Peruvian Technopole for Development in Health and Education
A Virtual Science and Technology Park Model
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Los Angeles, USA, 2007.

Abstract— The document is focused on a Peruvian model of virtual science and Technology Park. The contents describe how a «Technopole for Development Model» in Peru can be an adequate response from university, government and enterprise sectors to promote sustainable solutions for health and education sectors demands of Peruvian society. It also presents the partnership between national and global institutions interested in the implementation of this project. Healthcare technology development and management involve an understanding of health services, medical procedures, patient safety, biomedical systems, economics, and management topics such as life cycle costing, technology assessment, organizational and regulations systems to development. «Technopole for Development» focusing involves on his first period, Health Technology development and its Management – appropriate technology and best practices in planning, economics, clinical effectiveness, safety, one of the objectives is promoting employment. The ultimate goal of this project is: develop capacity in science and technology parks governance, such as: business plan development, clustering, policy, strategy and innovation in a educational system adapted to Peruvian context.

Keywords— Technopole, Science and Technology Park, regional development, Health Technology Management, clusters.

I. Introduction

Latin America and the Caribbean countries are rapidly expanding their healthcare technology usage. Peru has a “noteworthy” history of Health Technology Management as pointed out by the Pan American Health Organization (PAHO) / World Health Organization (WHO) “Health in the Americas 2002 report”1. The effects of the new technologies have benefited patients, but problems have occurred due to a lack of management, training, guidelines, and local technical support including:
1. Limited medical device regulations,
2. A high percentage of devices that are out of service because non appropriate use,
3. Weak after sale device support with nearly all service from manufacturers or their representatives,
4. A shortage of technical staff in hospitals,
5. Very limited maintenance budget, and
6. Limited technology management
Primary stakeholders in the development and sustenance of a Technopole are:
a) Education - Universities
b) Enterprises, Investors and private start-up companies (industry component)
c) Local Government – Regional Government

Each of these stakeholders plays a vital role in the development and growth of Latin America2. However, despite the considerable potential benefits, world-wide experience shows that genuine collaboration between universities and industry within science parks has been difficult to achieve. Since many years ago, Peruvian society demands efficient and urgent answers to health, education and poverty aspects3. Since 2006 and after his participation on “High-tech Clusters in Global Context” International Training Workshop4, Peru is working in this model in Lima and the region of Cusco5, several technical meetings with stakeholders have been done in order to improve the project.

II. Methodology

For a Science and Technology Park linked to a University, collaboration is the key. May or may not have an Incubator. Clinical Engineering and Health Technology Management – CENGETS PUCP presents a Virtual Science and Technology Park model; “Peruvian Technopole for Development in Health and Education”, which belongs to: “Mustering Support” on step 1: “Introducing relevance”. The focus is on two modules: Health, introducing Health Technology development and its Management – appropriate technology and best practices in planning, economics, clinical effectiveness, safety, one of the objectives is promote employment and national biomedical industry. The ultimate goal of this project is: develop capacity in science and technology parks governance, such as: business plan development, clustering, policy, strategy and innovation in an educational system adapted to Peruvian context using information technologies. Healthcare technology development and management involve an understanding of health services, medical procedures, patient safety, biomedical systems, economics, and management topics such as life cycle costing, technology assessment, organizational and regulations systems to development.

Therefore “Peruvian Technopole for Development in Health and Education” is a virtual center which articulates local capacities of university, government and enterprise. This model promotes a regional development through the adequate use of technology and research. Components of the successful of the project are: definition of priorities focuses on health and education areas, transfer of knowledge between university, government and civil society, develop a common vision of a networking initiative, which promote the exchange between scientific leaders in order to improve the objectives proposed. The pilot project will focus in the first period on: a) health technology development and management, b) education technologies (based on « Education for Development » model) and c) promoting the creation of enterprises.

Partnerships of this project are: Health Ministry, Education Ministry, Production Ministry, Regional Government of Cusco, Municipal Government of Cusco, “San Antonio Abad del Cusco” University, University of Vermont, USA, Peruvian Engineers College, Education, Science & Technology Commission of Peruvian Republic Congress, Acuerdo Nacional, Pan-American Health Organization, World Health Organization, CONCYTEC, Research PUCP-Office (Direccion Academica de Investigacion), and others.

III. Results in Advance

1. Implementing of strategies, programs, and policies for sustainable growth and poverty reduction, promoting of employment opportunities executing science-technology-innovation STI projects in the regions of Lima and Cusco by:

A. Improve education in healthcare technology development and management: Undergraduate and graduate in biomedical Engineering programs.

B. Process and Outcomes: Incorporate best practices Healthcare Technology Management HTM in local Hospitals noted below, defining teams in health organization; leadership; policy; assessment; planning; management; economic decision-making and auditing; maintenance; regulations; patient safety, network management, etc. into the Peruvian health sector, in the context of the new Peruvian government health initiatives: e.g., “develop health sector, decentralization of health system, change of regional governments” are activities which must be done with adequate health budgets, including appropriated healthcare technology incorporation, e.g., incorporate telemedicine, physical medicine, improve primary care, oncology care, etc.

C. Structure: Improve - Change hospital/facility organizational structure to include people with HTM capabilities, e.g. current Peruvian practices include the following management levels: (a) General (physician) Director; (b) Executive (physician) Director; and (c) Managers, and Physician Clinical Chiefs. This situation demands assignment of an HTM leader to at least the (c) management level in the hospital, regional and national health sectors.

D. Sustainability: Identify and implement HTM financial development initiatives that make the first two objectives sustainable.

1) Enhancing quality’s educational level in Lima and Cusco in consistence with “Education for development” as Educational Model through: (1) Educational programs in partnership with external institutions, e.g., University of
2) Providing technical assistance and policy advice for educational programs executing science-technological-innovation projects by programs/partnerships developed by PAHO/Long Beach & Deans of HTM-related universities represented from North America & Latin America, CORAL, Latin American Biomedical Engineering Regional Council, KP Biomedical Engineering; CENETEC Mexico, Brazilian Health sector.

Vermont³, University of Northern California, Kaiser Permanente - USA and Orleans University - France.

E. Healthcare Technology Development: Improve research and development focused in appropriate healthcare technology, oriented to create national biomedical industry.

IV. Conclusions

1. “Peruvian Technopole for Development in Health and Education” has high adaptability capacity as he promotes a work multidisciplinary.

2. Networking capability suitable basis for the implementation of the Action Plans.

3. University have a stake in the parks ongoing development

4. Holding regular seminars and briefings, where university and enterprises staff can mingle and make efficient contacts are essential activities to support the model

5. Special scholarships for students to conduct their research projects are part of the activities in the Technopole model.

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