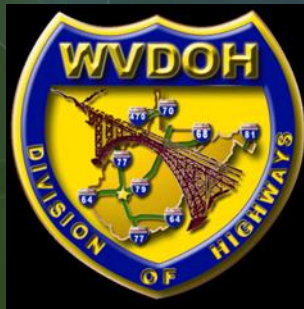# Project Management: Concepts, Techniques, and Applications

2015 Marshall University

SAME-ASCE Winter Technical Conference

Ryland Wayne Musick, Jr., M.S., P.E.

January 22, 2015

Presentation Topics

○ "Macro" Project Management (Program Management)

○ Communication

○ Quadrant Living

○ How to Conduct Meetings

○ Work Breakdown Structures

Presentation Topics

- Network Diagram
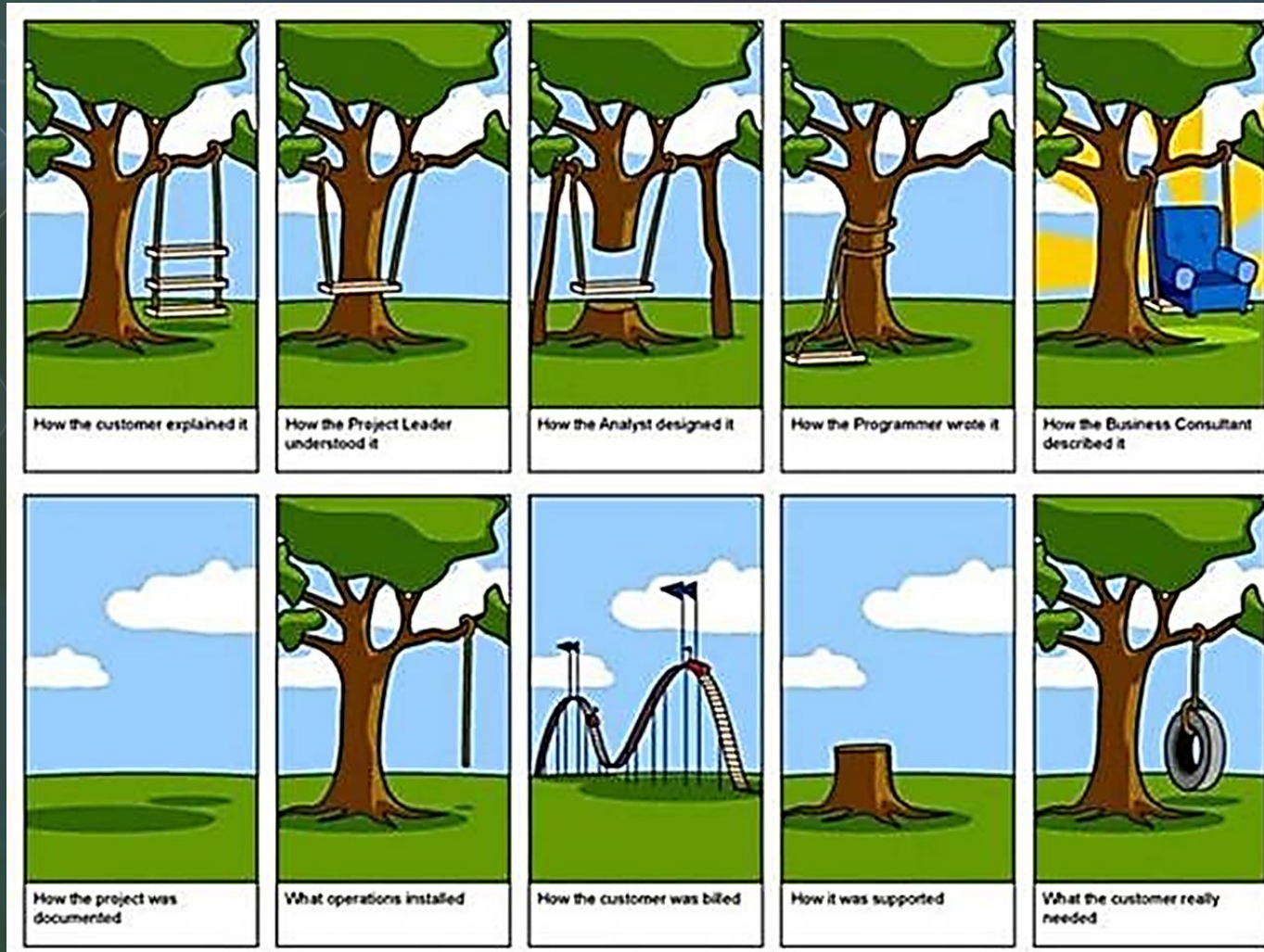
- Gantt Chart

- Resource Histogram

- Project Crashing

Dr. Eldon R. Larsen, Ph.D., PMP

Project Management in the WVDOH?

http://technology.infomine.com/ProjectManagement/ProjectManagement_files/image004.jpg

"Macro" Project Management (Program Management)

- As Designers, you are at the core of our State and Federal-Aid Programs.

- Without you, the Programs do not get delivered.

- Designers oftentimes forget their worth – V A L U A B L E.

"Macro" Project Management (Program Management)

- In our District Design Sections and development Divisions, how many of you feel you have enough staff to adequately meet the current schedule of projects?

- If not, what kind of help can we assist you in receiving?

- **Project Schedules**

- **Schedule and Cost Changes**

- **Cash Flow $$$$**

"Macro" Project Management (Program Management)

○ Please help the Programming Division to keep all of the project records straight.

○ Please work with the Regional Program Managers for all of your Programming Division needs.

"Macro" Project Management (Program Management)
Regional Program Managers

Beth Fox
Districts 3 and 7
(304) 415-9302

Elizabeth Lilly
District 2
(304) 558-9602

Eva Melancon
District 1
(304) 558-9611

"Macro" Project Management (Program Management) Regional Program Managers

Mike Adkins
Districts 9 and 10
(304) 487-5286

A.J. Bernatowicz
Districts 4 and 6
(304) 329-0192

Ben Shaffer
Districts 5 and 8
(304) 591-3812

Communication (Larsen)

- Definition of "communication"
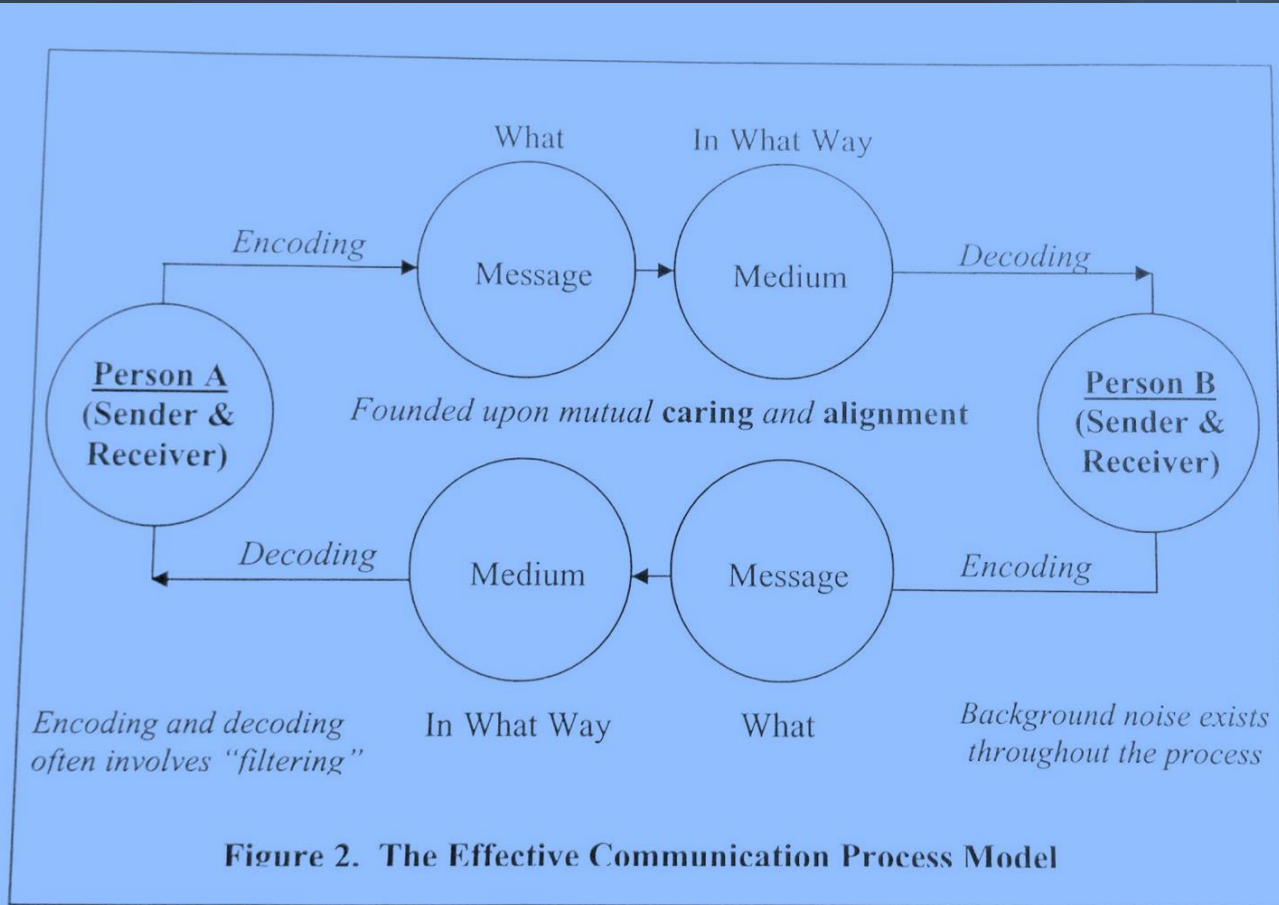 - The process of becoming "like one" or "as one."

Communication (Larsen)
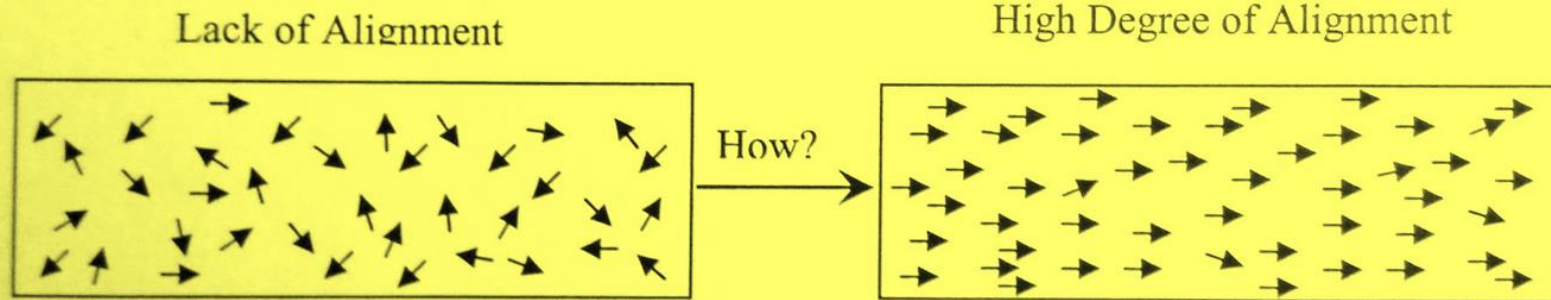
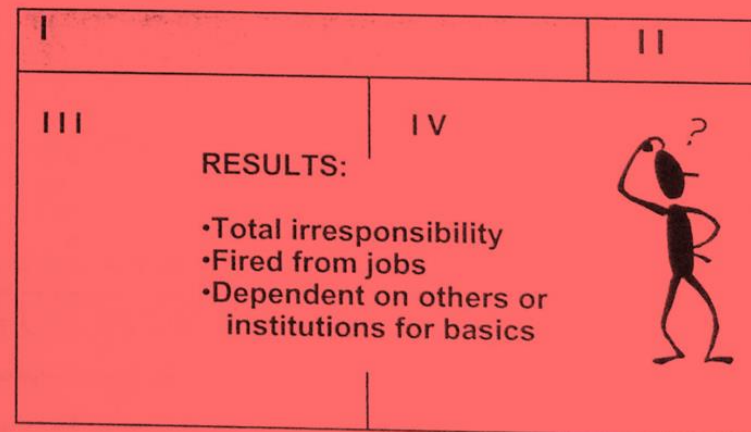Figure 1. Transforming People from a State of Misalignment to High Degree of Alignment
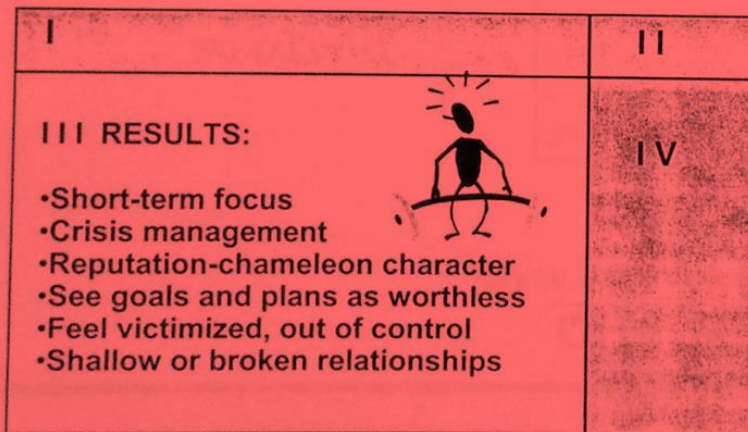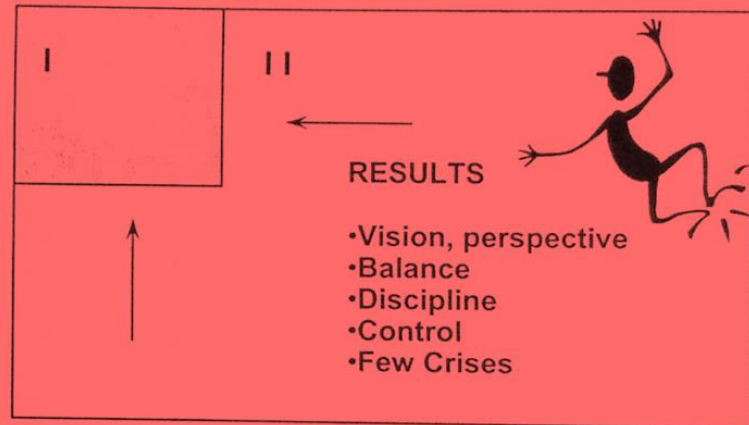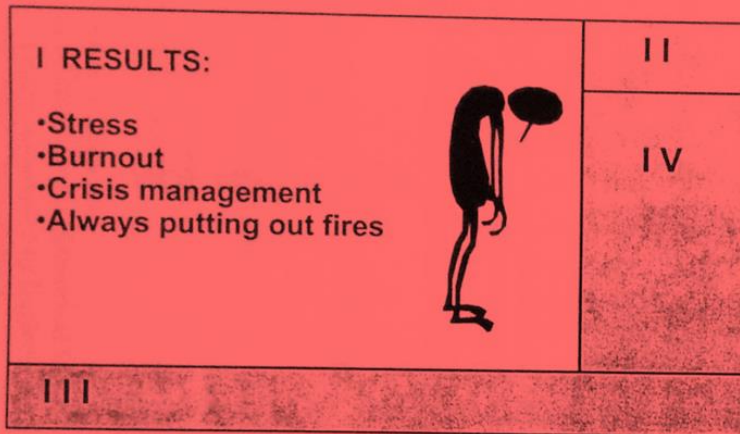
Communication (Larsen)

Figure 2. The Effective Communication Process Model

Quadrant Living - Home

	Urgent		Not Urgent	
Important	**Quad I**		**Quad II**	
	Activities	**Results**	**Activities**	**Results**
	• Crisis • Pressing Problems • Deadline Driven	• Stress • Burn-out • Crisis management • Always putting out fires	• Prevention, capability improvement • Relationship building • Recognizing new opportunities • Planning, recreation	• Vision, perspective • Balance • Discipline • Control • Few crisis
Not Important	**Quad III**		**Quad IV**	
	Activities	**Results**	**Activities**	**Results**
	• Interruptions, some callers • Some email, some reports • Some meetings • Proximate, pressing matters • Popular activities	• Short term focus • Crisis management • Reputation – chameleon character • See goals/ plans as worthless • Feel victimized, out of control • Shallow or broken relationships	• Trivia, busy work • Some email • Personal social media • Some phone calls • Time wasters • Pleasant activities	• Total irresponsibility • Fired from jobs • Dependent on others or institutions for basics

http://amilya.com/stephen-covey-4-quadrants/

Quadrant Living – Work (Larsen)

Project Management Training--ERL

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Meetings (Larsen)

- Identify the meeting objective, write down, and pass it out to everyone that is invited to the meeting.

- Have a clear agenda that has been agreed to by all prior to the meeting.

- Set an established start time and end time, and treat them as a contract.

- Prepare for the meeting and be ready, in content as well as in process.

- Establish the ground rules of conduct and order, changeable only by the group by consensus.

Meetings (Larsen)

- Understand the meaning of the word communication and apply it well continuously before, during, and after the meeting.

- Teach the members involved in the meeting to listen empathically.

- Create a supportive and task-oriented environment during the meeting.

- Close the meeting properly.

- Follow up.

Work Breakdown Structures (WBS)
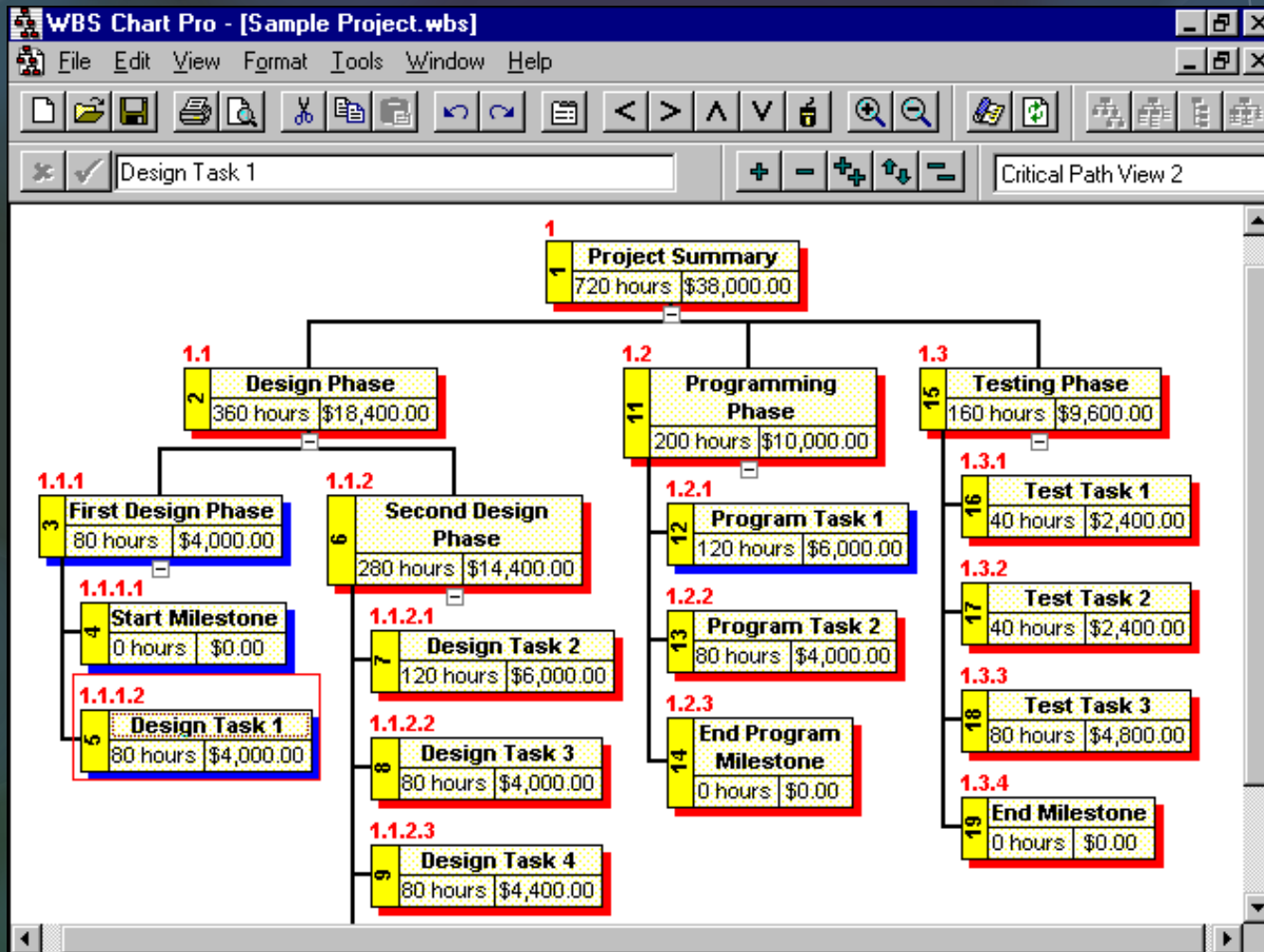
Work Breakdown Structures (Larsen)

- The most important but the least used by untrained project managers.

- Rules of Work Breakdown Structures
  - No chronological order vertically in WBS.

  - Break tasks down to the level that a specific resource can be identified.

  - Break tasks down to where it is useful.

Work Breakdown Structures (Larsen)

- Rules of Work Breakdown Structures
  - Always use action verbs to describe lowest-level tasks.

  - Never break one task into only one task.

  - Make task descriptions so they stand alone from the structure.

  - The lowest-level tasks shall be easily estimated.

Network Diagram

Critical Path In Red
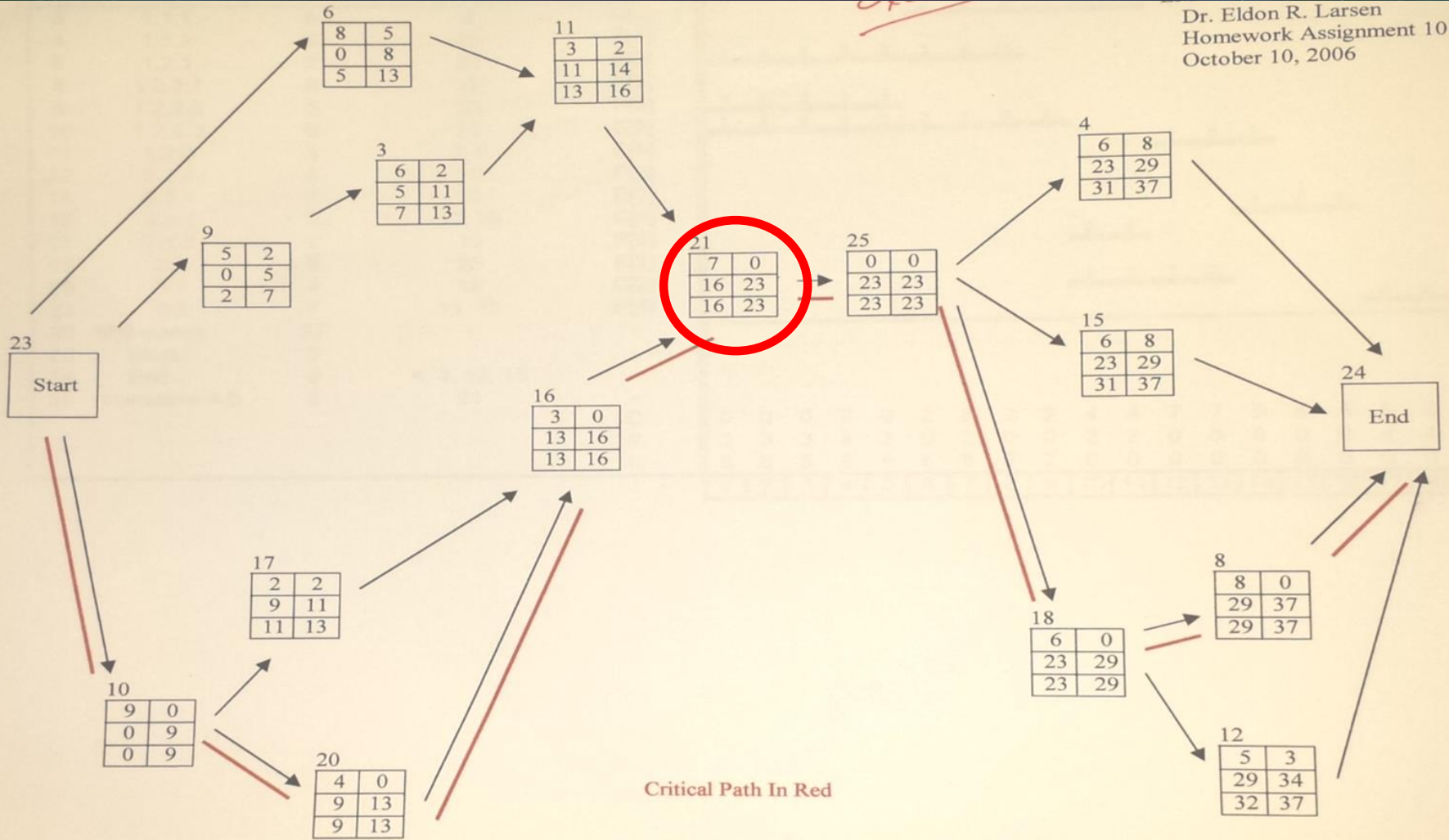
Network Diagram (Larsen)

Task Number

Duration   Slack

Early Start   Early Finish

Late Start   Late Finish

Objective: To Determine the Critical Path

Gantt Chart (Larsen)

ID	Task Name	Predecessors	Duration
1	Start		0 days
2	a	1	4 days
3	b	1	5.33 days
4	c	2	5.17 days
5	d	2	6.33 days
6	e	3,4	5.17 days
7	f	5	4.5 days
8	g	6	5.17 days
9	Finish	7,8	0 days
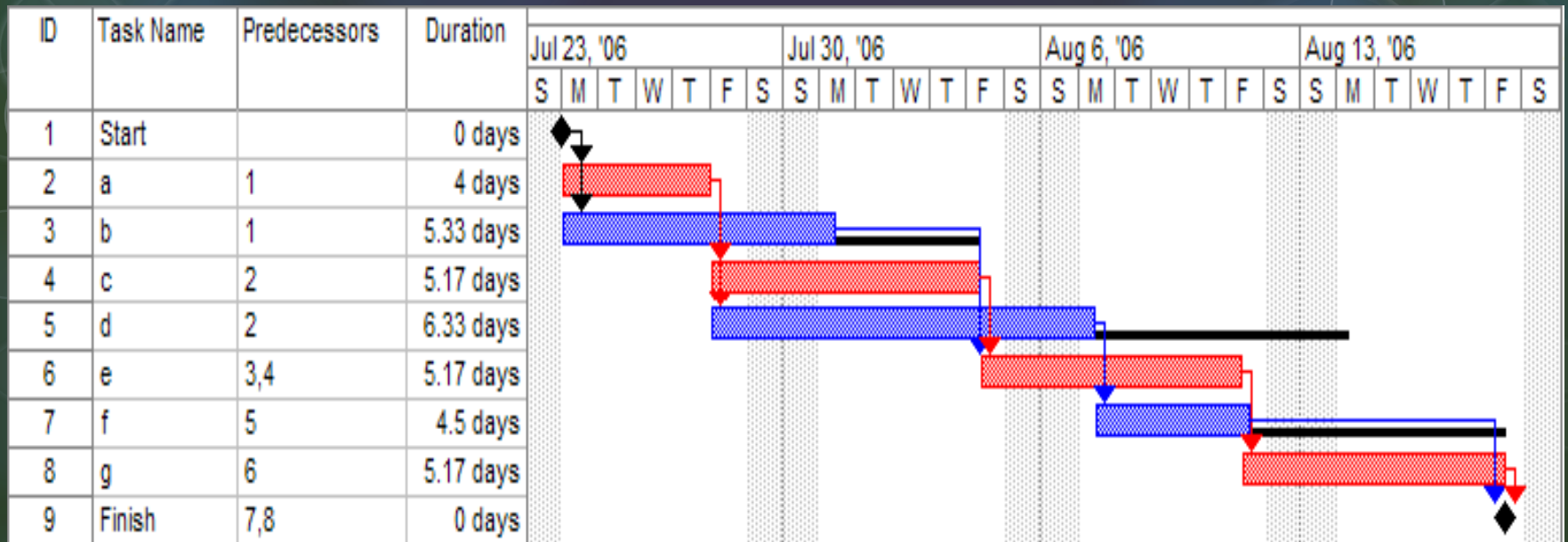
- Critical path is displayed in red.
- Arrows represent interdependencies.
- Early Start and Early Finish
- Black lines represent Slack

Resource Histogram
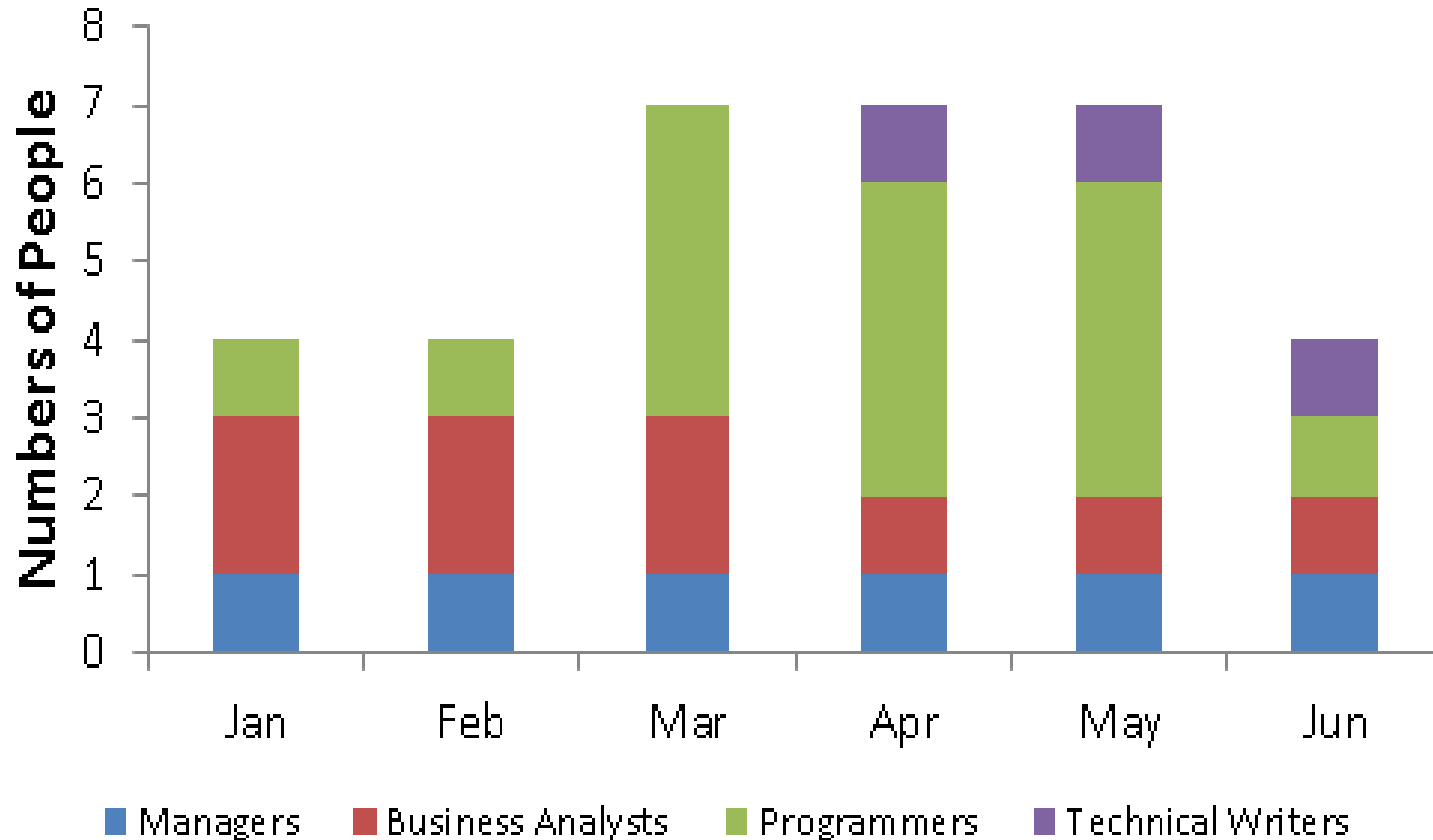
Resource Histogram (Larsen)

- Benefts of a resource histogram:
  - Ability to move your workload to level your resources
  - Ability to predict financial expenditures for resources

Project Crashing (Larsen)
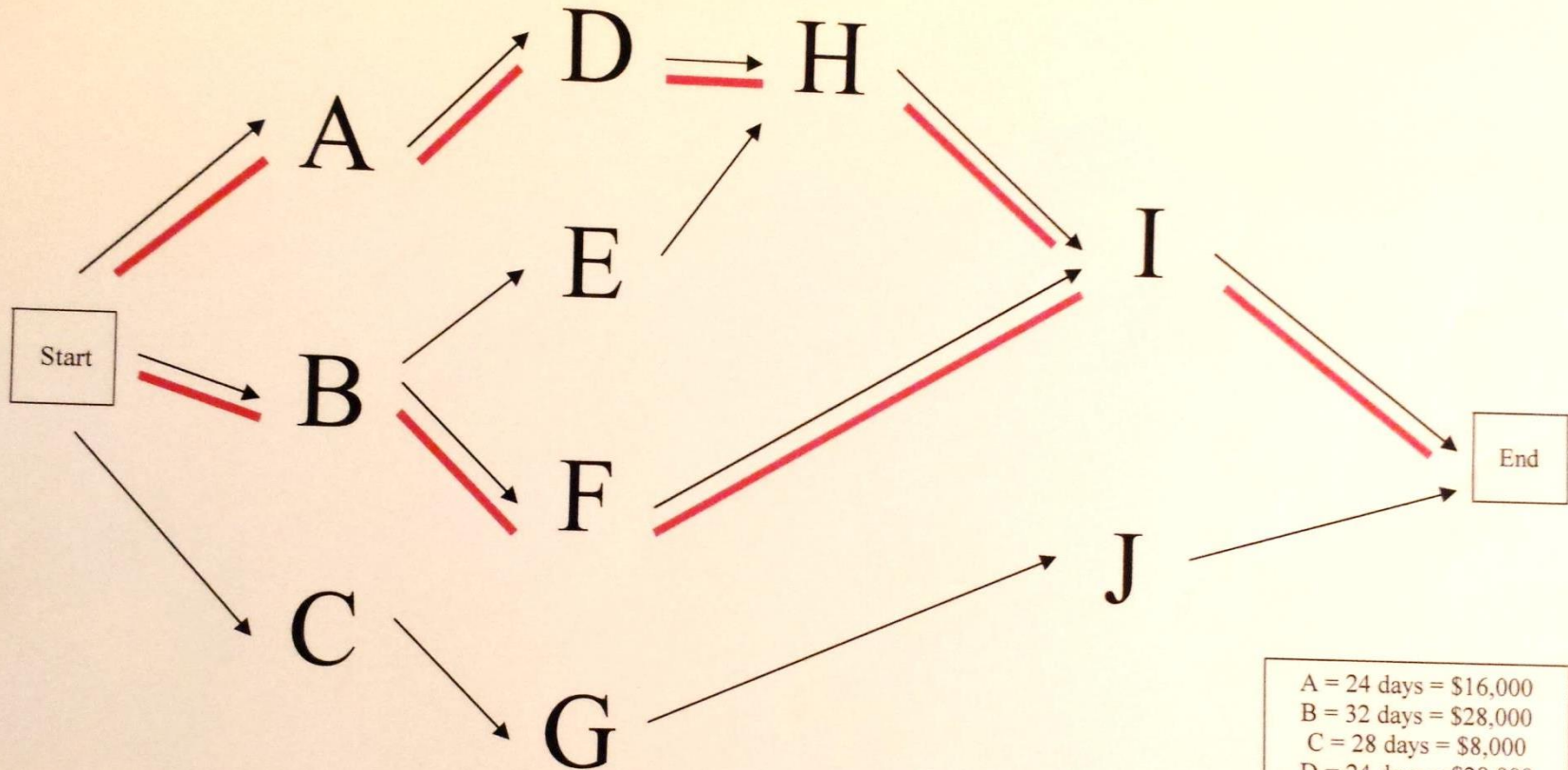
MAXIMUM ALLOWED PROJECT COST = $ 240,000

Activity	Immediate Predecessors	Normal Duration, days	Normal Cost, $	Crashed Duration, days	Crashed Cost, $	Additional (Crash) Cost/day, $/day
A	-	28	$ 12,000	24	$ 16,000	$ 1,000
B	-	32	$ 28,000	28	$ 40,000	$ 3,000
C	-	28	$ 8,000	24	$ 12,000	$ 1,000
D	A	24	$ 28,000	12	$ 76,000	$ 4,000
E	B	12	$ 20,000	4	$ 36,000	$ 2,000
F	B	36	$ 36,000	28	$ 52,000	$ 2,000
G	C	24	$ 12,000	12	$ 24,000	$ 1,000
H	D, E	20	$ 24,000	12	$ 48,000	$ 3,000
I	F,H	12	$ 4,000	8	$ 8,000	$ 1,000
J	G	20	$ 4,000	8	$ 16,000	$ 1,000

Total Normal Cost Without Crashing = $ 176,000

Project Crashing (Larsen)

- Why "crash" a project?
  - When the project time needs to be shortened

  - When tasks done in series are done in parallel

  - Scope is reduced

  - Modular or prefabrication desired

Project Crashing

Questions

http://www.jonnyross.com/news/five-things-we-can-learn-about-digital-marketing-from-children

Thank You!!

http://blog.examprofessor.com/