

9: Project Resource Management

IT4306 – IT Project Management

Level II - Semester 4

Intended Learning Outcomes

- At the end of this lesson, you will be able to;
 - Define project human resource management and describe its processes
 - Explain theories of managing people for active participation in IT projects
 - Explain human resource planning and be able to create a project organizational chart, responsibility assignment matrix, and resource histogram
 - Explain the concepts of resource assignments, resource loading, and resource Leveling
 - Describe how the training needs used to develop project team
 - Explain techniques that can be used to manage a project team

9.1. The Importance of Resource Management

- People determine the success and failure of organizations and projects.
- Recent statistics about IT workforce:
 - The labor market changed a lot early in the new millennium, with shortages and then an abundance of IT workers.
 - A 2004 ITAA report showed a slight recovery in 2004.
 - The total number of IT workers in the U.S. was more than 10.5 million in early 2004, up from 10.3 million in 2003 and 9.9 million in 2002.
 - Eighty-nine percent of new jobs came from non-IT companies, such as banking, finance, manufacturing, food service, and transportation.
 - Hiring managers say interpersonal skills are the most important soft skill for IT workers.*

"Recovery Slight for IT Job Market in 2004," (September 8, 2004) www.ita.org.

Digital Planet Reports

- The global high-tech industry generated more than \$2.1 trillion in 1999, \$2.3 trillion in 2000, and \$2.4 trillion in 2001.
- The Internet and e-commerce were notable bright spots in the global economy.
- Global e-commerce increased 79 percent between 2000 and 2001.*
- China, Poland, and other developing countries are playing an increasing role in the global IT market.

*Information Technology Association of America (ITAA), "Global IT Spending to Rocket from Current \$2 Trillion to \$3 Trillion, New Study Finds," *Update for IT Executives* (2001) p. 6 (15) www.ita.org.

Long Hours and Stereotypes of IT Workers Hurt Recruiting

- Many people are struggling with how to increase and diversify the IT labor pool.
- Noted problems include:
 - The fact that many IT professionals work long hours and must constantly stay abreast of changes in the field.
 - Undesirable stereotypes that keep certain people (for example, women) away from the career field.
 - The need to improve benefits, redefine work hours and incentives, and provide better human resource management.

Media Snapshot

- “Here’s the dirty little secret: U.S. productivity is No. 1 in the world when productivity is measured as gross domestic product per worker, but our lead vanishes when productivity is measured as GDP per hour worked...Europeans take an average of six to seven weeks of paid annual leave, compared with just 12 days in the United States. Twice as many American as European workers put in more than 48 hours per week.”*
- Sociologists have shown that many Americans, especially men, would like to have more family or leisure time. Recent surveys show that many Americans are willing to sacrifice up to a quarter of their salaries in return for more time off!

*Williams, Joan and Ariane Hegewisch, “Confusing productivity with long work week,” *Minneapolis Star Tribune* (September 6, 2004) (www.startribune.com).

9.2. What is Project Resource Management?

- Making the most effective use of the people involved with a project.
- Processes include:
 - **Human resource planning:** Identifying and documenting project roles, responsibilities, and reporting relationships.
 - **Acquiring the project team:** Getting the needed personnel assigned to and working on the project.
 - **Developing the project team:** Building individual and group skills to enhance project performance.
 - **Managing the project team:** Tracking team member performance, motivating team members, providing timely feedback, resolving issues and conflicts, and coordinating changes to help enhance project performance.

9.3. Keys to Managing and Leading People

- Psychologists and management theorists have devoted much research and thought to the field of managing people at work.
- Important areas related to project management include:
 - Motivation theories
 - Influence and power
 - Effectiveness

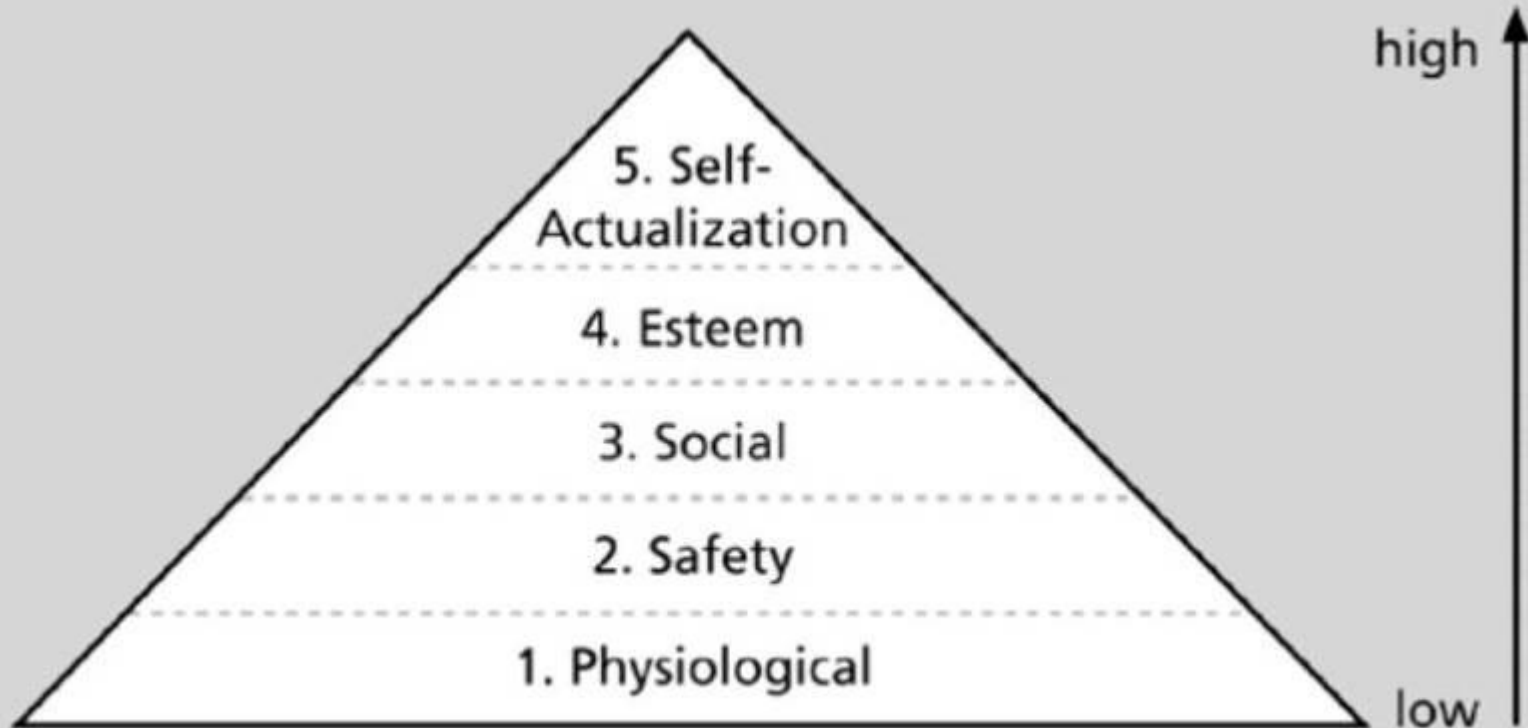
Intrinsic and Extrinsic Motivation

- **Intrinsic motivation** causes people to participate in an activity for their own enjoyment.
- **Extrinsic motivation** causes people to do something for a reward or to avoid a penalty.
- For example, some children take piano lessons for intrinsic motivation (they enjoy it) while others take them for extrinsic motivation (to get a reward or avoid punishment).

Maslow's Hierarchy of Needs

- Abraham Maslow argued that human beings possess unique qualities that enable them to make independent choices, thus giving them control of their destiny.
- Maslow developed a **hierarchy of needs**, which states that people's behaviors are guided or motivated by a sequence of needs.

Maslow's Hierarchy of Needs



A satisfied need is no longer a motivator!

Ways to Influence that Help and Hurt Projects

- Projects are more likely to succeed when project managers influence people using:
 - Expertise
 - Work challenge
- Projects are more likely to fail when project managers rely too heavily on:
 - Authority
 - Money
 - Penalty

Power

- **Power** is the potential ability to influence behavior to get people to do things they would not otherwise do.
- Types of power include:
 - Coercive power
 - Legitimate power
 - Expert power
 - Reward power
 - Referent power

Improving Effectiveness: Covey's Seven Habits

- Project managers can apply Covey's seven habits to improve effectiveness on projects.
 - Be proactive.
 - Begin with the end in mind.
 - Put first things first.
 - Think win/win.
 - Seek first to understand, then to be understood.
 - Synergize.
 - Sharpen the saw.

Empathic Listening and Rapport

- Good project managers are **empathic listeners**, meaning they listen with the intent to understand.
- Before you can communicate with others, you have to have **rapport**, which is a relation of harmony, conformity, accord, or affinity.
- **Mirroring** is the matching of certain behaviors of the other person, and is a technique used to help establish rapport.
- IT professionals need to develop empathic listening and other people skills to improve relationships with users and other stakeholders.

9.4. Developing the Resource Management Plan and Team Charter

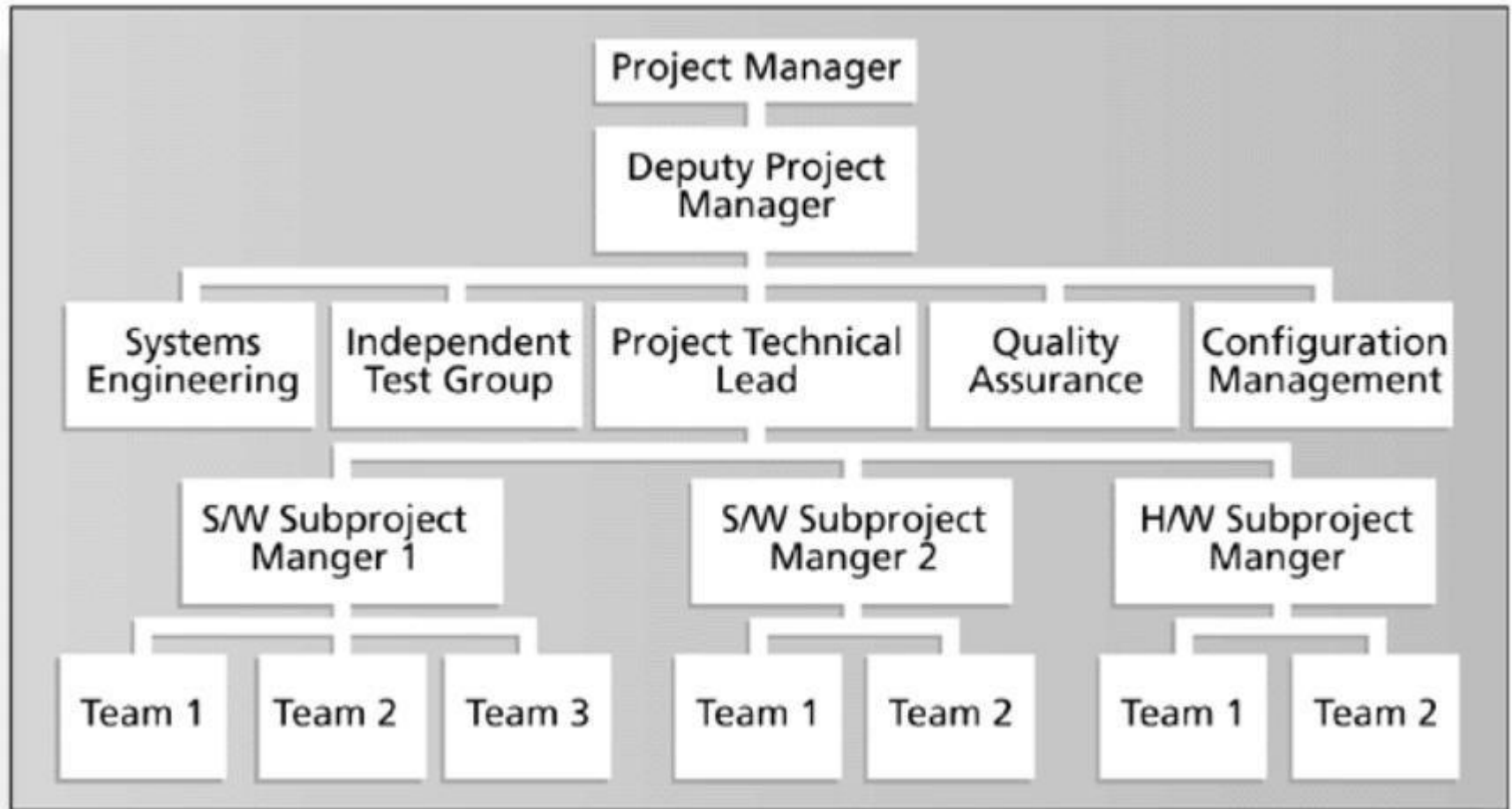
Human Resource Planning - What Went Right?

- Best practices for ensuring partnerships between people in business and technology areas include:
 - Requiring business people, not IT people, to take the lead in determining and justifying investments in new computer systems.
 - Having CIOs push their staff to recognize that the needs of the business must drive all technology decisions.
 - Reshaping IT units to look and perform like consulting firms.

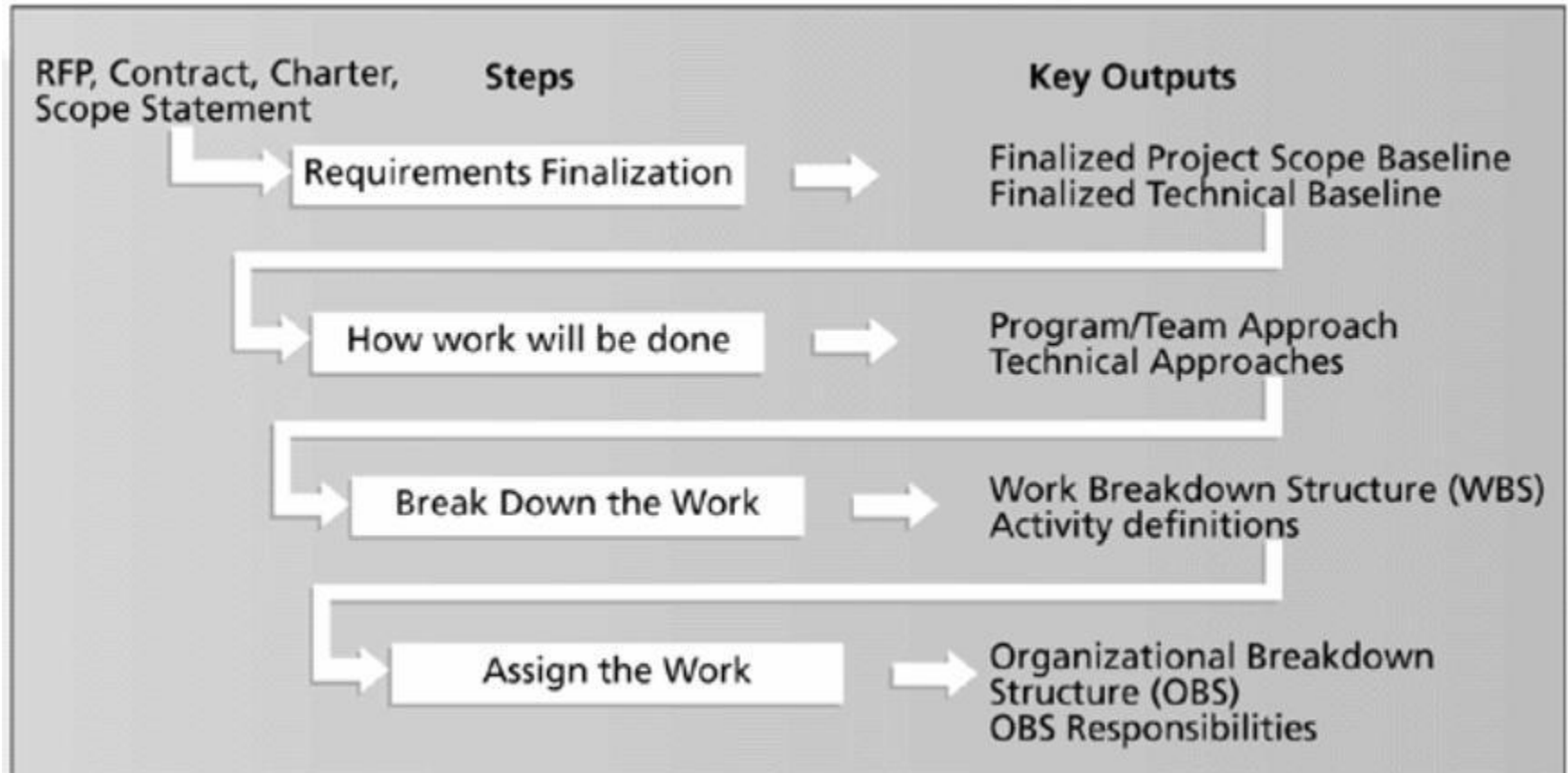
Organizational Planning

- Involves identifying and documenting project roles, responsibilities, and reporting relationships.
- Outputs include:
 - Project organizational charts
 - Staffing management plans
 - Responsibility assignment matrixes
 - Resource histograms

Sample Organizational Chart for a Large IT Project



Work Definition and Assignment Process



Responsibility Assignment Matrixes

- A **responsibility assignment matrix (RAM)** is a matrix that maps the work of the project, as described in the WBS, to the people responsible for performing the work, as described in the OBS.
- Can be created in different ways to meet unique project needs.

Sample Responsibility Assignment Matrix (RAM)

WBS activities →

OBS units ↓

	1.1.1	1.1.2	1.1.3	1.1.4	1.1.5	1.1.6	1.1.7	1.1.8
Systems Engineering	R	R P					R	
Software Development			R P					
Hardware Development				R P				
Test Engineering	P							
Quality Assurance					R P			
Configuration Management						R P		
Integrated Logistics Support							P	
Training								R P

R = Responsible organizational unit
P = Performing organizational unit

RAM Showing Stakeholder Roles

Items	Stakeholders				
	A	B	C	D	E
Unit Test	S	A	I	I	R
Integration Test	S	P	A	I	R
System Test	S	P	A	I	R
User Acceptance Test	S	P	I	A	R

A = Accountable

P = Participant

R = Review Required

I = Input Required

S = Sign-off Required

Sample RACI Chart

	GROUP A	GROUP B	GROUP C	GROUP D	GROUP E
Test Plans	R	A	C	C	I
Unit Test	C	I	R	A	I
Integration Test	A	R	I	C	C
System Test	I	C	A	I	R
User Acceptance Test	A	I	C	R	A

R = Responsibility, only one R per task

A = Accountability

C = Consultation

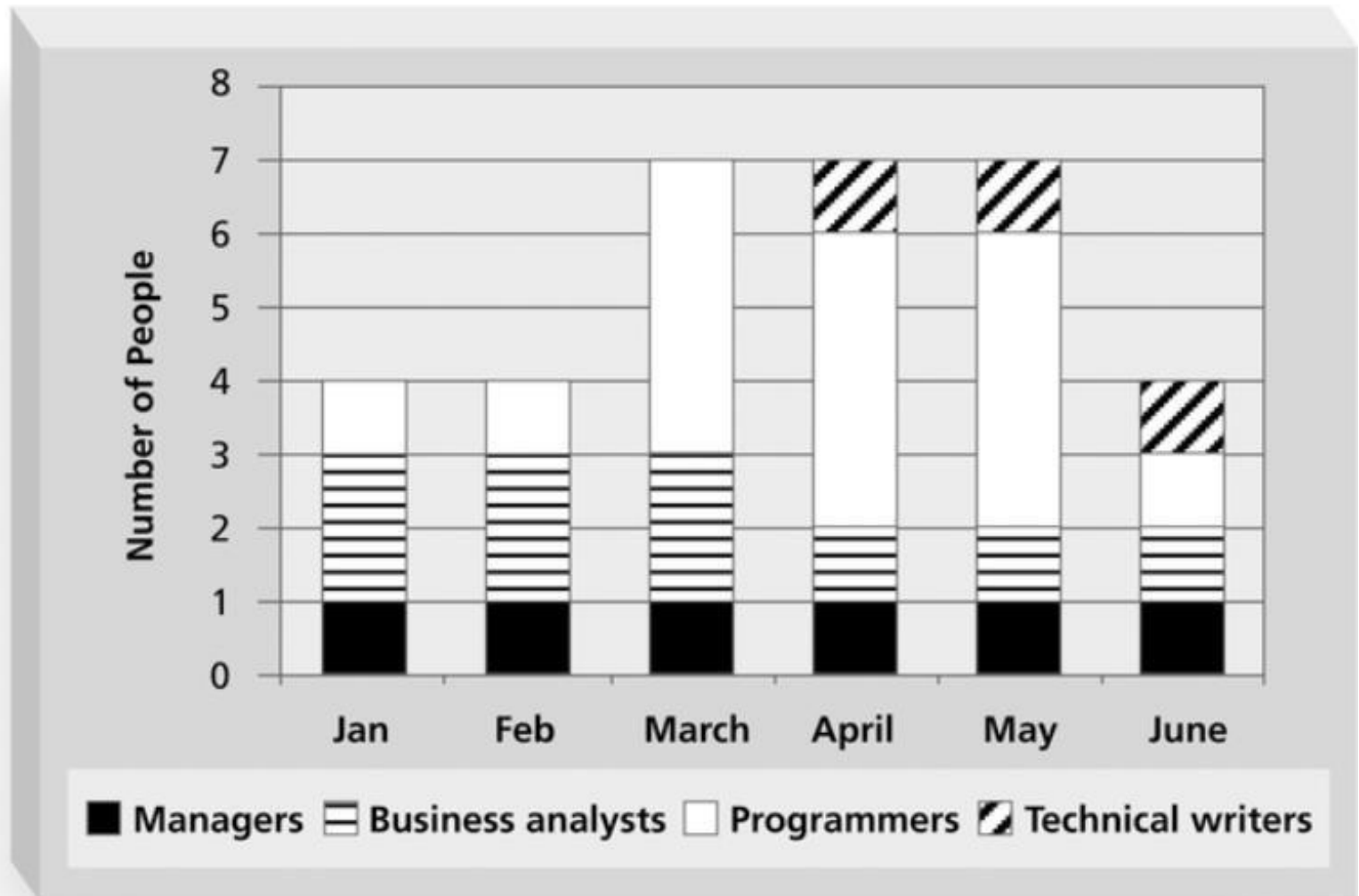
I = Informed

9.5. Estimating Activity Resources

Staffing Management Plans and Resource Histograms

- A **staffing management plan** describes when and how people will be added to and taken off the project team.
- A **resource histogram** is a column chart that shows the number of resources assigned to a project over time.

Sample Resource Histogram



9.6. Acquiring resources

- Acquiring qualified people for teams is crucial.
- The project manager who is the smartest person on the team has done a poor job of recruiting!
- Staffing plans and good hiring procedures are important, as are incentives for recruiting and retention.
 - Some companies give their employees one dollar for every hour that a new person who they helped hire works.
 - Some organizations allow people to work from home as an incentive.

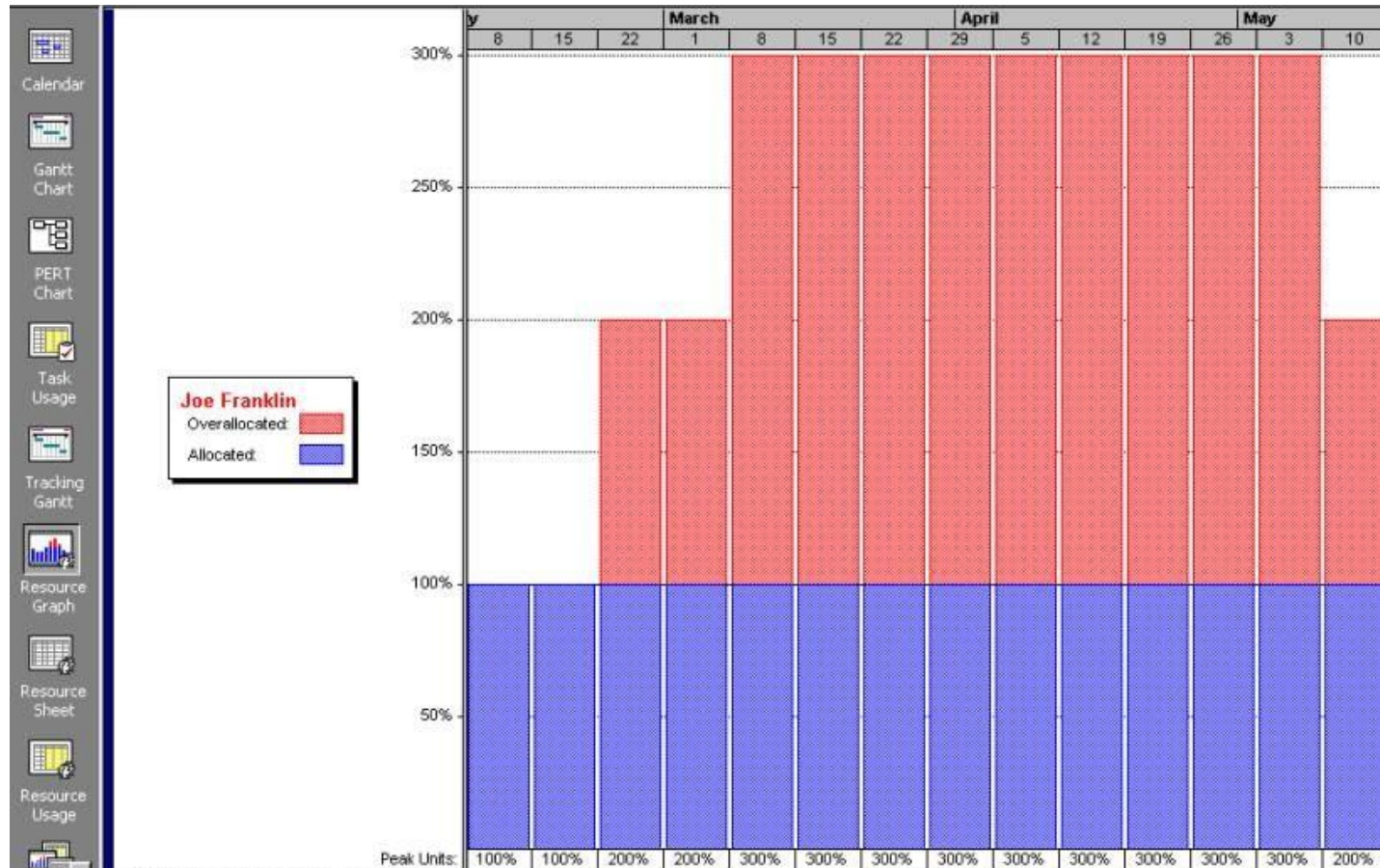
Why People Leave Their Jobs

- They feel they do not make a difference.
- They do not get proper recognition.
- They are not learning anything new or growing as a person.
- They do not like their coworkers.
- They want to earn more money.

Resource Loading

- **Resource loading** refers to the amount of individual resources an existing schedule requires during specific time periods.
- Helps project managers develop a general understanding of the demands a project will make on the organization's resources and individual people's schedules.
- **Overallocation** means more resources than are available are assigned to perform work at a given time.

Sample Histogram Showing an Overallocated Individual

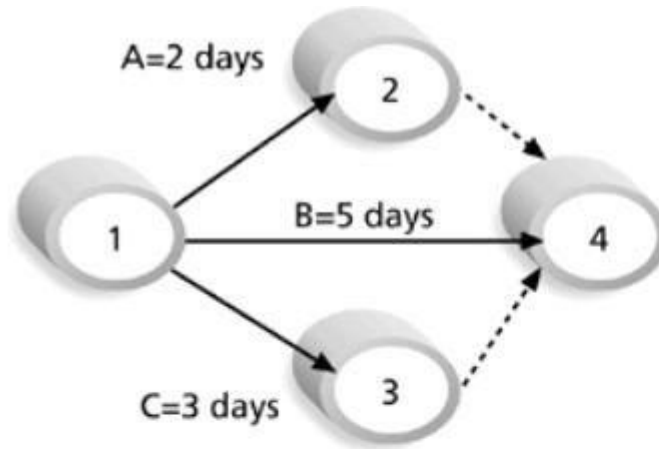


What's wrong with this picture? Assume 100 percent means Joe is working eight hours per day.

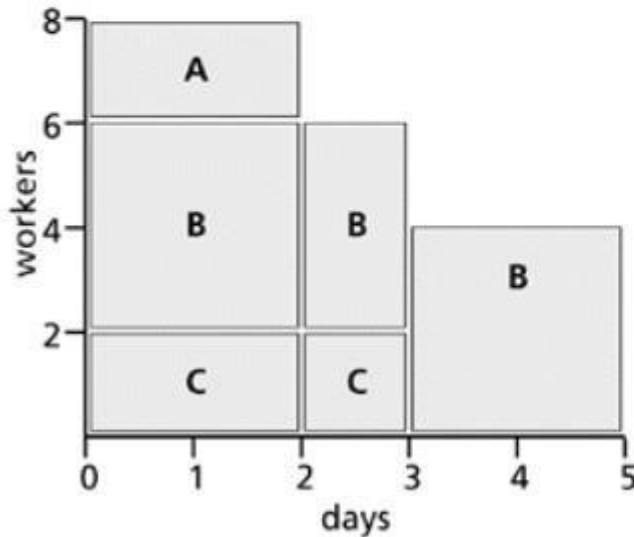
Resource Leveling

- **Resource leveling** is a technique for resolving resource conflicts by delaying tasks.
- The main purpose of resource leveling is to create a smoother distribution of resource use and reduce overallocation.

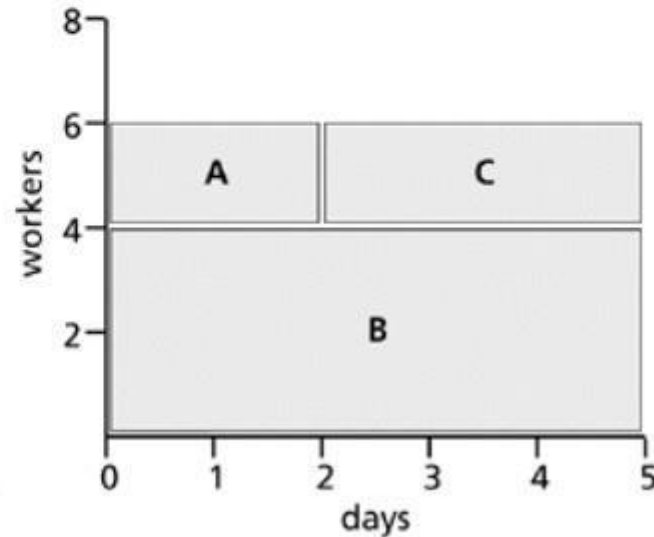
Resource Leveling Example



The project network with Activities A, B, and C and durations as shown. Activity A has 3 days of slack, and Activity C has 2 days of slack. Assume Activity A has 2 workers, B has 4 workers, and C has 2 workers.



Resource usage if all Activities start on day one



Resource usage if Activity C is delayed 2 days, its total slack

Benefits of Resource Leveling

- When resources are used on a more constant basis, they require less management.
- It may enable project managers to use a just-in-time inventory type of policy for using subcontractors or other expensive resources.
- It results in fewer problems for project personnel and the accounting department.
- It often improves morale.

9.7. Developing the Project Team

- The main goal of **team development** is to help people work together more effectively to improve project performance.
- It takes teamwork to successfully complete most projects.

Tuckman Model of Team Development

- Forming
- Storming
- Norming
- Performing
- Adjourning

Training

- Training can help people understand themselves and each other and understand how to work better in teams.
- Team building activities include:
 - Physical challenges
 - Psychological preference indicator tools

Myers-Briggs Type Indicator (MBTI)

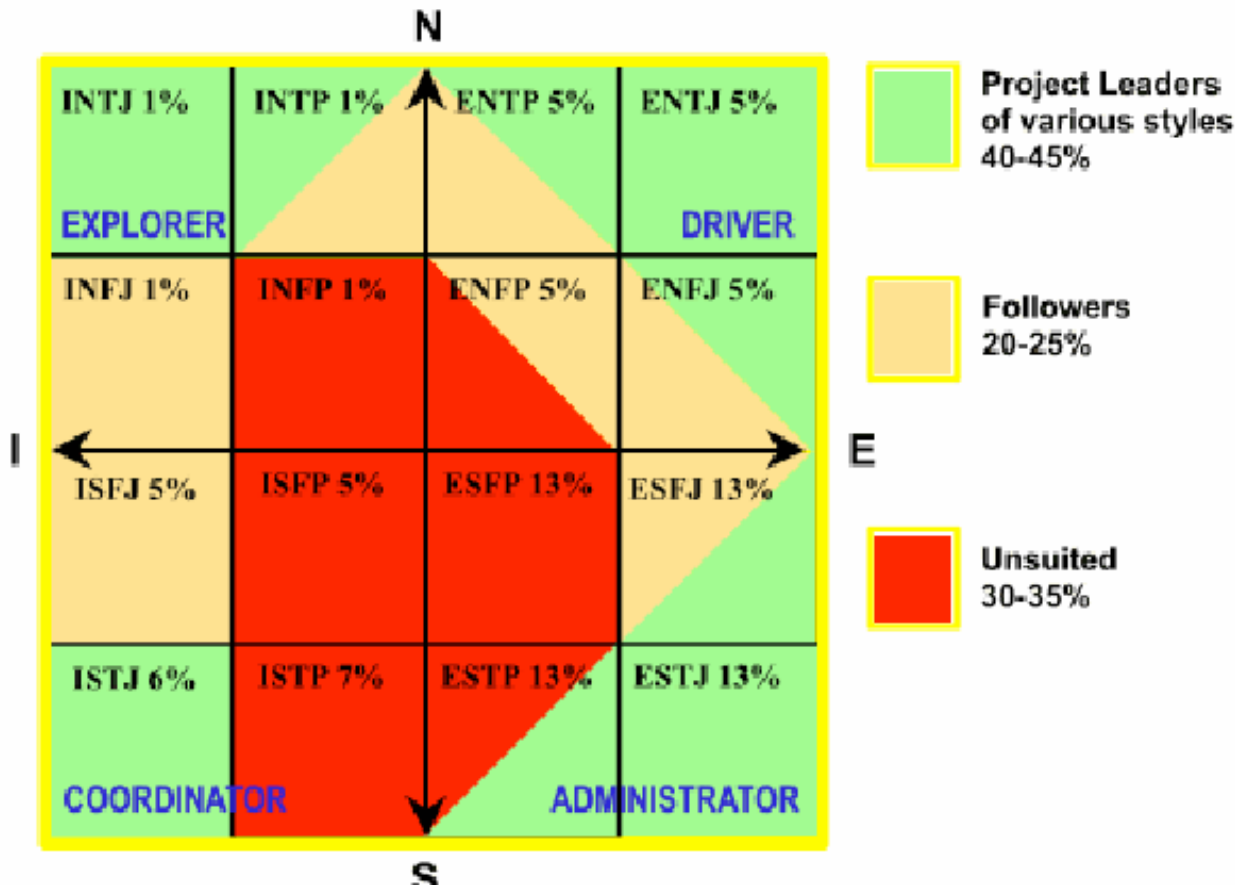
- MBTI is a popular tool for determining personality preferences and helping teammates understand each other.
- Four dimensions include:
 - Extrovert/Introvert (E/I)
 - Sensation/Intuition (S/N)
 - Thinking/Feeling (T/F)
 - Judgment/Perception (J/P)
- NTs, or rationals, are attracted to technology fields.
- IT people vary most from the general population in their tendency to not be extroverted or sensing.

Wideman and Shenhar's Views on MBTI and Project Management*

- Most suited for project leadership:
 - 100 percent: INTJ, ENTJ, ISTJ, ESTJ
 - 50 percent: INTP, ENTP, ENFP, ENFJ
- Best suited as followers:
 - 100 percent: INFJ, ISFJ
 - 50 percent: INTP, ENTP, ENFP, ENFJ, ESFJ
- Not suited for project work:
 - 100 percent: INFP, ISFP, ESFP, ISTP
 - 50 percent: ENFP, ESTP

*Wideman, R. Max and Aaron J. Shenhar, "Professional and Personal Development: A Practical Approach to Education and Training," *Project Management for Business Professionals*, edited by Joan Knutson, 2001, p. 375.

MBTI and Suitability to Project Work*



What do you think about these views?

*Wideman, R. Max. "Project Teamwork, Personality Profiles and the Population at Large: Do we have enough of the right kind of people?" (<http://www.maxwideman.com/papers/profiles/profiles.pdf>).

9.8. Managing the Project Team

- Project managers must lead their teams in performing various project activities.
- After assessing team performance and related information, the project manager must decide:
 - If changes should be requested to the project.
 - If corrective or preventive actions should be recommended.
 - If updates are needed to the project management plan or organizational process assets.

Tools and Techniques for Managing Project Teams

- Observation and conversation
- Project performance appraisals
- Conflict management
- Issue logs

General Advice on Teams

- Be patient and kind with your team.
- Fix the problem instead of blaming people.
- Establish regular, effective meetings.
- Allow time for teams to go through the basic team-building stages.
- Limit the size of work teams to three to seven members.

General Advice on Teams (cont'd)

- Plan some social activities to help project team members and other stakeholders get to know each other better.
- Stress team identity.
- Nurture team members and encourage them to help each other.
- Take additional actions to work with virtual team members.

Summary

- Project human resource management includes the processes required to make the most effective use of the people involved with a project.
- Main processes include:
 - Human resource planning
 - Acquiring the project team
 - Developing the project team
 - Managing the project team