

## 02-1 Optimizing Resources for a Construction Project

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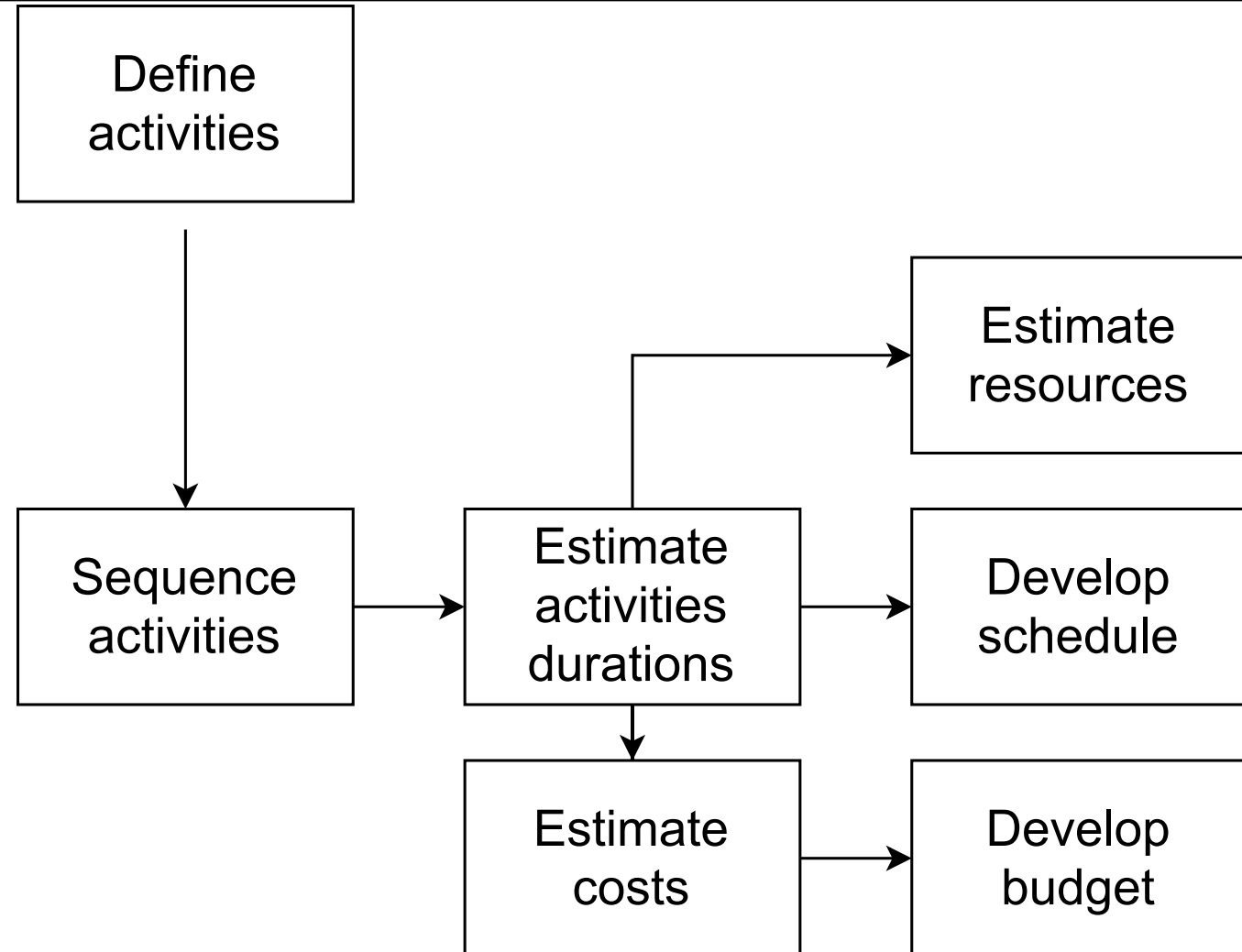
## Resourcing > Today Lecture

Allocating resources in systemic ways to maximize efficiency and effectiveness

## Process view

ISO21500:2012

Figure A.2 —  
Planning process  
group processes



## Limits of Scope - Time - Cost Scheduling

The process flow above is informed by the traditional Scope - Time - Cost approach.

Typically:

- Deliverables dictate scope
- Scope dictates activities newtwork
- Activities have a determined duration and cost
- Resources are defined to fullfill scope timing and cost requirement

This approach is valid only for high level scheduling and should be used only for setting targets.

## Nature of activities' duration and cost

Duration = total work / allocated resources units

Cost = total work \* resources rate

## The Economics perspective

### Defining economics

One of the founding fathers of economics, Alfred Marshall, advised as follows:

Every short statement about economics is misleading (with the possible exception of my present one).

Nevertheless, definitions are a useful place to begin. A standard definition of economics could describe it as:

a social science directed at the satisfaction of needs and wants through the allocation of scarce resources which have alternative uses

## Resources optimization - Learning by doing

Use the files uploaded:

- 02-02-01-CostBreakdown.xlsx
- 02-02-02-prjBase.mpp
- 02-02-03-prjOpt.mpp

Follow the recording of the lecture.

## Benefits of the proposed approach

We have optimized the resources allocation profiles

- Reduced idle times of expensive resources
- Reduced overall duration and therefore
- Reduced total overhead and impact of "daily" indirect costs

We have not increased direct costs!



## Limits of the proposed approach

We have not considered the specific nature of tasks

- there are **fixed duration** tasks, ie. concrete curing
- there are **fixed units** tasks

Read more at <https://support.microsoft.com/en-us/office/change-the-task-type-for-more-accurate-scheduling-b0b969ad-45bc-4e9e-8967-435587548a72>

## Limits of the proposed approach

We have not considered the effect of resources congestion and diminishing marginal utility of additional resources.

This results in increase of indirect costs and decrease of overall resources productivity.

## Mandatory Reading

A. De Marco, Project Management for Facility Constructions, Second Edi. Springer International Publishing, 2018  
§ 7.6 Resource-Based Scheduling