Annex (I): Housing, Construction & Urban Development Presentations

Industry-Faculty Liaison Committee (IFLC)
Green Architecture Applications

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It's wonderful to be green!

Shifting demographics
Climate change
Environmental degradation
Energy security
Resource scarcity
Interdependent world
Poverty and inequity
Material-based consumption

Vision 2050 project — a world in transition

People & Values
Governance
Economy
Resources, Energy and Environment
Adequate policy framework
Material-based consumption
Energy security
Climate change

Carbon footprint

A simpler working term is “carbon footprint.” It is the total amount of CO2 and other greenhouse gases emitted over the full life cycle of a product, operation, construct or service. The goal is to reduce them!!!

Scope

The Future Isn’t A Book, It’s A Video Game

Living in 5% Only
• Globally, we are now engaged in by far the largest city-building experiment in the history of the planet driven, in part, by a rural to urban transition that is occurring on a scale never to be repeated.
Sustainability is about
- Awareness of connections
- Creativity to find solutions
- Stewardship of resources
- Institutions that continually learn, adapt, and anticipate
- Instilling a sense of justice and increasing opportunity

Sustainability is Not Easy
- Sustainability challenges are not amenable to simple solutions or optimal trade offs
- Sustainable solutions impact all sectors of society and its environment
- Sustainability challenges are not easily understood using traditional frameworks
- Sustainability challenges are urgent and of high importance

BUE is Well-Positioned to Address Sustainability Challenges

5. Law 4/94
- This is a list of environmental issues that is due to human activity. These articles relate to the anthropogenic effects on the natural environment.

4. Strategic Environmental Assessment (SEA)
- Strategic Environmental Assessment (SEA) is recognized as a form of environmental assessment that can assist managers and leaders in policy, planning and programmatic decisions.
- Figure 2 shows the increasing focus of impact assessment across the various decision-making levels, moving from a very broad scope of issues and uncertainty, at the policy levels, towards a more focused, to the point approach at program level, and subsequently at project level (see table 1).
Levels of decision-making in Environmental Assessment

Policy: Road-map with defined objectives, set priorities, rules and mechanisms to implement objectives

Planning: Priorities, options and measures for resource allocation according to resource suitability and availability, following the orientation, and implementing, relevant sector and global policies

Program: Organized agenda with defined objectives to be achieved during program implementation, with specification of activities and programs investments, in the framework of relevant objectives

Project: A detailed proposal, scheme or design of any development action or activity, which represents an investment, involves construction works and implements policy / planning objectives

Table 1: Levels of decision-making in environmental assessment

Source: www.who.int/quantifying_ehimpacts/publications/...
Arabtec Holding in talks with Egypt for joint venture on $40bn low-cost housing project

- Arabtec Holding has begun talks with the Egyptian government towards setting up a joint venture project to build a million low-cost homes.
- Analysts said such a JV could help Arabtec raise financing from local Egyptian banks for the $40 billion project.
- They also said Arabtec might also go down other avenues to raise funds - including an offering on the Egyptian stock market.
- "Arabtec could look into a local listing or listing one of its units in the UAE," said Allen Sandeep, the head of equity research at Egypt-based Naeem Holding.
- "Arabtec is in talks with the Egyptian government, including the ministry of defence and military production, to set up and develop one million residential units," Arabtec said in yesterday.
Designing for a Sustainable Future: Partnerships to sustainability

Design for Sustainability

DfS means developing products with minimal or no environmental impacts – not ‘eco’ or ‘green’ products - but incorporating environmental considerations into good design practice for everyday products.
Future challenges - Design in 2050

- Designers will need to face the challenges of a world with reduced and much more expensive resources
- The design community, manufacturers and our leaders need to embrace the challenge now
- A sustainable future is possible, and DfS is a key strategy help to achieve it.
The increasing demand for sustainable architecture and energy conservation generated a need for tools of environmental analysis that architects can use, especially at the early stages of the design process, when decisions regarding building geometry, materials and orientation, are still being made, making this the most crucial stage for most projects.

Indoor Environment
Thermal Enviro.
Visual Enviro.
Acoustical Enviro.

Services submitted by BUE Environmental Laboratory in this field:
Thermal Environment Measurements and Assessment
- Weather Data Analysis
- Shadows
- Overshadowing
- Solar Radiation
- Shading Design

Sun path diagram for Al-Shoerouk city
### Thermal Environment

#### Shading Devices

#### Thermal Analysis

### Table: Total Monthly Solar Exposure

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**Thermal Environment**

- Thermal Analysis

**Services submitted by BUE Environmental Laboratory in this field:**

- **Acoustical Environment Measurement and Assessment**
  - Environmental Noise Measurement
  - Workplace Noise Assessment
  - Computer Modelling of Acoustic Impact

**Visual Environment**

- **Visual Environment Measurement and Assessment**
  - Daylighting and Artificial Lighting Measurements
  - Lighting Assessment (Quantity / Quality)
  - Lighting Simulations (Diva for Rhinoceros)

**Available Tools**

- Thermo anometer (18 units)
- Psychrometer (17 units)
- Thermocouple Data Logger (19 units)
Available Tools

The following list of tools are available in the BUE Environmental Laboratory:

**Visual Environment Measurements**
- Light (Lux) Meter (10 units)
- Used to measure lighting intensity / surface reflectance and transmittance

**Acoustical Environment Measurements**
- Sound Level Meter ($5 units)
- Calibrator ($5 units)

THANK YOU
Prof. Husam Bakr
Dr. Ashraf A. Nessim
Urban Studies

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Outline

- Landscape design
- Urban planning projects (new planning)
- Urban planning project (upgrading of existing agglomeration)
- Urban design projects
- Public participation and working with the community

Landscape Design

- Among our modules we teach student landscape design in the fourth year in two modules, which are landscape design 1 & 2:
  - Students are able to design landscape projects
  - Make working & details for landscape projects
  - Select suitable trees and hardscape for the project.

Urban planning projects (new planning)

- In urban planning module we are offering making urban planning for new cities
  - Select the suitable lands through site analysis studies
  - Propose land use for the project based on the nature of the project
  - Make all population studies and planning studies for the proposed project.
Urban planning project (upgrading of existing agglomeration)

• In urban planning module; students are taught how to make urban survey for existing urban sites
  – Make urban survey and produce all urban existing situation maps.
  – Make SWOT analysis for the study area
  – Propose solutions and future projects based on their analysis.

Urban design projects

• In urban design module; students are taught to make an urban design for square, plaza or recreational project
  – Make urban survey and produce all urban existing situation maps.
  – Make SWOT analysis for the study area & elevations and sections studies (Architecture style studies)
  – Propose urban design based on their previous analysis.

Public participation and working with the community

• As Egyptian building law no 119 encourage all urban planning to done through public participation;
  – Many students studied public participation in urban planning in their dissertation thesis.
  – We made several workshops that attended by some student in informal areas in Egypt, to participate in a real public participation project.
Public participation and working with the community

• Ezbet project workshop
Consultations, Training and Capabilities

Hossam Saleh, Ph.D., P.Eng.
Civil Engineering Department

Training and Capabilities

- Courses and Seminars
- Labs and Testing Facilities

Concrete
Hydraulic
Transportation

Environmental
Soil

Surveying

Consultations

- Sub-Structures
  - Soil Tests
  - Shoring Design consultation
  - Foundation Types Recommendations and Consultation
Consultations

- Super-Structures
  - Pre-Stressed and Post-Tensioned Consultation
  - Composite Flooring and Members
  - Lateral Loads Consultations

Consultations

- Progressive Collapse Strategy
- Blast Design
- Vibration Check
- Façade Supporting Systems
- Precast Connection Evaluation
- Non-Destructive Tests
Systems Approach to Improving Performance and Reliability of Organizations and Projects

Prof. Maged S Morcos
Professor of Project, Construction and Operations Management
Head of Civil Engineering Department
Faculty of Engineering

Outline

- The Management Process?
- Established Approaches to Management
  1. The Classical Approach
  2. The Behavioral Approach
  3. The Management Science Approach
  4. The Systems Approach to Management
  5. The Changing Paradigm of Management
- The SRD Framework for Improving Organizational and Project Performance and Reliability

The Management Process

- What is Management?
- The Main Tasks of the Effective Project Manager
- The Main Functions of The Effective Project Manager
- The Main Roles of The Effective Project Manager
- Management Levels and Required Skills
- Established Approaches to Management
- The Changing Paradigm of Management (Learning Organizations)

What is Management?

"Management is the process of undertaken by one or more individuals to coordinate the activities of others to achieve results not achievable or possible by one individual acting alone."

Peter Drucker, a management pioneer, defined management as: "the Process of making people more productive." He emphasizes: Performance, Quality and Service.

Peter and Waterman, other management authors, defined management as: "The role of loving work and people, communicating and inspiring people to get the job done". They emphasize Mentorship.

Motto for Project and Organisations Empowerment

1. An Empowered Communicator Leader: A Maestro
2. An Empowered Employee
3. A Healthy Environment which stresses Communication between people and groups
4. A Satisfied Client and a Project Success and Reliable Reputation

The Rational Cycle to Project / Organization Success

The Motto: "Empowerment is the road to Organizational Effectiveness"

M = 4 M's Organizational Resources in Management:

- Manpower Resource
- Material Resource
- Machine Resource
- Money Resource

"Management is the process of efficient allocation and utilization of the different 4 M's. These are as shown in next diagram:"

M = 4 M's
The Main Tasks of the Effective Project Manager

- Management Environment
- Management of Work & Organization
- Management of People

The Empowered Manager with his three Main Tasks

The Main Functions of the Effective Project Manager

Function and Purpose of Communication in Organizations

The Main Tasks of The Effective Project Manager

- Management Environment
- Management of Work & Organization
- Management of People

The Empowered Manager with his three Main Tasks

Established Approaches to Management

1. The Classical Approach: which focuses on the task of managing work and organizations.
2. The Behavioral Approach: which focuses on the task of managing people.
   - Human Relations:
   - Behavioral Science:
3. The Management Science Approach: which focuses on the task of managing productivity and operations.
   - It has been in existence for approximately 50 years
   - It is defined as: "the science devoted to describing, understanding, and predicting the behavior of complicated systems of men and machines operating in natural environments".

4. The Systems Approach to Management

Management levels and Required Skills

- Skills vary in importance at different management levels.

Management Science Knowledge

Integration of Managerial Approaches with the Managers’ Functions

- Classical Knowledge
- Behavioral Knowledge
- Management Knowledge

Resources Management as Open Systems [ICO]
Integrating Management and Organizations Systems as Open Systems

General Model of Resources Management and Organizations Systems

A System Reliability Decision [SRD] Framework For Improving Organizational Management Performance

Simplified Proposed Tall Organisational Structure with Its Management Systems A Series - Parallel Connection

Fault Tree Diagram [FTD] for the Tall Organisational Structure Showing the Probability Inputs of the Basic Events

From the Fault Tree Diagram (FTD): PF(TM) = 0.55, PF(MM) = 0.62, PF(PR1) = 0.50, PF(PR2) = 0.50, PF(MK1) = 0.50, PF(MK2) = 0.50

Probability of Failure of the Organisational Structure AFTER adding The Reliability Management Department [RMD] in Parallel to each Management Level
The world of organizations and management is changing. Rapid environmental changes are causing fundamental transformations that have dramatic impact on the manager’s job.

These transformations represent a shift from a traditional to a new paradigm. A paradigm is a shared mindset represents a fundamental way of thinking about, perceiving and understanding the world. Accordingly shifts in management thinking and behavior should be accompanied.

The primary shift is from the traditional vertical organization to something called the learning organization.

Benefits of Change to the New Paradigm

- Undoubtedly, the correct shift from the traditional organization to the learning organization will lead to:
  - more empowerment by employees which will definitely lead to:
  - more success in the business which will definitely lead to:
  - more satisfaction to employees and customers which will definitely lead to:
  - more profit and reputation to the organization
Figure 3: Suggested Performance Management Grid and the Efficient Frontier

The Performance Management Grid

Dimension 1: Cs
Dimension 2: Es

Pr1 = \sqrt{(60 \times 60 + 50 \times 50)} = 78.10
Pr2 = \sqrt{(85 \times 85 + 50 \times 50)} = 98.6
Pr3 = \sqrt{(60 \times 60 + 80 \times 80)} = 100.0

Figure 6: Trade-off & Calculations of Cs, Es and Pr for each Package on the Efficient Frontier and Performance Management Grid

Figure 9: Resulted Three Perspectives on Performance

Employees Satisfaction
Es Level = 92 points

Customers Satisfaction
Cs Level = 97 points

Organizational Effectiveness & High Performance
Pr level = 133 points

Questions?

Thank You