

Twenty years of Ibero American Science and Education Consortium (ISTEC): Past, Present and Future of a Collaborative Work

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***Abstract** — The Ibero-American Science and Technology Education Consortium (ISTEC) is a non-profit organization comprised of educational, research, industrial, and multilateral organizations throughout the Americas and the Iberian Peninsula. The Consortium has been established to foster scientific, engineering, and technology education, joint international research and development efforts among its members, and to provide a cost-effective vehicle for the application and transfer of technology. In mid 1990 personnel from the University of New Mexico visited countries in Latin America to identify and evaluate opportunities for successful collaboration in science, technology and education. Meetings were held with officials from various governments, educational institutions, research facilities, and industrial firms to gauge interest in establishing efforts for international cooperation in technical fields. The meetings resulted in the identification of areas of common interest for employing hands-on education, research, and technology transfer in state-of-the-art technology and science. As a result of these visits, an organizational meeting was held in December of 1990, at the University of New Mexico, involving personnel from universities, industries, governments, and foundations throughout Ibero-America. These discussions resulted in the creation of the ISTEC.*

***Index terms** — collaborative work, education, Latin America and Iberian Peninsula, science, technology.*

1. INTRODUCTION

The Ibero-American Science and Technology Education Consortium (ISTEC) is a non-profit organization comprised of educational, research, industrial, and multilateral organizations throughout the Americas and the Iberian Peninsula. The Consortium has been established to foster scientific, engineering, and technology education, joint international research and development efforts among its members, and to provide a cost-effective vehicle for the application and transfer of technology. In mid 1990 personnel from the University of New Mexico, Universidad Politécnica de Madrid, Universidad de San Pablo y Universidad de Vigo, visited countries in Latin America to identify and evaluate opportunities for successful collaboration in science, technology and education.

Meetings were held with officials from various governments, educational institutions, research facilities, and industrial firms to gauge interest in establishing efforts for international cooperation in technical fields. The meetings resulted in the identification of areas of common interest for employing hands-on education, research, and technology transfer in state-of-the-art technology and science.

As a result of these visits, an organizational meeting was held in December of 1990, at the University of New Mexico, involving personnel from universities, industries, governments, and foundations throughout Ibero-America. These discussions resulted in the creation of the ISTEC.

Once it was created, universities, industries, and other organizations become members by signing a Memorandum of Understanding (MOU). In 1999, the Consortium officially became a U.S. 501 (c) non-profit institution, comprised of a General Assembly to which all members belong that sets policy and direction, a Board of Directors, which is made up of fifteen academic and industrial members of the General Assembly that carries out the policies and promotes the Consortium, and an Executive Office that handles the day-to-day operations.

The objectives of the Consortium are to conceive, plan, and carry out activities of higher education, research and development, and technology transfer, for the purpose of facilitating scientific and technical progress of the Ibero-American countries. ISTEC participants encourage the free flow and access of information in the pursuit of technical excellence.

2. THE MECHANISM

By coordinating eminent personnel and resources from diverse geographical locations, ISTECE has developed a mechanism called "The Initiative", which is an organized effort to create activities to address a specific area of concern. The Initiatives are member-driven, flexible, and run concurrently. Within initiatives, projects are identified, planned, and implemented. The distributed structure from which the projects stem avoids duplication of efforts. Projects are designed with both short- and long-term goals, with consideration of social impact. They are dynamic and expandable, and coordination is encouraged in order to maximize the utilization of available resources. Currently, there are four Initiatives underway: Digital Libraries, Advanced Continuing Education, Research and Development Laboratories, and Los Libertadores. The present paper outlines the difficulties and experiences over the past twenty years and try to establish new contacts and discussing new projects to work on in the future.

2.1 Mission Statement

ISTECE is a non-profit organization comprised of educational, research, industrial, and multilateral organizations throughout the Americas and the Iberian Peninsula. The Consortium has been established to foster scientific, engineering, and technology education, joint international research and development efforts among its members, and to provide a cost-effective vehicle for the application and transfer of technology.

2.2 Background

In an effort to improve international collaborations in Science and Technology, in mid 1990 personnel from the University of New Mexico visited countries in Latin America to identify and evaluate opportunities for successful collaboration in science, technology and education. Meetings were held with officials from various governments, educational institutions, research facilities, and industrial firms to gauge interest in establishing efforts for international cooperation in technical fields. The meetings resulted in the identification of areas of common interest for employing hands-on education, research, and technology transfer in state-of-the-art technology and science. As a result of these visits, an organizational meeting was held in December of 1990, at the University of New Mexico, involving personnel from universities, industries, governments, and foundations throughout Ibero-America.

These discussions, which resulted in the creation of the Ibero-American Science and Technology Education Consortium (ISTECE), identified a number of obstacles that need to be addressed:

- Lack of current information for planning and developing technology.
- Lack of expertise in the use of information.
- Lack of international cooperation in developing the critical mass needed for projects and joint efforts.
- Lack of interaction (lack of confidence) among universities, industries, governments, and international agencies.
- Lack of availability of technology.

The above difficulties are aggravated by another problem, which is the lack of awareness of the simultaneous existence and interaction of the above obstacles. It is imperative that efforts be made to address these issues concurrently in order to further the scientific and technological development of Ibero-America. It was a consensus among the participants in the meeting that traditional mechanisms for cooperation are not sufficient, and new, more effective mechanisms are needed. As a result of the meeting, ISTECE was created, and universities, industries, and other organizations become members by signing a Memorandum of Understanding (MOU). In 1999, the Consortium officially became a U.S. 501 (c) (3) non-profit institution, comprised of a General Assembly to which all members belong that sets policy and direction, a Board of Directors, which is made up of fifteen academic and industrial members of the General Assembly that carries out the policies and promotes the Consortium, and an Executive Office that handles the day-to-day operations.

2.3 Mode of Operation

The objectives of the Consortium are to conceive, plan, and carry out activities of higher education, research and development, and technology transfer, for the purpose of facilitating scientific and technical progress of the Ibero-American countries.

ISTECE participants encourage the free flow and access of information in the pursuit of technical excellence. By coordinating eminent personnel and resources from diverse geographical locations, ISTECE has developed a mechanism called the Initiative, which is an organized effort to create activities to address a specific area of concern. The Initiatives are member-driven, flexible, and run concurrently. Within initiatives, projects are identified, planned, and implemented.

The distributed structure from which the projects stem avoids duplication of efforts and inherently responds to the needs of the ISTECE membership. Projects are designed with both short- and long-term goals, with consideration of social

impact. They are dynamic and expandable, and coordination is encouraged in order to maximize the utilization of available resources.

3. THE INITIATIVES

Currently, there are four Initiatives underway: Digital Libraries, Advanced Continuing Education, Research and Development Laboratories, and Los Libertadores.

3.1 Digital Libraries Initiative

One of the basic tenets of science and technology is access to up-to-date information. The Initiative aims to modernize document delivery as a complement to education, research, manufacturing and policy design, to broaden electronic availability of research materials, to upgrade the information skills of library staff, and to sharpen the savvy and independence of the electronic user.

In order to manage all bibliographic resources required by users (journal articles, book chapters, congress proceedings, theses and patents) in the different Universities participating in the project, it has been developed in UNLP the Celsius Software, which has evolved to Celsius Network platform. This platform permits interconnection among all instances of Celsius, installed in servers of each of more than 55 Institutions that participate in the project distributed in 11 countries of America. Through this interconnection of instances, many tasks are automated such as remote request creation, request administration and file sending between Institutions. In addition to this, counting with a network of Celsius instances, Institutions are allowed and encouraged to share historical information about requests, to improve the service minimizing response times. This network potentially permits to offer a great variety of facilities, for example global statistics that show its performance. For more information see: <http://celsius.prebi.unlp.edu.ar/>

3.2 Advanced Continuing Education Initiative

The key to the development of any nation is the availability of highly qualified human resources. This initiative seeks to upgrade the available skills and increase the number of qualified individuals in applicable areas.

Projects conducted within this initiative involve curriculum adaptation, design and enhancement, professional development, accreditation, on-site training, web based distance learning, as well as non-traditional faculty, staff, and student exchanges, including “sandwich” graduate programs. Of particular interest is the development of materials that incorporate the latest technology in the education process, both in the way of state-of-the-art textbooks and laboratory materials, and also in the way of development systems.

3.4 Research and Development Laboratories

The costs of introducing state-of-the-art infrastructure in education are difficult to accomplish for most countries in Latin America. This initiative has been created to provide a vehicle for performing research and development in a variety of disciplines. The laboratory facilities not only are utilized in teaching situations, but are used to enhance interaction between industries and universities to foster innovation and creativity. Thus, this initiative improves the ability of technology to be applied to the resolution of problems in a variety of areas.

3.5 Los Libertadores

This initiative is a “common thread” effort that links together all of ISTECS’ goals and objectives. It seeks to create a flexible network of electronic services (a hemispheric backbone for education, R&D, and business development purposes), computing facilities, and teaching stations, known as “Centers of Excellence”. It pretends to share worldwide expertise and distributed problem solving as well as creating the critical mass needed for regional projects.

4. ISTECS: NEW CONCERNS AND CHALLENGES

We have a well-established network in the region and our next step is to work with the network to guarantee sustainable socio-economic development in Ibero-America. ISTECS is specially focused on:

- Clean Energy
- Water Conservation
- Environmental Protection and natural resource management
- Innovative solutions for health issues and local problems
- Social Responsibility as a common shared value in the region

4.1 ISTECSOME NEW PROGRAMS

Attending its mission and vision ISTECSOME has created new interdisciplinary programs, especially interesting results:

4.2 Information Communication Technologies for Social Development (ICTSD)

Is an initiative that aims at bridging the human and digital divide for the benefit of local communities. The objective of ICTSD is to spur an international strategy for generating and supporting collaborative activities among academia, industry, government, and marginalized communities to promote social development. Additionally, an overarching goal is to challenge communities to develop new organizing tools that can contribute to a bottom-up approach to cultural and socio-economic development that is created by rather than for community members. This proactive and action-oriented approach is aimed at creating the synergy needed to empower marginalized communities to develop innovative ways to use technology applications that improve economic development and the quality of life.

4.3 ISTECSALUD

This is a new interdisciplinary program that incorporates Information and Communication Technologies (ICTs) through different ISTECSOME Initiatives and Programs. The objective of ISTECSOME SALUD is to create, by means of multidisciplinary cooperative projects, a "Network of networks" in research, technology development, training and social action and assistance, with the final goal of improving health and environment. This approach promotes the well-being and raises the quality of life in the Ibero-American region, respecting the ethical, historical and cultural values of individuals and their respective communities.

4.4 ISTECSOME NEW VISION FOR NEXT DECADE

- Support university education: undergraduate, graduate, and professional.
- Develop new entrepreneurs: business and IP education and practices.
- Create new business opportunities: identification of new markets and technologies.
- Start new businesses: alliances, partnerships, and funding.
- Integrate university R&D: collaborative partnerships.
- Catalyst for social changes: create trust in government, business, and international partners.

4.5 ISTECSOME'S NEW MISSION

ISTECSOME'S members and stakeholders (academia, industry, governments, and non-governmental organizations) will:

- Advance the state of higher education
- Promote integration between local and international accreditation and certification initiatives in academia and industry
- Create a forum to encourage joint international research and development
- Provide tools, knowledge and environment for entrepreneurship
- Provide a cost-effective vehicle for technology transfer.

To accomplish this, ISTECSOME has created an organization that is flexible, self-sustaining, transparent and effective, and will be responsible for carrying out the mission.

5. CONCLUSION

During the last twenty years ISTECSOME has been growing more and more, as well as dealing with a number of challenges that implies a collaborative work. Over 28 countries ISTECSOME has got strategic alliance among academia, industry, government agencies, and multilateral organizations. To foster sustainable socio-economic development in Ibero-America by carrying out programs focused on: advancing the quality of education, and promote the culture of quality, generating and disseminating knowledge and information, establishing cost-effective vehicles for technology transfer, encouraging joint international research and development, and creating an environment for entrepreneurship. While nurturing a network that promotes trust and integration ISTECSOME also strives to strengthen social responsibility as a common shared value in the region.

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