

# GLOBAL COOPERATION IN PURSUIT OF LEARNING EXCELLENCE

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## Learning Excellence

- Limited Use of the term excellence as applied to learning relevant engineering materials
  - Relevance based on
    - *The Globalization of Engineering Practice*, American Society of Mechanical Engineers, 1998
    - *The Engineer of 2020*- National Academy of Engineering, 2004

## Engineering in Future

- *The Globalization of Engineering Practice*, American Society of Mechanical Engineers, 1998.

### *The Globalization of Engineering Practice*

- Professional Service and World Trade Operating Environment
- Global Standards Competition
- Engineering and Intellectual Property Protection
- Emerging Markets for Engineering Products

## Engineering in Future *The Engineer of 2020*

- Technological Context
  - Breakthrough Technology
    - Biotechnology-Biology and Chemistry beyond macro scale
    - Nanotechnology
    - Materials Science and Photonics
    - Micro Electro- Mechanical Systems (MEMS)
    - High Speed Computation
    - High Speed Communication
    - Information Explosion
    - Logistics

## Engineering in Future *The Engineer of 2020*

- Technological Context
  - Technological Challenges
    - Physical Infrastructure- Roads and Bridges
    - Information and Communication Infrastructure
    - Environment
    - Technology for Aging Population

## Engineering in Future *The Engineer of 2020*

- Societal, Global and Professional Context
  - Population and Demographics
  - Health and Health care
  - Youth Bulge in some pockets
  - Accelerating Global Economy
    - Growth of Educational Infrastructure in the “now developing economy”
  - Complex Systems
  - Teamwork

## Engineering in Future *The Engineer of 2020*

- Aspirations of the Engineer of 2020
  - Contribution to:
    - Non Engineering Jobs
    - World’s Complex and Changing Challenges
    - Development of next generation technology and future problems
- Engineering without Boundaries
- Engineering for a Sustainable society and world

## Engineering in Future *The Engineer of 2020*

- Likely Scenario
  - Rapid and Accelerating rate of technological innovation
  - Intensely interconnected world
  - Diverse and multi-disciplinary participants
  - Social, Cultural, Political, and Economic forces
  - Presence of technology in everyday life

## Engineering in Future *The Engineer of 2020*

- Attributes of the 2020 Engineer
  - Strong Analytical Skills
  - Ingenuity
  - Creativity
  - Communication
  - Understanding of business and management
  - Leadership
  - High Ethical Standards and professionalism
  - Dynamism, Agility, Resilience and Flexibility
  - Lifelong Learners

## Engineering in Future

### *The Globalization of Engineering Practice*

- Scenario
  - Varying Standards of Education and Professional Practice Requirements
  - Globalization of Engineering
  - Growth of Internet and communication supporting complex engineering material in real-time

## Engineering in Future

### *The Engineer of 2020*

- Implication for Engineering Education
  - Technology Explosion
  - Pace of Change
    - Half life of ME's 5 years soon to be more like 3 years
  - Aging Population
  - Needs for Engineering Manpower- Example of agriculture and manufacturing
  - Global Economy
  - Retention of Engineering Students

## Engineering in Future *The Engineer of 2020*

- Implication for Engineering Education
  - Teamwork, Communication and Public Policy

## University of Hartford Effort in Meeting the Upcoming Challenges

- A word about University of Hartford
  - Private University with a public purpose
  - Takes pride in transformation of students
  - Commitment to community and environment
  - Comprehensive university with tradition of excellence in several areas such as Music, Arts, Engineering, Business
  - Seven schools within the university supporting the university's mission and vision

## University of Hartford Effort in Meeting the Upcoming Challenges

- Local Consortium of colleges providing easy credit transfer
- International Relation in UK
- Relation with University/ies in India
  - Caparo School of Materials and Manufacturing Engineering
  - Birla Institute of Technology

## Birla Institute of Technology Ranchi (India)

- Facts about BIT
  - Established by Industrialist BM Birla
  - Predominantly center of excellence in engineering and technology (ranked ninth in India) – the only private university in the top ten
  - Area of studies include- Engineering and Technology, Applied Sciences, Pharmaceutical Sciences, , Biotechnology and Business and Management

## Birla Institute of Technology Ranchi (India)

- Six offsite campuses in India
- Middle East Campuses in Oman, UAE and Muscat
- New Campuses opening in Myanmar and Vietnam
- Relation with several other universities in USA and Canada

## Caparo School of Manufacturing and Materials Engineering, Jalandhar India

- New School expected to start in July 2007
- Affiliated to Punjabi Technical University

## Basis for International Relations

- Need for engineers to know broad range of technology from the more traditional to more recent such as biotechnology, nanotechnology, nanomechanical systems
- Expanding internal business relation requires the western world to be knowledgeable about the society, culture and the market

## Basis for International Relations

- Several Business Schools such as Wharton are already in international education

## University of Hartford and BIT Ranchi

- BIT is part of GP-CK Birla Group with substantial presence and business in India, USA, UK, Middle East and Africa
- Articulation arrangement for faculty and student exchange
  - A little difficult for US based faculty and students but doable under relationship of mutual trust and understanding
- Graduate and undergraduate Projects to be simultaneously pursued with predefined tasks to be completed like any other international industrial project

## University of Hartford and BIT Ranchi

- Consortium of international universities, government and engineering companies under consideration and negotiation

## University of Hartford and Caparo School

- Caparo School being built by Lord Swraj Paul UK Industrialist Chairman of Caparo Group of Industries with presence in UK, USA, and China
- U of H currently closely associated with development of new facilities at Caparo School
- U of H working closely with the Caparo School Faculty in developing curriculum appropriate for promoting international work