

BASIC NETWORK

FERDINAND FASSA

OUTLINE LECTURE 3

• REVIEW LECTURE 2

- INTRODUCTION
- FUNCTION NETWORK DIAGRAM
- ACTIVITY ON ARROW (AOA) & ACTIVITY ON NODES (AOD)

REVIEW LECTURE 2

A BAR CHART..???

``A GRAPHIC REPRESENTATION OF PROJECT ACTIVITIES, SHOWN IN A TIME-SCALED BAR LINE WITH NO LINKS SHOWN BETWEEN ACTIVITIES''

WHY BAR CHART

- 1. SIMPLE AND EASY TO UNDERSTAND
- 2. USED FOR GLOBAL CONTROL AT THE PROJECT MANAGEMENT AND EXECUTIVE LEVEL
- 3. VERY USEFUL FOR MILESTONE AND SUMMARY SCHEDULES

REVIEW PROJECT X

SCHEDULE...????

BAR CHART...???

INTRODUCTION

Network Diagrams

• Developed in the 1950's

• A graphical representation of the tasks necessary to complete a project

• Visualizes the flow of tasks & relationships

FUNCTION NETWORK DIAGRAM

- Network diagrams show the precedence relationships among activities
- Network diagrams help to understand the flow of work in a project
- Network diagrams are a useful tool for project planning and control, as well as for scheduling

ACTIVITY ON ARROW & ACTIVITY ON NODES

Two classic formats

 AOA: Activity on Arrow
 AON: Activity on Node

Continue AOA & AON

- AOA consists of
 - Circles representing Events

 Such as 'start' or 'end' of a given task
 - Lines representing Tasks
 Thing being done
 - Arrows represent activities and nodes are events for points in time
 - Sometimes requires dummy activities

Continue AOA & AON

- AON
 - Tasks on Nodes
 - Nodes can be circles or rectangles
 - Task information written on node
 - Arrows are dependencies between tasks
 - Nodes represent activities, and arrows show precedence relationships
 - No dummy activities

Activity on Arrow (AOA)



Activity on Node (AON)



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Early Start	Duration	Early Finish
Task Name		
Late Start	Slack	Late Finish

Continue AOA & AON

- Activity
 - A task or a certain amount of work required in the project
 - Requires time to complete
 - Represented by an arrow
 - Dummy Activity
 - Indicates only precedence relationships
 - Does not require any time of effort
 - an artificial activity with zero time duration that only shows a precedence relationship among activities

Continue AOA & AON Arrow & Node Formats

Activity on Arrow (AOA)



Situations in network diagram



A must finish before either B or C can start

Both A and B must finish before C can start

Both A and C must finish before either of B or D can start

A must finish before B can start

both A and C must finish before D can start

Concurrent Activities



Table 1 A Sample Set of Project Activities and Precedences

Task	Predecessor
a	
b	
С	a
d	b
e	b
f	c, d
g	e

Figure 1 Stage 1 of a Sample AON Network



Predecessor
a
b
b
c, d
e

Nodes represent activities, and arrows show precedence relationships

Arrows are dependencies between tasks

Figure 2 Stage 2 of a Sample AON Network



Figure 3 A Completed Sample AON Network



Figure 4 Stage 1 of a Sample AOA Network



Task	Predecessor
а	
b	
С	a
d	b
e	b
f	c, d
g	e

Figure 5 Stage 2 of a Sample AOA Network



Task	Predecessor
a	
b	
С	a
d	b
e	b
f	c, d
g	e

Figure 6a A Completed Sample AOA Network



Figure 6b A Completed Sample AOA Network Showing the Use of a Dummy Task



Task	Predecessor
а	
b	
с	a
d	b
e	b
f	c, d
g	e

Table 2 A Sample Problem for Finding the Critical Path and Critical Time

Activity	Predecessor	Duration
a		5 days
b		4
С	a	3
d	а	4
e	а	6
f	b, c	4
g	d	5
h	d, e	6
i	f	6
j	g, h	4

Figure 7 Stage 1 of a Sample Network



Figure 8 A Complete Network



AOA Project Network for House



AON Project Network for House



EXAMPLE

- the example "Install caissons."
- 1. Accept winning bid and award contract.
- 2. Schedule municipal inspection.
- 3. Order and deliver reinforcing steel cages.
- 4. Lay out the exact location of the hole.
- 5. Excavate caisson.
- 6. Install rebar cages.
- 7. Connect cages to foundation continuous rebar.
- 8. Place concrete.
- 9. Strip forms.
- 10. Clean up site.

EXAMPLE



- (1) Accept winning bid and award contract.
- (2) Schedule municipal inspection.
- (3) Order and deliver reinforcing steel cages.
- (4) Layout the exact location of the hole.
- (5) Excavate caissons.

- (6) Install rebar cages.
- (7) Connect cages to foundation continuous rebar.
- (8) Place concrete.
- (9) Strip forms.
- (10) Clean up site.

Task Project X

Alter