



50th DAC

Global Forum

Republic of Peru

Trends and status in chip design and EDA

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I. INTRODUCTION

Peru (official: Republic of Perú) is a representative democratic republic divided into 25 political regions. The Andes mountains runs parallel to the Pacific Ocean; which defines the geographical regions of Peru: the Coast, from the Pacific ocean to the Andes, where its capital Lima is located; the highlands in the Andes, which includes the Altiplano plateau, the Huascarán, and the Titicaca Lake(the highest lake in the world); and the jungle, where the Amazon Rainforest is located covering almost 60% of the country's area[1].

Peru is one of the world's fastest-growing economies owing to the economic boom experienced during the 2000s[2]. Peru's main economy its related to exports, including copper, gold, zinc, textiles, chemicals, pharmaceuticals, manufactures, machinery, services and fish meal. There is a mixture of ethnic groups and indigenous peoples living in Peru due to the different migrations seasons across history over five centuries, starting with the Spanish conquest bringing Spaniard and Africans, followed by Europeans from Italy, Spain, France, Britain, Germany and others. Years later the Chinese arrived, influencing the Peruvian society[3]. There is an increasing index in Peruvian education in the past years, where 16 % high education, 15.1 % undergraduate education, 38.2 % high school education, 23.2 % primary education[4]. There are 140 universities (51 are State and 89 are Private)[5].

With an advance of 6.1%, Peru's economic growth will lead South America in 2014 while reporting the lowest inflation in the region (2%), projected by the International Monetary Fund (IMF). This year, Peru also has the lowest inflation in South America (2.1%).[6]

II. CHIP DESIGN AND EDA PRESENCE

Peruvian companies are primarily consumer oriented. There are no factories of electronic technology in Peru; electronic products and components are imported from countries like USA, Japan, Korea, China and some European countries. All high-tech products are imported, however there is a large volume of technical personal and engineers to provide maintenance and offer solutions in our country without, often, to look abroad for such tasks.

At leading universities, students involved in research groups, perform tasks integrated circuit design of ASICs and programmable logic devices. The manufacture of the integrated circuit designs are made possible by the participation of research groups in research projects or multilateral agreements.

The main research group in the country with great significant experience in the design of integrated circuits is undoubtedly the Microelectronics Research Group of the Pontificia Universidad Catolica del Peru.

III. ACADEMIA

“The Pontifical Catholic University of Peru(PUCP), founded in Lima in 1917, is the nation's number one university, one of the twenty-five best universities in Latin America and the only Peruvian university to be listed among the top five-hundred universities in the world in the international rankings. This placement is recognition of the quality of its education, research, publications, social responsibility, contribution to culture and indisputable institutional and academic leadership”.[7]



Capital
Largest city
Language
Area Total
Population (2007 estimate)
Currency
Time zone
Internet TLD

Lima
Lima
Spanish
1 285 215 km²
28 220 764
Peruvian Nuevo Sol (PEN)
(UTC -5)
[.pe](http://pe)



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The investment of Pontifical Catholic University of Peru in the promotion of research have raised in Institutional Strategic Plans (PEI 2000-2010 and 2011-2017). The average percentage during period 2011-2012 has been over 3.2% of the general budget of the university executed[7].

About 19 000 students are studying at the university, which consists of 10 Faculties, 14 academic departments and 1 Graduate school. There are several R&D centers involved in hi-tech areas such as acoustic, digital image processing, photonics, microelectronics, mechanical engineering, IT, robotics, etc.

The Microelectronics Research Group (Gue) of PUCP was founded in 1992 and clearly highlights nationally and a staff of excellence for their contributions to the technology. Its research interests are: ASICs using CADENCE, PLD using ALTERA and XILINX well and EnFETs analog integrated circuits. Probably, the research group will start work in the coming months with other IC design tools, which will be obtained by donation. The training of the members of the group are in the same university, PUCP, and using the help of members of the research group that are outside the country holding master's or doctoral studies. During 21 years the Microelectronic Research Group has trained more than 120 students in the IC design tasks and 36 of them have obtained their degrees of master of science and PhD in universities in USA, Brazil, Spain, France, Mexico and Netherlands thanks to agreements and participation in international projects where participated Gue. Gue's main strength is its ability to design integrated circuits.

IV. GOVERNMENT PROGRAMS

Government programs aimed at supporting the development of science and technology in Peru are made from the CONCYTEC (National Council on Science, Technology, And Technological Innovation) governing body of the National Science and Technology and Technological Innovation - SINACYT. The CONCYTEC norma, directs, guides, fosters, coordinates, monitors and evaluates actions in the field of Science, Technology and Technological Innovation and promotes and supports the development[8].

The National Fund for Science, Technology and Innovation Research(FONDECYT) operation began in 2007. The FONDECYT is responsible for capturing, managing, administering and channel financial resources of national power and international cooperation, for SINACYT activities in the country. FONDECYT operates within the framework of the priorities, criteria and policy guidelines established in the National Plan for Science, Technology and Innovation (PNCTel) and adopt the CONCYTEC. The existence of FONDECYT does not affect the existence of other public funds aimed at promoting science, technology and innovation.[8]

The major projects executed by FONDECYT are: PROCYT PROCOM, PROTEC. PROCYT Projects must be designed to original knowledge generation, scientific and / or technological. PROCOM Projects must be designed to improve competitiveness, productivity and profitability through research, development and adaptation of new products, processes, services, forms of organization, or marketing systems, or modification and improving the existing ones to meet the needs of consumers and seize market opportunities. PROTEC projects should be proposed technology transfer and extension which allow for the results of research or traditional knowledge to benefit the country and the service of economic and social development. These projects must propose technology transfer phases and / or assimilation and adaptation of technology[8]

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