



***“ENGINEER 2020 at LATIN AMERICA”***

# THE WORLD MEGATRENDS

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I assume from your general knowledge that there exists these unavoidable tendencies and respective transformations occurring in the world

## **Society in changing**

FROM

INDUSTRIAL SOCIETY  
ONE WAY TECHNOLOGY  
NATIONAL ECONOMY  
CENTRALIZED COMMAND  
HIERARCHICAL STRUCTURES

TO

INFORMATION TECHNOLOGY SOCIETY  
HIGH TECHNOLOGY  
GLOBAL ECONOMY  
DECENTRALIZED MANAGEMENT  
NETWORKING

## **Globalization is a fact.**

This is the *silent revolution* promoting by engineering, modifying all kinds of productive system and the global economy, changing our lives.

The unique certainty that we have, is that everything will be changed.

# THE CHANGES OF PARADIGMS

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## UPADI

In the last six years adopted a very strong tendencies of changes and stimulating its National Members Associations to promote structural changes adapting to the inevitable transformations and establishing new paradigms to fit into the MODERN DAYS.

### NEW PARADIGMS SUGGESTED

#### FROM

REGIONAL POLITICAL FOR CORPORATION  
REGIONAL PRESENCE  
ACTIONS FOR PROFESSIONALS  
BUSINESS ORIENTED FOR CORPORATION

#### TO

GLOBAL POLITICAL FOR MARKETING  
GLOBAL PRESENCE  
SINERGY IN ACTIONS CIVIL SOCIETY  
BUSINESS ORIENTED FOR COMMUNITY

# WORLD REALITY and ENGINEERS 2020

## PRESENTLY

Total World Population – set around **7,2 billion people**

Conditions of life

2.2 billion without sanitation

1.4 billion without housing

1.3 billion without potable water

1.7 billion without electrical energy

Childhood Population – set around **2.2 billion people – 30%**

1.1 billion extreme poverty, underfed, no healthcare.

0,2 billion without school access.

## In 2020

World Population will increase by more 1,8 billion people

Children from 2006 will be adults – 1,6 billion

In Latin America around 15% of all of these problems will occur.

At least **350 million** people are hoping for improvement in their lives.

# WORLD DEMANDS and ENGINEERS 2020

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In the next **20** years, in LA there will be a strong demand and probably a enormous popular pressure for

➤ **ENERGY**

Production and supply of all kinds

➤ **ENVIRONMENTAL SUSTAINABLE**

Mitigation, Control and Protection

➤ **HOUSING CONSTRUCTION**

Materials and Safe buildings

➤ **WATER**

Demands and Preservation

➤ **TRANSPORTATION**

Regional and Physical Integration

➤ **COMMUNICATIONS**

World Class System usage

# STATISTICAL FINDINGS

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- 97 % of all disaster-related deaths in 2001 occurred in developing countries
- As a percentage of GNP, disaster losses is 20 percent higher in developing countries than in industrialized countries.
- Disasters cause loss of development gains in developing countries.
- In recent disaster trends, the Annual GDP losses: 2 to 15% (Seven times more lives lost in 2003 than in 2002).
- Between 1960s and 1990s global catastrophes increased five-fold and damage grew by the factor of 9

# QUESTIONS FOR ENGINEERS 2020

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## SUGGESTIVE QUESTIONS

*WHY today's communities are not safe from natural disasters?*

*Is there anything beyond technical excellence in engineering that might be at stake?*

## KEY QUESTIONS

- 1. CAN ENGINEERS build a BETTER WORLD and SAFE COMMUNITIES?*
- 2. ARE ENGINEERS, with all the awareness of infrastructure vulnerability, done enough to PROTECT PEOPLE & COMMUNITIES?*
- 3. CAN ENGINEERS work to AVOID and MITIGATE the ENVIRONMENTAL FACTORS ?*

# QUESTIONS FOR ENGINEERS 2020

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4. **ARE THEY** conscious that their works can promote **ENVIRONMENTAL DEGRADATION** ?

*Like*

- *Conversion of natural landscape to agricultural land*
- *Conversion of agricultural lands to building urban environment*
- *Deforestation of dangerous slopes and destruction of protective mangrove belts*

5. **CAN ENGINEERS** with their **KNOWLEDGE** act in **VULNERABILITY** to disasters?

*Do they have **ENOUGH ABILITY** to prepare, respond, cope and make recoveries?*

*Are they **PREPARED TO EVALUATE** distinct spatial, social and economic dimensions?*

6. **SHOULD ENGINEERS REDEFINE** their traditional role by taking more active leadership in strengthening infrastructure & protecting communities?

# JOBBS and CHALLENGES for 2020

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WHAT CAN BE DONE ?

HOW WE ARE ACTING AND HOW WE INTEND TO CONTINUE TO ACT IN THE GLOBAL SETTING ?

## Thinking of the year 2020 Challenges

*Nothing can be achieved in the near future by creating better opportunities, following the same historical paths, that brought us where we are today.*

*We need professionals system thinkers in proffering solutions for future challenges.*

## Further more

*We continually need to review our proceedings and settings in the Latin America Engineering Education with consistency, with a search for achievements and goals to the relief of its reality.*

# TECHNICAL ENLACE

**UPADI** can help to achieve this challenges, using the technical enlace promoted by it Committees, to joining the Universities, Research Institutes and Private Companies, in supporting, training, teaching, thus promoting professional practices with responsibility and ethics.

## TECHNICAL COMMITTEES IN ACTIVITY

- ENGINEERING OF MAINTENANCE (URUGUAY)
- ENERGY (ARGENTINA)
- HISTORICAL PATRIMONY and URBAN DEVELOPMENT (COSTA RICA)
- ENGINEERING EDUCATION (USA)
- CIVIL ENGINEERING and STRUCTURES SYSMICAL RESISTENTS (PORTO RICO)
- SYSTEMS of INFORMATION and TELECOMUNICATIONS (BRASIL)
- PETROLEUM and CHEMICAL ENGINEERING (MEXICO)
- HYDROGRAPHICS BASINS (CUBA)
- ENVIRONMENTAL AND HUMAN DEVELOPMENT (BRASIL)
- OCEANIC ENGINEERING (MEXICO)
- RESPONSIBLE PROFESSIONAL PRATICE (MEXICO)
- INTREGRATED TRANSPORTATION (BOLIVIA)

# ACHIEVING THE OBJECTIVES

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## ⇒ Field of Competitiveness

It is unquestionable that "*The World Battle of Competitiveness*" is occurring in a field dominated by an international structure of production and trends in intensive and permanent mutation...and considering that

*The Countries of Latin America needs Engineers with a strong and cohesive academic formation with a new behavioral and professional commitment*

## ⇒ Intellectual Capital for the Battle

Professionals engineers with highly strong intellectual and engineering education.

The engineers for this strategic battle could not be inepts , unprepared

They need **combine** and **understood** the differences between Knowing, Management and Leadership

# MANAGEMENT and LEADERSHIP

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## Management

is the ability to organize resources and coordinate the execution of tasks necessary to reach a goal previously planned.

Works with job complexity and sought the results.

## Leadership

is the ability to develop a vision that motivates professionals enthusiastically to move towards the same direction.

Works with the changes in paradigms.

# NEW BEHAVIORAL WAY FOR ENGINEERS

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## ↳ Gunning for Competitiveness

New behavioral way for future engineers:

- Development of social intelligence and its critical analysis (myself alone versus myself with others);
- Growing his social and humanist formation;
- Increasing his market vision, learning to be enthusiastic and to enchant clients.
- Broaden his international vision
- To have a permanent consciousness of continuous education.
- Having the consciousness that they are responsible and promoters in solving problems for the community.
- Knowing that there is an inseparable - behavioral and attitudes in their professional conducts.

# ENGINEERS from LA and NEW WORLD ORDER

Three Cross borders

