**PROJECT MANAGEMENT IT - LAB IUH-SE**

MODULE 4: Assigning resources to the tasks in Project

There are three types of resources used to manage and allocate project work effectively. These resources help in scheduling, budgeting, and tracking progress.

**1. Work Resources** (People & Equipment) 

Definition:

∙ These are resources that perform work on tasks in the project.

∙ Their tasks is measured in units of time (hours, days, weeks).

∙ They can have a defined capacity (% availability), work schedules, and

**hourly/daily/monthly/yearly costs. *[Std.Rate], [Cost/Usage]*** 

∙ They can get a private working time ***[Base]*** 

Examples:

∙ People: Software Developers, System Architects, Business Analysts, Project Managers, QA Testers, UI/UX Designers, Database Administrators, Network Engineers, Cybersecurity Experts. ∙ Equipment: Servers, Cloud Computing (e.g., AWS, Azure), Version Control Systems **–** GitHub, GitLab, or Bitbucket for managing code versions. 

How it works in Microsoft Project 2016:

∙ When a work resource is assigned to a task, Microsoft Project calculates the amount of work based on the resource's availability and the task duration.

∙ You can set work schedules to ensure proper workload distribution and avoid over-allocation.

**2. Material Resources** (Consumable Items)

Definition:

∙ These are physical materials that are consumed as work progresses.

∙ They do not have a work capacity (availability % does not apply).

∙ They are measured in units like **GB, TB, units, meters, liters, kilograms, or pieces** instead of time.

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Examples:

**Hardware & Consumable IT Equipment**

∙ Storage Devices – Hard drives, SSDs, USB flash drives.

∙ Cables & Networking Accessories – Ethernet cables, adapters, routers.

∙ Backup Media – DVDs, tapes, external hard drives for data backups.

∙ Batteries & Power Supplies – UPS batteries, laptop chargers. 

**Software Licenses & Subscriptions**

∙ Operating System Licenses – Windows, macOS, Linux distributions.

∙ Development Tools – Visual Studio, JetBrains IDEs, MATLAB. 

∙ Database Licenses – SQL Server, Oracle, MySQL Enterprise.

∙ Cloud Services – AWS, Azure, Google Cloud storage and computing.

**Office & Miscellaneous Supplies**

∙ Printed Documents & Manuals – Requirement specifications, test plans. ∙ Stationery – Whiteboards, markers, sticky notes for agile teams. 

∙ Headsets & Microphones – Used for remote meetings and testing. 

How it works in Microsoft Project 2016:

∙ When adding material resources, you specify the unit of measurement (e.g., GB, TB, meters, units, licenses, pages, packs, …). 

∙ Microsoft Project does not schedule material resources based on work time but tracks the quantity required for each task. 

**3. Cost Resources** (Fixed Expenses)

Definition:

∙ These represent financial costs that are associated with a task but are not dependent on work time.

∙ Unlike work resources, cost resources do not have a fixed availability or work rate. Examples:

**Software & Licensing Costs**

∙ Cloud Services Subscription – AWS, Azure, Google Cloud fees.

∙ Software Licenses – Microsoft Office, Adobe Suite, Visual Studio.

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∙ Database Licensing Fees – SQL Server, Oracle, MySQL Enterprise.

**Infrastructure & Hardware Costs**

∙ Server Rental – Monthly or yearly hosting fees.

∙ Data Center Costs – Fees for colocation or cloud hosting.

∙ Networking Costs – ISP charges, VPN subscriptions.

**Professional & Outsourcing Fees** 

∙ Consulting Fees – Payments to external consultants.

∙ Freelancer/Contractor Payments – Web developers, security experts.

∙ Training & Certification Costs – Courses for IT staff. 

**Business & Operational Costs**

∙ Travel Expenses – Flights, hotels, transportation for meetings.

∙ Conference Fees – IT summits, training workshops.

∙ Legal & Compliance Costs – GDPR, software patents, security audits.

How it works in Microsoft Project 2016:

∙ When assigning a cost resource to a task, you manually enter the amount.

∙ Microsoft Project does not calculate cost resources based on time worked; instead, it simply adds them to the task budget.

Exercise 1. Entering Resources

∙ Open the Exercise 1 (Module 3)

∙ Tab View 🡪 Resource Sheet / Tab Task 🡪 Resource Sheet

Add the resources for this project bellow: Work (the person)

| **STT Name Initials Groups Max.**  **Std. Rate**  **Units** | | | | | |
| --- | --- | --- | --- | --- | --- |
| 1. | David | D | Consultant | 100% | 8 |
| 2. | Brian | B | Staff | 100% | 7 |
| 3. | Mary | M | Staff | 100% | 7 |
| 4. | John | J | Staff | 100% | 7 |
| 5. | Worker 1: Liam | W1 | Worker | 100% | 6 |
| 6. | Worker 2: Chang | W2 | Worker | 100% | 6 |

∙ Assign the resources for each task in the project

Tab Task 🡪 Gantt Chart 🡪 Add Column Resource Name, Cost

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Select the task that you want to assign the resources:

| **ID TASK NAME Resource Names Cost** | | | |
| --- | --- | --- | --- |
| **1** | clean machine | Worker 1, David |  |
| **2** | load raw materials | Worker 2 |  |
| **3** | prime machine | Mary |  |
| **4** | Test run | Brian |  |
| **5** | clean machine | Worker 1 |  |
| **6** | load raw materials | Worker 2 |  |
| **7** | prime machine | John |  |
| **8** | Test run | David |  |

*Capture images:* 

- *Gantt Chart (Resource Name, Cost Column)*

- *Display the Project Information (Statics): Duration, Hours, Cost*

- *Resource Sheet* 

- *Resource Usage*

Exercise 2. Entering resources

∙ Open the Exercise 2 (Module 3)

∙ Tab View 🡪Resource Sheet

Add the resource for this project bellow: Material Type

| **STT Name Type Materials Initials Groups Std. Rate** | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| 1. | MDF | Material | Sheet | Md | Material | 20 |
| 2. | Flooring | Material | Pack | Fl | Material | 80 |
| 3. | Purple Material | Material | Roll | Pu | Material | 30 |
| 4. | Orange Material | Material | Roll | Or | Material | 120 |

∙ Assign the resources for each task in the project 

Tab Task 🡪 Gantt Chart 🡪 Add Column Resource Name, Cost

The information of resources that assigning to each task

| **ID TASK NAME RESOURCE Names Cost** | | | |
| --- | --- | --- | --- |
| **1** | Visit estate agents | MDF [2] |  |
| **2** | View properties | Flooring [2] |  |
| **3** | Decide what to buy | Purple Material [1] |  |
| **4** | Make offer | Flooring [1], Purple Material [1] |  |
| **5** | Wait for decision | Flooring [1], Orange Material [1] |  |
| **6** | offer a accepted | Orange Material [2] |  |

*Capture images:*

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- *Display the Project Information (Statics): Duration, Hours, Cost*

- *Resource Sheet*

- *Resource Usage*

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Exercise 3. Entering resources

∙ Create the project bellowing:

| **ID TASK NAME PREDESCESSOR DURATION** | | | |
| --- | --- | --- | --- |
| **1** | Planning | - | 1 wk |
| **2** | Requirement documents | 1 | 2 wks |
| **3** | Sign off | 2 | 1 day |
| **4** | Development | 3 | 10 wks |
| **5** | Testing | 4 | 4 wks |
| **6** | Implementation | 5 | 2 wks |
| **7** | Review | 6 | 1 wk |

∙ Tab View 🡪 Resource Sheet / Tab Task 🡪 Resource Sheet

Add the resources this project bellow: Work/Material

| **STT Name Type Materials Initials Groups Std. Rate** | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| 1. | PM | Work |  | PM | Sponsor | 10 |
| 2. | Designer | Work |  | Ds | Staff | 6 |
| 3. | Developer | Work |  | Dp | Staff | 8 |
| 4. | Tester | Work |  | Tt | Staff | 6 |
| 5. | Maintainer | Work |  | M | Staff | 5 |
| 6. | Operating System | Material | Unit | OS | Material | 120 |
| 7. | Internet Provider | Material | Unit | ISP | Material | 100 |
| 8. | Cable | Material | M | Cb | Material | 1 |
| 9. | Visual Studio | Material | Unit | VS | Material | 20 |

∙ Assign the resource for each task in the project

| **ID TASK NAME Work Material** | | | |
| --- | --- | --- | --- |
| **1** | Planning | PM |  |
| **2** | Requirement documents | PM, Designer |  |
| **3** | Sign off | PM |  |
| **4** | Development | Developer | Operating System[1] , Visual Studio [1] |
| **5** | Testing | Tester |  |
| **6** | Implementation | Maintainer | Operating System , Visual Studio, Cable [100] |
| **7** | Review | PM, Maintainer |  |

*Capture images:*

- *Gantt Chart (Resource Name, Cost Column)*

- *Display the Project Information (Statics): Duration, Hours, Cost*

- *Resource Sheet*

- *Resource Usage*

Exercise 4. Entering resources

∙ Open the Exercise 3 (Module 3)

∙ Tab View 🡪Resource Sheet 🡪 Resource Views

Add the resources that type is work (default) for the project below:

| **STT Name Initials Groups Max.**  **Std. Rate**  **Units** |
| --- |

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| 1. | Architect | Arc | Consultant | 100% | 9 |
| --- | --- | --- | --- | --- | --- |
| 2. | Draftsperson | Dft | Staff | 200% | 7 |
| 3. | Building Clerk | BC | Staff | 100% | 8 |
| 4. | Supervisor | Sup | Staff | 100% | 12 |
| 5. | Rigger | Rig | Wages | 600% | 5 |
| 6. | Boilermaker | BM | Wages | 600% | 5 |
| 7. | Welder | Weld | Wages | 500% | 6 |
| 8. | Carpenter | Car | Wages | 800% | 7 |
| 9. | Painter | Ptr | Wages | 500% | 6 |
| 10. | Labourer | Lab | Wages | 1,000% | 6 |
| 11. | Driver | Drv | Wages | 300% | 8 |
| 12. | No Barrier Fencing | NBF | Contractor | 100% | 3 |
| 13. | Rock Solid Concrete | RSC | Contractor | 100% | 4 |
| 14. | Listen Ear Audio | LEA | Contractor | 100% | 5 |
| 15. | In Focus Video | IFV | Contractor | 100% | 5 |
| 16. | Pure Grass Turf | PGT | Contractor | 100% | 5 |
| 17. | Building Inspector | BI | Government | 100% | 5 |
| 18. | High Jib Crane | HJC | Equipment | 100% | 7 |
| 19. | Grader | Grd | Equipment | 200% | 6 |
| 20. | Air Compressor | AC | Equipment | 100% | 7 |
| 21. | Utility | Ute | Equipment | 200% | 5 |
| 22. | Electrician | Cap | Staff | 400% | 7 |
| 23. | Plumber | Plu | Staff | 400% | 5 |

∙ Establish the resources that type is material for the project below at the of Resource list above:

| **STT Name Type Materials Initials Groups Std. Rate** | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| 24. | Astro Turf | Material | Square Matre | Grass | Material | 12 |
| 25. | Paint | Material | Ultre | Paint | Ute | 20 |

∙ Assign the resources for each task in the project

| **ID TASK NAME RESOURCE** | | |
| --- | --- | --- |
| **1** | Planning |  |
| **2** | Creating architectural plans | Architect, Draftsperson (200%), Building Clerk (25%) |
| **3** | Submit plans for approval | Architect |
| **4** | Order materials | Draftsperson, Building Clerk |
| **5** | Planning Completed |  |
| **6** | Site works |  |
| **7** | Erect fencing | No Barrier Fencing |
| **8** | Erect site building | Carpenter (400%),Supervisor, Labourer |
| **9** | Clear and level site | Supervisor, Grader(200%), Driver(200%) |
| **10** | Prepare drainage infrastructure | Supervisor(50%), Plumber(200%) |
| **11** | Prepare cabling infrastructure | Supervisor(50%), Electrician(300%) |
| **12** | Site works Completed |  |
| **13** | Building Construction |  |
| **14** | Pour foundations | Rock Solid Concrete |

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| **15** | Erect steelwork | Supervisor [50%], Rigger [600%], Boilermaker [600%], Welder [500%],  Labourer [600%], Driver [200%], High Jib Crane, Utility |
| --- | --- | --- |
| **16** | Erect wall | Supervisor [50%], Carpenter [700%], Labourer [400%], Driver, Grader,  Air Compressor, Electrician [75%], Plumber [25%] |
| **17** | Install roofing superstructure | Supervisor [50%], Rigger [500%], Boilermaker [500%], Welder [300%],  Labourer [500%], Driver [200%], High Jib Crane, Utility, Air  Compressor, Plumber [50%] |
| **18** | Install roofing retracting  mechanism | Supervisor [50%], Welder, Boilermaker [200%], Rigger [200%],  Electrician [200%], Driver, High Jib Crane |
| **19** | Erect seating tiers | Supervisor [50%], Carpenter [800%], Welder [200%], Boilermaker  [200%], Labourer [500%], Driver, Utility, Air Compressor |
| **20** | Building Construction Completed |  |
| **21** | Fit Out |  |
| **22** | Fit all windows and doors | Carpenter [500%], Labourer [200%] |
| **23** | Install electrical cabling | Electrician [300%], Labourer [200%] |
| **24** | Install electrical fittings and  fixtures | Electrician [300%] |
| **25** | Install all plumbing | Plumber [200%], Labourer [200%] |
| **26** | Install plumbing fixtures and  fittings | Plumber [200%] |
| **27** | Lay astro turf | Pure Grass Turf |
| **28** | Erect handrails and fencing | Welder [400%], Boilermaker [200%] |
| **29** | Paint rooms, fixtures,  fittings, etc. | Painter [500%] |
| **30** | Install PA system | Listen Ear Audio |
| **31** | Install video imaging  equipment | In Focus Video |
| **32** | Fit out control room | Electrician [200%], Listen Ear Audio, In Focus Video |
| **33** | Fit out Completed |  |
| **34** | Commissioning |  |
| **35** | Test roof mechanism | Supervisor, Electrician [200%], Rigger |
| **36** | Test PA system | Listen Ear Audio |
| **37** | Test video imaging equipment | In Focus Video |
| **38** | Test control room equipment | Supervisor, Listen Ear Audio [20%], In Focus Video [20%], Architect,  Electrician [200%] |
| **39** | Obtain official occupancy | Architect, Building Clerk, Supervisor |
| **40** | Obtain safety certification | Supervisor |
| **41** | Official opening | Supervisor[200%] |

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| **42** | Commissioning Completed |  |
| --- | --- | --- |

*Capture images:*

- *Gantt Chart (Resource Name, Cost Column)*

- *Display the Project Information (Statics): Duration, Hours, Cost*

- *Resource Sheet*

- *Resource Usage*

Exercise 5. Resources with the private working time 

∙ Creating the Calendars with working times: 

**PM\_Time:**

1. Working time: Mon – Sat: 7AM – 11AM

2. Nonworking time: Sun

3. Exception: Nonworking time: 30/4, 1/5, 2/9

**Dev\_Time:**

1. Working time: Mon – Fri: 8AM – 11AM, 1PM – 5PM

2. Nonworking time: Sat, Sun

3. Exception: Nonworking time: 30/4, 1/5, 2/9

**Extra\_Time:** 

1. Working time: Mon – Fri: 6PM – 9PM 

2. Nonworking time: Sat, Sun

3. Exception: Nonworking time: 30/4, 1/5, 2/9

∙ Creating the following tasks

| **No Task Name Duration**  **(days) Dependencies** |
| --- |
| **9** Deployment to Test Environment 3 8 |
| **8** Testing & Bug Fixing 7 7 |
| **7** Frontend & Backend Integration 5 5, 6 |
| **6** Frontend Development 14 3 |
| **5** Backend Development 14 4 |
| **4** Database Design 5 1 |
| **3** UI/UX Design 7 1 |
| **2** Project Planning 3 1 |
| **12** Maintenance & Support Ongoing 11 |
| **11** Official Deployment 2 10 |
| **10** Evaluation & Optimization 5 9 |
| **1** Requirement Analysis 5 - |

∙ Tab View 🡪 Resource Sheet / Tab Task 🡪 Resource Sheet

Add the resources this project bellow: Work/Material/Cost

Each Resource bases on a type of working time:

| **No. Name Type Quantity Unit Std.Rate Base Related Tasks** |
| --- |
| **1** Project Manager Work 1 Person 20 **PM\_Time** Project Planning |

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| **2** System Analyst Work 3 Person 15 **Extra\_Time** Requirement Analysis, Database  Design |
| --- |
| Work 4 Person 18 **Dev\_Time** Backend  **3** Backend  Developer  development,  Frontend & Backend  Integration |
| Work 3 Person 17 **Dev\_Time** Frontend  **4** Frontend  Developer  development |
| **5** UI/UX Designer Work 2 Person 16 **Extra\_Time** UI/UX design |
| **6** Tester Work 3 Person 16 **Dev\_Time** Testing & bug fixing |
| **7** Cloud Server  Cost 1 Subscription 200 Data storage,  (AWS, Azure)  application  deployment |
| **8** Software Licenses Cost 1 Software  99 Deployment to Test  Package  Environment |
| **9** Developer  Material 4 Units 1200 Deployment to Test  Workstations  Environment |
| **10** UI/UX Design  Cost 1 Software  200 Official Deployment  Tools  Package |
| **11** Testing Tools  Cost 1 Software  90 Testing & bug fixing,  (Selenium,  Package  Evaluation &  JMeter)  Optimization |

*Capture images:* 

- *Gantt Chart (Resource Name, Cost Column)*

- *Display the Project Information (Statics): Duration, Hours, Cost*

- *Resource Sheet* 

- *Resource Usage*

Exercise 6. The Engagement planning 

Creating the following tasks

| **STT Name Duration Dependencies** |
| --- |

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| 1. | The Engagement | 1 day |  |
| --- | --- | --- | --- |
| 2. | The Venue - Confirm Dates | 4 wks | 1 |
| 3. | The Photographer | 3 wks | 2 |
| 4. | The Cars | 4 wks | 2 |
| 5. | The DJ | 1 wk | 2 |
| 6. | The Dress - Find the Perfect Dress | 3 wks | 2 |
| 7. | The Venue - Confirm Menu | 4 wks | 2 |
| 8. | The Venue - Pay Deposit | 2 hrs | 7 |
| 9. | The Dress - Pay for Dress | 1 hr | 6 |
| 10. | Invitations - Confirm Design | 2 wks | 6 |
| 11. | The Flowers | 2 wks | 6 |
| 12. | Invitations - Confirm Numbers | 1 wk | 10 |
| 13. | Inviations - Invites Produced | 2 mons | 12 |
| 14. | Review progress | 4 wks | 3,4,5,8,9,11,12,13 |
| 15. | Invitations - Send Out | 1 wk | 13 |
| 16. | The Dress - First Fitting | 2 hrs | 9 |
| 17. | Invitations - Review RSVP's | 1 wk | 15 |
| 18. | The Venue - Confirm Numbers | 2 hrs | 17 |
| 19. | The Venue - Confirm Timings | 2 hrs | 18 |
| 20. | The Venue - Pay Balance | 1 hr | 19 |
| 21. | The Dress- Final Fitting | 2hr | 20 |

∙ Create a milestone task at the end: The Big day (P) (Dependencies: 19,21) ∙ Creating the summary tasks : 

Before 6 month to go (Task 2,3,4,5,6,7) 

6 month to go (Task 8,9,10,11)

5 month to go (Task 12,13) 

4 month to go (Task 14)

3 month to go (Task 15)

2 month to go (Task 16,17)

1 month to go (Task 18,19,20,21)

∙ Establish the resource table:

| **STT Name Type Initials Groups Max.**  **Std. Rate**  **Units** |
| --- |

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| 1. | Venue | Material | Initials |  |  | £3,000.00 |
| --- | --- | --- | --- | --- | --- | --- |
| 2. | Photgraphs | Material | V |  |  | £1,000.00 |
| 3. | Flowers | Material | P |  |  | £900.00 |
| 4. | Cars | Material | F |  |  | £500.00 |
| 5. | DJ | Material | C |  |  | £250.00 |
| 6. | Guest | Work | D |  | 8000% | £25/1hr |
| 7. | Cost |  |  |  |  |  |

∙ Assign the resource for each task in the project

| **STT Name Resource** | | |
| --- | --- | --- |
| 1. | The Engagement |  |
| 2. | The Venue - Confirm Dates | Venue[1] |
| 3. | The Photographer | Photgraphs[3] |
| 4. | The Cars | Cars[1] |
| 5. | The DJ | DJ[1] |
| 6. | The Dress - Find the Perfect Dress | Cost [10] |
| 7. | The Venue - Confirm Menu |  |
| 8. | The Venue - Pay Deposit | Cost[£120] |
| 9. | The Dress - Pay for Dress | Cost [£210] |
| 10. | Invitations - Confirm Design | Cost[£90] |
| 11. | The Flowers | Flowers[1] |
| 12. | Invitations - Confirm Numbers |  |
| 13. | Inviations - Invites Produced |  |
| 14. | Review progress |  |
| 15. | Invitations - Send Out |  |
| 16. | The Dress - First Fitting |  |
| 17. | Invitations - Review RSVP's |  |
| 18. | The Venue - Confirm Numbers |  |
| 19. | The Venue - Confirm Timings |  |
| 20. | The Venue - Pay Balance | Guests[7,000%] |
| 21. | The Dress- Final Fitting |  |
| 22. | The Dress- Final Fitting |  |

*Capture images:*

- *Gantt Chart (Resource Name, Cost Column)*

- *Display the Project Information (Statics): Duration, Hours, Cost* - *Resource Sheet*

- *Resource Usage*

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