping.

Quantitative Resource Risk Analysis – Using numerical techniques (e.G., Monte Carlo) to assess the impact of resource uncertainties on schedule and cost. Related terms: Qualitative risk analysis, sensitivity analysis.

R

Resource Allocation – The assignment of specific resources to project activities, specifying quantity, timing, and duration. Related terms: Assignment matrix, loading.

Resource Calendar – A calendar that defines the working days and hours for each resource, including holidays and planned vacations. Related terms: Availability, working time.

Resource Cost Baseline – The approved budget for resource expenditures, forming part of the overall cost baseline. Related terms: Cost estimate, budget.

Resource Dictionary – A detailed repository containing descriptions, rates, availability, and constraints for each resource type. Related terms: Resource pool, asset register.

Resource Histogram – A bar chart that displays the amount of each resource required over time, highlighting peaks and valleys. Related terms: Allocation curve, leveling.

Resource Leveling – Adjusting the schedule to eliminate periods where resource demand exceeds supply, without changing the critical path if possible. Related terms: Smoothing, leveling.

Resource Loading – The process of applying resource quantities to activities to produce a time-phased view of demand. Related terms: Allocation, histogram.

Resource Management Plan (Overall) – The formal plan that integrates the human, material, equipment, and facility resource strategies for the project. Related terms: Procurement plan, staffing plan.

Resource Matrix (Responsibility Assignment Matrix – RAM) – A grid that maps project activities to responsible resources, often using RACI designations. Related terms: RACI chart, OBS.

Resource Outlook – A forward-looking assessment of resource availability and potential constraints for upcoming project phases. Related terms: Capacity planning, forecasting.

Resource Pool – A collection of resources (people, equipment, materials) that can be drawn upon for multiple projects or tasks. Related terms: Shared services, centralized staffing.

Resource Smoothing – Adjusting non-critical activities within their float to reduce peaks in resource demand while preserving the critical path. Related terms: Leveling, leveling.

Resource Utilization – The ratio of actual resource usage to the total available capacity, expressed as a

percentage. Related terms: Efficiency, productivity.

Resource-Constrained Scheduling – Creating a schedule that accounts for limited resource availability, often requiring trade-offs between time and scope. Related terms: Critical chain, capacity planning.

Return on Investment (ROI) – Resource Training – Measuring the financial benefit derived from investing in resource skill development. Related terms: Cost-benefit analysis, learning curve.

S

Skill Gap Analysis – Identifying differences between required competencies for project tasks and the current capabilities of available resources. Related terms: Qualification matrix, training plan.

Skill Matrix – A visual tool that lists required skills across activities and indicates which resources possess them, often using proficiency levels. Related terms: Qualification matrix, competency map.

Soft Resource – Intangible assets such as knowledge, expertise, or relationships that contribute to project success. Related terms: Hard resource, intellectual capital.

Stakeholder Resource Expectation – The anticipated level of involvement, communication, and deliverable quality that stakeholders expect from project resources. Related terms: Stakeholder analysis, engagement plan.

Standard Rate – The default cost per unit of time (e.G., Per hour) for a resource, used when no special rates apply. Related terms: Overtime rate, cost of resource.

Strategic Resource Planning – Aligning resource acquisition and development with long-term organizational goals and project pipelines. Related terms: Workforce planning, capacity forecasting.

Subcontractor Management – The processes for selecting, contracting, monitoring, and integrating external contractors into the project. Related terms: Vendor management, procurement.

Supply Chain Risk – Potential disruptions to the flow of materials, components, or equipment that can affect project schedules. Related terms: Lead time, contingency.

Swing Resource – A flexible resource that can be shifted between tasks to address short-term imbalances. Related terms: Float, buffer.

Systematic Resource Review – A scheduled evaluation of resource performance, utilization, and alignment with project objectives. Related terms: Performance measurement, variance analysis.

T

Task Dependency (Resource Driven) – A relationship where the start or finish of a task is contingent upon the availability of a specific resource. Related terms: Logical dependency, resource constraint.

Team Development Cycle – The phases (forming, storming, norming, performing) that a project team typically progresses through, influencing resource productivity. Related terms: Team building, Tuckman model.

Time-Phased Budget – A budget that aligns cost allocations with the schedule, reflecting when resources will be expended. Related terms: Cost baseline, earned value.

Toolset Compatibility – Ensuring that software, hardware, and equipment used by resources can interoperate without issues. Related terms: Standards, integration.

Training Needs Assessment – The process of determining which skills or knowledge areas require development to meet project resource demands. Related terms: Skill gap analysis, learning plan.

Turnover Rate (Human Resource) – The frequency at which personnel leave and are replaced, affecting continuity and knowledge retention. Related terms: Attrition, staffing stability.

U
Utilization Target – A predefined level of resource usage that the project aims to achieve, often set to balance efficiency and employee well-being. Related terms: Capacity planning, KPI.

Unavailability Forecast – Anticipated periods when a resource will be absent due to leave, training, or maintenance. Related terms: Availability buffer, calendar.

V
Value Engineering (Resource Focus) – Analyzing resource usage to identify cost-saving alternatives without sacrificing functionality. Related terms: Cost reduction, alternative analysis.

Vendor Performance Rating – A systematic assessment of an external supplier's reliability, quality, and timeliness. Related terms: Vendor management, scorecard.

W
Work Breakdown Structure (WBS) – Resource Alignment – Mapping resources to WBS elements to ensure that each deliverable has the necessary inputs. Related terms: OBS, resource dictionary.

Workforce Planning – The strategic process of determining the number and type of personnel needed over the project lifecycle. Related terms: Staffing plan, human resource management.

Workload Balancing – Distributing tasks among resources to achieve equitable effort levels and avoid burnout. Related terms: Leveling, smoothing.

X
eXternal Dependency Log – A register that tracks dependencies on resources outside the project's direct control, such as supplier lead times. Related terms: Risk register, constraint log.

Y
Yield Rate (Resource) – The amount of output produced per unit of resource input, often used for manufacturing or construction labor. Related terms: Productivity, efficiency.

Z
Zero-Based Resource Budgeting – Building the resource budget from scratch for each reporting period,

justifying every cost item. Related terms: Incremental budgeting, cost control.