

ENGINEERS AS MANAGERS

- Engineers must equip themselves with managerial skills such as *finance and leadership*.
- Manager requires a less *technical skills* while managing skills become more important

ENGINEERS AS MANAGERS

- Two major responsibilities of engineer-manager are as follows;
 - Creating an ethical climate
 - **Managing conflict**

MANAGERS

- Primary function is to direct activities or supervise the organization
- Are "custodians" /guardian or caretaker of the organization

ENGINEERS AS MANAGERS

- Engineers often rise in a position to **manage** – usually supervising other engineers as part of career advancement
- offer higher incentives, responsibilities, accountabilities and power
- Managers are more highly regarded compared to engineers

ENGINEERS AS CONSULTANT

- Consultant must have a long experience "Experience is the name of gain"
- Consultant engineers work in private practices
- Consultant behave as contractors.
- They are compensated by fees for services they provide.
- Because of this, they tend to have greater freedom to make decisions about what projects they undertake
- Hence consultant engineer is basically a specialist which have strong educational background in a specific area

CONSULTANT RESPONSIBILITY

- To understand what process trying to accomplished
- To characterize the step to be taken
- To identify the points of improvement
- To define cost saving opportunities
- To give advice on expert hiring
- To resolve issues related to finance
- Decide time plan and frame of work

CONFLICT MANAGEMENT

- ✱ Unresolved and unmanageable conflict in organization will reduce productivity and effectiveness.
- ✱ Manager need to resolve and stop conflict from affecting the organizational performance.

ENGINEERS AS EXPERT WITNESS

- ✱ The role of engineer as an expert is to analyze the problems that are present in the environment and to take proper measures.
- ✱ Engineers increasingly are asked to serve as consultants who provide expert witness in courts
- ✱ An engineer as an expert witness must have confidence and should be neutral and honest
- ✱ The whole idea and objective is to find the truth and uncover the evidence

ENGINEERS AS ADVISORS

- Engineers are required to give their views on configurations such as planning and policy making which involves technology

- **POLICY MAKING:**

In policy making, public officials and the general public had objective studies about cost and benefits of alternative systems of transportation, housing and energy use.

ENGINEERS AS ADVISORS

- **PLANNING:**

In planning, they need expert advice about the feasibility, risks and benefits of particular technological projects.

Engineering and Society

ENGINEER'S AS MANAGER, CONSULTANT, EXPERT AND ADVISOR POLICY MAKER

AT THE END OF THIS MODULE, YOU SHOULD BE ABLE TO

- ✘ Understand engineer's roles as manager
- ✘ Identify professional responsibilities as consultant
- ✘ Discuss the roles of engineer as advisor and expert witness
- ✘ Understand the social obligation of professional engineers as ethical leaders in the society

Engineers as Expert Witness

- Engineers increasingly are asked to serve as consultants who provide expert testimony in courts
- Usually engineers are hired by one adversary (opponent) in the dispute and that raises special ethical concern about their proper roles.
- Should they function as impartial seekers and communicator of truth or do they essentially become 'hired gun'?

Engineers as Expert Witness

- Engineers as expert witness have these obligations
 - To represent their qualification accurately
 - To perform thorough investigation
 - To present a professional demeanor/behavior
 - To protect confidentiality – cannot indulge the contents of their investigations to the opposing side of controversy until required to do so by courts

Engineers as Expert Witness

- Engineers as expert witness have these obligations
 - Engineers as expert witnesses are *not required to volunteer evidence favorable to the other side*
 - Must answer truthfully but it remains the responsibility of the attorney for the opposing side to ask.

Engineers as Expert Witness

- While performing duties as expert witnesses, engineers are susceptible to the following biases
 - Money biases – high payment
 - Ego biases – past accomplishments
 - Sympathy biases – compelling drama
- Therefore, engineers must maintain their integrity when serving as expert witness

Engineers as Consultants

- Consultant engineers are directly responsible for advertising of their services even when they hire consultants to help them. Advertising becomes an issue because of these natures

- By outright lies
- By half truths
- Through exaggeration
- By making false promises, hints, suggestions or innuendoes
- Through confusion created by ambiguity, vagueness or incoherence
- Through substantial/subconscious manipulation of the facts

Engineers as Consultants

- Competitive bidding for professional engineering services is defined as the formal or informal submission, or receipt, of verbal or written estimates of cost or proposals in terms of dollars, man-days of work required, percentage of construction cost, or any other measure of compensation whereby the prospective client may compare engineering services on a price basis prior to the time that one engineer, or one engineering organization, has been selected for negotiations

Engineers as Consultants

- An Engineer requested to submit a fee proposal or bid prior to the selection of an engineer or firm subject to the negotiation of a satisfactory contract, shall attempt to have the procedure changed to conform to ethical practices, but if not successful he shall withdraw from consideration for the proposed work. These principles shall be applied by the Engineer in obtaining the services of other professionals

Engineers as Consultants

- Contingency fees is a fee paid based on the projects the engineers successfully market.
- The greater amount of job freedom enjoyed by consultant engineers lead to wider areas of responsible decision making concerning safety
- "Design-Only" project where consultant engineers contract to design something but not to have any role in its construction pose significant ethical issues especially if it concerns the safety of the public

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 - by half-truths.
 - Through exaggeration.
 - By making false innuendos/hints, suggestions or insinuations.
 - Through confusion created by ambiguity, vagueness or incoherence.
 - Through subliminal/subconscious manipulation of the unconscious.

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PROPER ENGINEERING DECISION

- A decision that should be made by engineers or governed by engineering principles:
 - * involves **technical matters** requiring **engineering expertise**
 - * falls **within the ethical standards** embodied in the engineering codes

PROPER MANAGEMENT DECISION

- A decision that should be made by managers or governed by management considerations:
 - * involves factors relating to the **well-being of the organization**
 - * *does not force engineers to make unacceptable compromises with their technical practices or ethical standards*

**“Success is not the key to happiness.
Happiness is the key to success.
If you love what you are doing, you will be
successful.”**

THANK YOU

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