# MS-PROJECT BASICS

## About Effort Driven Scheduling

When you assign or remove people from a task, Microsoft Project engthens or shortens the duration of the task based on the number of resources assigned to it, but it does not change the total work for the task. This is called **_effort-driven scheduling_** and is the default Project uses when you assign resources to tasks.

As resources are added to a task, the total work on the task stays the same. However, the amount of work distributed to the resources assigned to the task changes.

Effort-driven scheduling only takes effect when resources are added to or removed from a task. Effort-driven calculation rules are not applied when you change work, duration, and unit values for resources already assigned to a task.

When working with effort-driven scheduling, keep the following in mind:

> The effort-driven calculations apply only after the first resources are initially assigned to the task. After the first resources are assigned, the work value doesn't change as new resources are assigned to or removed from the same task.

> If the assigned task type is **_Fixed Units_**, assigning additional resources shortens the duration of the task.

> If the assigned task type is **_Fixed Duration_**, assigning additional resources decreases the individual unit values for resources.

> If the assigned task type is **_Fixed Work_**, assigning additional resources shortens the duration of the task.
> _____

> _Suggestion for new users; File → Options → Schedule_
> _Scheduling options for this project..._
> Default Task Type: Fixed Duration
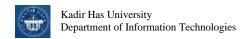> ☐New Tasks are effort driven

## About Task Types

Microsoft Project uses one of three task types to calculate the duration of tasks and subsequently their finish dates (or their start dates if you schedule your project from the project finish date rather than the project start date).

For all tasks, after you assign a resource, the task is scheduled according to the formula

**_Duration = Work / Units_.**

For any task, you can choose which piece of the equation Project calculates by setting the task type. The three task types are **_fixed units_**, **_fixed work_**, and **_fixed duration_**. Project uses fixed units by default.

# EXERCISE 1

**Creating Activity Coding Dictionary (Structure)**

- Open a blank MS-Project file. Save it as "New Product Development Project"

- "New Product Development Project" will start in 09/03/2015.
    - *Project → Project Information → Start Date:* 09/03/2015

- Using *Custom Fields*, create activity coding structure below.
    - *Project → Customize Fields*

    1. **Department**

    | Value | Description |
    |-------|-------------|
    | BDG | Bidding Department |
    | SLS | Sales Department |
    | DSGN | Design Department |
    | PROD | Production Planning Department |
    | MGMT | Management |

    2. **Project Leader**

    | Value | Description |
    |-------|-------------|
    | Uİ | Uğur İşman |
    | ZA | Zafer Aladağ |
    | GB | Gökhan Babacan |
    | CM | Can Makinabakan |

- To display these customized fields
    - *Add new column
      OR…
      Format → Insert Column*

# EXERCISE 2

**Working with Project Calendars**

- In "New Product Development Project", some resources will need to use different calendars. Do the followings from;
    - *Project → Change Working Time*

        o 23 April, 2015, Thursday – Holiday
        o 19 May, 2015, Tuesday – Holiday

- Create a new calendar named "6 Days" which is a copy of Standart calendar
        o Only Sundays are nonworking days.

- Create a new calendar named "4 Days" which is a copy of Standart calendar
        o Fridays, Saturdays and Sundays are nonworking days.

# EXERCISE 3

**Adding Activities**

- Add the following activities, durations, activity codes and calendars to the "New Product Development Project" as listed below;

| 1 | **New Product Development** | Duration | Dept. | Proj.Leader |
|---|---|---|---|---|
| 2 | **Bidding** | | | |
| 3 | Project Kick-off meeting | 0 days | BDG | Uİ |
| 4 | Preparing bidding | 5 days | BDG | Uİ |
| 5 | Presenting bidding | 1 days | BDG | Uİ |
| 6 | Establishing teams | 4 days | BDG | Uİ |
| 7 | **Concept Design** | | | |
| 8 | Starting concept design | 0 days | DSGN | ZA |
| 9 | Working on concept design | 11 days | DSGN | ZA |
| 10 | Preparing Cost Baseline | 3 days | PROD | ZA |
| 11 | **Prototyping** | | | |
| 12 | Starting prototyping | 0 days | DSGN | ZA |
| 13 | Designing prototype | 8 days | DSGN | ZA |
| 14 | Producing prototype | 17 days | PROD | ZA |
| 15 | **Development** | | | |
| 16 | Starting development | 0 days | DSGN | ZA |
| 17 | Mechanical design | 8 days | DSGN | CM |
| 18 | Interior design | 7 days | DSGN | ZA |
| 19 | Designing electrical system | 8 days | DSGN | CM |
| 20 | Preparing exploration | 2 days | DSGN | ZA |
| 21 | Improving cost estimations | 1 days | DSGN | ZA |
| 22 | Reviewing design | 3 days | DSGN | ZA |
| 23 | Design completion | 0 days | DSGN | ZA |
| 24 | **Pre-Manufacturing Term** | | | |
| 25 | Starting Pre-Manufacturing term | 0 days | PROD | CM |
| 26 | Reviewing & approving exploration | 4 days | PROD | ZA |
| 27 | Starting production by management approval | 4 days | MGMT | Uİ |
| 28 | Getting "Ready for production" approval | 0 days | MGMT | CM |

- Assign 4 Days calendar to Activity 6
- Assign 6 Days calendar to Activity 10
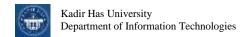    - Double click on task → Task Information → Advanced Tab

**EXERCISE 4**

**Adding Dependencies**

- Add the following dependencies to the "New Product Development Project" as listed below;

| 1 | **New Product Development** | **Predecessor** |
|---|---|---|
| 2 | **Bidding** | |
| 3 | Project Kick-off meeting | |
| 4 | Preparing bidding | 3 |
| 5 | Presenting bidding | 4 |
| 6 | Establishing teams | 5 |
| 7 | **Concept Design** | |
| 8 | Starting concept design | 6SS+50% |
| 9 | Working on concept design | 8 |
| 10 | Preparing Cost Baseline | 9 |
| 11 | **Prototyping** | |
| 12 | Starting prototyping | 9 |
| 13 | Designing prototype | 12 |
| 14 | Producing prototype | 13;10 |
| 15 | **Development** | |
| 16 | Starting development | 14 |
| 17 | Mechanical design | 16 |
| 18 | Interior design | 17 |
| 19 | Designing electrical system | 18FF-4 days; 17SS |
| 20 | Preparing exploration | 18 |
| 21 | Improving cost estimations | 20 |
| 22 | Reviewing design | 21 |
| 23 | Design completion | 22 |
| 24 | **Pre-Manufacturing Term** | |
| 25 | Starting Pre-Manufacturing term | 23 |
| 26 | Reviewing & approving exploration | 25 |
| 27 | Starting production by management approval | 26 |
| 28 | Getting "Ready for production" approval | 27 |

- To display Critical Path;

    o *Format → Critical Tasks*

- Project Duration is …………… days.
  Project's finish date is ……………………………

- Some alternative views and tables...
    o View → Network Diagram
    o View → Other Views → More Views → Detail Gantt
    o View → Tables  → Schedule
    o View → Tables → Entry

## EXERCISE 5

**Adding Constraints**

- During "New Product Development Project" scheduling, some conditions have been encountered. Please add these constraints to the activities.

  The materials which are required to start Activity 14 – "Producing Prototype" will be delivered on 15.04.2015. So, Activity 14 can not start earlier than 16.04.2015.

  - o  Double click on the task → Task Information → Advanced Tab
- Now...
  Project Duration is …………… days.

## EXERCISE 6

**Creating Resource Pool, Resource and Cost Assignment**

- Enter resources below for the "New Product Development Project".

| Resource Name | Type | Label | Initials | Group | Max. | Std. Rate | Ovr. Rate | Cost/Use | Accrue | Calendar |
|---|---|---|---|---|---|---|---|---|---|---|
| Hamdi Tanır | Work | | HT | Designer | 100% | 12,00 TL/hr | 18,00 TL/hr | 00,00 TL | Prorated | 4 Days |
| Yüksel Yavaş | Work | | YY | Mechanical Eng. | 100% | 16,00 TL/hr | 24,00 TL/hr | 00,00 TL | Prorated | Standard |
| Bedri Çalışkan | Work | | BÇ | Mechanical Eng. | 100% | 18,00 TL/hr | 27,00 TL/hr | 00,00 TL | Prorated | Standard |
| Memduh Şatır | Work | | MŞ | Electrical Eng. | 100% | 14,00 TL/hr | 21,00 TL/hr | 00,00 TL | Prorated | Standard |
| Tusin Uzman | Work | | TU | Industrial Eng. | 100% | 20,00 TL/hr | 30,00 TL/hr | 00,00 TL | Prorated | Standard |
| Hale Baykır | Work | | HB | Industrial Eng. | 100% | 24,00 TL/hr | 36,00 TL/hr | 00,00 TL | Prorated | Standard |
| Deniz Hatip | Work | | DH | Industrial Eng. | 100% | 20,00 TL/hr | 30,00 TL/hr | 00,00 TL | Prorated | Standard |
| Meltem Doğrusöz | Work | | MD | Manager | 100% | 50,00 TL/hr | 100,00 TL/hr | 00,00 TL | Prorated | 6 Days |
| Consultant | Work | | C | Consultant | 100% | 35,00 TL/hr | 00,00 TL/hr | 250,00 TL | Prorated | Standard |
| Bumber (Tampon) | Material | Item | B | | | 145 TL | | 00,00 TL | Start | |

- Assign resources as seen below.

| Task ID | Task Name | Resource Name | Effort Driven | Task Type |
|---|---|---|---|---|
| 9 | Working on concept design | Hamdi Tanır; Hale Baykır | Check | Fixed Units |
| 13 | Designing prototype | Hale Baykır; Danışman | Check | Fixed Units |
| 14 | Producing prototype | Bunber [2 Items] | | Fixed Duration |
| 17 | Mechanical design | Yüksel Yavaş | Check | Fixed Units |
| 18 | Interior design | Hamdi Tanır | Check | Fixed Units |
| 19 | Designing electrical system | Memduh Şatır [125%] | Check | Fixed Duration |
| 27 | Starting production by management approval | Meltem Doğrusöz [25%] | Check | Fixed Units |

- Now...
  Project Duration is …………… days.
  Project Budget is ........................
  - o  *View → Tables → Cost*

## EXERCISE 7

**Schedule Optimization (Duration Compression)**

- "New Product Development Project" seems to be completed on ??.06.2015.
  Make the necessary adjustments so that the schedule can be compressed and project is completed earlier.

    - Filter critical activities,
      *View → Filter: Critical*

    o Activity 17 – "Mechanical design" is performed by one resource in 8 days. But, since the activity is "Effort Driven", you can compress duration by increasing the number of resources. (Notice that the activity is critical!) Assign resource "Bedri Çalışkan" to the activity.

    o Remove critical activities filter
      *View → Filter: None*

    o You noticed that, it is not mandatory to start Activity 16 – "Starting development" after completing Activity 14 – "Producing prototype". Let these two tasks overlap for 7 days. [Add lead time (-7 days) to the dependecy between these two tasks].

- Project duration is shortened to ............................. days.

## EXERCISE 8

**Saving a Baseline & Updating Project to measure the project performance**

- Make the following updates;

    o Save the baseline,
        - *Project → Set Baseline*

    o Project "Status Date" is 19.03.2015,

    o As of 19.03.2015, all the tasks have been completed as they have been planned - excluding Activity 5 - "Working on concept design"-. Only 50% of Activity 5 was completed. Update these tasks.
        - *Task → Schedule → Update Task → % Complete : ...%*

    o Track the project progress by
        - *View → Other Views → More Views → Tracking Gantt*

    o Perform "Earned Value Analysis" on 19.03.2015, to measure the project performance.
        - *View → Tables → More Tables: Earned Value*
          *OR...*
        - *Project → Reports → Costs → Earned Value*