TOPOLAC
Latin American Topographical Network and The Caribbean

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SUMMARY

This writing is developed with the objective of creating the base of a network of information in Latin America and the Caribbean to strengthen the relationships in the topography area with regard to the union and academic aspect in this geographical region. It is the result of the holding in the Congress in Paris in the year 2003, and the meeting that was carried out in Costa Rica in the year 2004, being on the deficiency in the information of the countries is not good in Latin America

The current world has forced to change the form to communicate, improving by means of aspects like they are to shorten the distances and the response time, the integration of geographical areas by means of characteristic common like the language, technology, or inclusive to the solution to problems, allowing to visualize a great community.

The developed methodology is presented, for which one had like reference the document of Metric V3 5 that it presents international norms for the development of Systems of Information, guaranteeing a process of standardization.

Some of the benefits to give emphasis as a result of the development in this project are the periodic upgrade the access easy to the information for all the users, it will facilitate the communication and interaction among the countries in the development of projects of the investigation that you/they grant with the likeness inside the countries.

Finally this writing waits he/she will help to the development of the working plan for the Commission 2 in the group 2.2, as well as the invigoration and integration of the American Latin Topography as a power for the future.

1. INTRODUCTION

The current world has forced to change the form to communicate, being able to shorten the distances and the response time, the integration of geographical areas by means of characteristic common like the language, technology, or inclusive to the solution to problems, he/she has allowed to think in a communal way, where we all win.

The development of the education and the investigation makes necessary that settle down bonds that allow the exchange of the knowledge, therefore the development of academic and scientific nets in different areas they are today an urgent necessity and for the specific case in latinoamerica and the caribe a disintegration is presented regarding the topography and its similar areas. At the moment the nets of information have gone consolidating like one of the most important mechanisms for the gathering, effective handling and access of the information, being today in highly utilized day in diverse application fields.

In this writing the proposal of a future Net of information is presented that will allow to consult the academic information of the topography in Latin America, in an interactive way, using the available technological advances in INTERNET. Inside the area of the topography, this project opens a space for the interaction of Latin America like a first phase in the consolidation the net of denominated information TOPOLAC (Topography LAtioamericana and the Caribbean).

Next it will be described the necessary methodological and logistical aspects for the implementation of the project in a final way, but the most important thing is the collaboration of all the countries that you/they would conform the NET and the help of other countries and organizations that have relationship intimately with the Topography and the sciences of the earth.

2. POSITION OF THE PROBLEM

At the moment the nets of information are a support to establish contact and exchange and consultation of up-to-date information at global level; For example the redIRIS of Spain, FUNREDES, and other projects of exchange of information like REDALC or MERCATOR, they allow to visualize the strengths when being looking in a combined way the problems and their solutions.

Contrary to other places of the world in Latin America has not been possible to develop this type of consultation mechanisms about topographical information and the little information that it exists it is outdated; the concern resides in that one doesn't know basic information on the I number of universities that offer academic programs, sent securities, duration, plan of studies, quantity of students, physical infrastructure, developed investigation projects, publications, etc., as if it happens in diverse places of the world where is possible to evidence the advance of the topography.

With the globalization plans and regional processes of several Latin American countries, he/she forces to the region to guarantee the mobility of professionals, for that which should be had and to identify elements minimum common that will serve as bridge, because each country has characteristic own and different legislations, you should end up reconciling which will be the professional from the topography to Latin American level, looking for the standards at international level.

3. JUSTIFICATION OF THE PROJECT

A net of the Topography doesn't exist in Latin-américa and you paginate them topography WEBs they are local and they don't have the total of information of all the countries, because in some information doesn't exist in the Net.

This project will be developed with the purpose of building a net of information at Latin American level that allows to strengthen the relationships of the actors that intervene in the field of the topography in this geographical area.

Inside the benefits that he/she brings I get the development of this project they can be stood out the easy access to the information for user's type, the periodic upgrade of the information and the establishment of a link with the page Web of the FIG that allows to consent to the information starting from it is to guarantee the knowledge at world level of the related information.

As additional benefit it will facilitate the communication and interaction of the Latin American countries in the development extension projects, combined investigation according to the likeness of each country, and professionals' exchanges, professors and students.

4. METHODOLOGY

For the development of the system you uses like base the Metric document V3 5 that it presents international norms for the development of Systems of Information in the following stages:

4.1. Study of Viability of the System (SVS)

The purpose of this phase was to analyze the group of necessities contrasted with the technical and economic resources that would allow the viability of the project to short, medium or I release term.

To identify the most outstanding aspects in interest I take like reference a document generated by the sub-commission 2.2. of the FIG, to identify the variables that will keep in mind in the taking of information in such a way that you/they were filled the established requirements with their models. But the proposals of the FIG were not only implemented, if not that it was necessary also to analyze with base in this models that type of additional elements was convenient to add and which of the information suggested by them been able to

be adjusted of agreement with the necessities of the geographical area where you this developing the project, to be able to guarantee somehow that one could speak in a family language to all the countries that were linked to the same one.

The most important points selected for the taking of information were defined this way:

- Universities in Latin America where academic formation related with the field of the topography is imparted. (to see annexed).
- Program academic
- Duration
- Frequency
- Educational body, days
- Number of students that consent to the plan of studies
- Title negotiated
- Nets of information
- Inter-institutional agreements
- Investigation works and publications of more importance in the international environment.

Another part of the project constitutes it the information of the organisms of each country that you/they develop or they advance similar works to the field of the topography. (to see annexed)

4.2. Analysis of the System of Information (ASI)

In this stage it was fully defined the variables for the gathering and upgrade of the information, in such a way that I guarantee you the integrity of the data were also carried out a pursuit of consultation models that can satisfy the necessities of the usurious potentials.

4.3. Design of the System of Information (DSI)

This stage is divided in two you leave this way:

4.3.1. Design of the database

They were defined the variables and the dictionary of data

Later on you continuous with the development of the conceptual pattern and the design parameters. The attributes and the relationships settled down among entities:

This part of the process was developed with the tool Power designer date-architec since this program allows great versatility for the design of Databases.

Then was carried out the normalization of the database, applying the first one, second and third normal form in such a way that it could guarantee himself the coherence of the

relationships among entities and this way to be able to subdivide the agreement charts with the type of information that I am contained in these.

Some final corrections were made to the pattern AND-R and you proceeded to the generation of the physical pattern. Under the domain of the same technological tool.

Structured the database you designs entrance forms and upgrade by means of the tool Macromedia Flash, this program was selected because it allowed to create a friendly and interactive atmosphere so that the in charge person of obtaining them was not saturated with the volume of information that should be consigned in them; on the other hand it allowed the standardization and the respective migration of the information directly from Internet previous verification with the contact entities regarding the authenticity and dependability of the data consigned in this forms in such a way that could guarantee you the integrity of the information stored in the database.

4.3.2. Geographical visualization and interface with INTERNET

In this part of the process one believes the space bond between the database and the graphic representation of the study area by means of the use of the tool Macromedia flash that was selected to allow to visualize maps quickly.

To take the graphic information from the database to the design tool it was necessary before to look for the maps that will be good for the visualization, this maps was extracted of the files of the Libraries of ESRI of the Software Arc-view and published whereas under the domain of this same program necessary single era to define the area of influence of the project in this case Latin America and the Caribbean.

After having selected the images the map of the project one keeps a drawing version with the file extension (dxf) in such a way that could be carried out the final edition by means of the tool Autocad.

Finally one believes the interactive interface for transfer the information to the servant for their respective consultation through the INTERNET under certain restrictions of confidentiality of the information. This finishes part is still in supporting period. The utilized programs for the implementation are:

Power Designer (Tool CASE)
MySQL(Base of data)
Macromedia Flash (Implementation Interface and forms)

It is necessary to point out that this it is a project pilot where it was used the basic data of Colombia and it becomes necessary to clarify that the construction stages, implementation, acceptance and that of maintenance of the system of information, they are whereas subject to verifications they require a little but of time to be developed fully and the support of International institutions should also be had for its maintenance.

4.4. Construction of the System of Information (CSI)

This part of the process allows to capture the union of all the components according to the DSI and to carry out the necessary tests for the adjustment of the system, suggestions for the appropriate use and the solution to the most frequent restlessness that the user can present.

4.5. Implementation and Acceptance of the System (IAS)

During the development of this phase he/she seeks to put into operation the system to evaluate the acceptance on the part of the users and the possible suggestions for the continuous improvement.

4.6. Maintenance of the System of Information (MSI)

Besides the defined stages previously is necessary to add another important one as for the operation process, like it is the maintenance and periodic upgrade of the system of information, realized under some limits that guarantee the dependability and verisimilitude of the information; as they are the suggestions that you/they carry out the users, the evolution and the development of new technologies that imply the modification of the system.

5. OBTAINED RESULTS

5.1. Potential Beneficiaries

This project is managed to the professionals, academic, institutions and all the other entities related with the topography at Latin American level mainly and in second order at world level.

5.2. Obtained Products

Formats for the taking of the Information - Gathering of Information
Consultation of Universities and institutions related with Topography
Graphic interface for the consultation via Internet
You consult more comunes for the users

5.3. Prospective Products

Recommendations of use of the system
Politicians for the maintenance and upgrade of the system
Diagnose of existent Information

The prospective of this project is to conform a net of specialized Latin American information, where each one of the actors intervenes directly in the continuous improvement and upgrade of the net. To medium term seeks to conform to one net node that serves as bridge to

establish contact with international organizations. to reflect the current situation of this science and the possible invigoration strategies in this field.

6. ANNEX

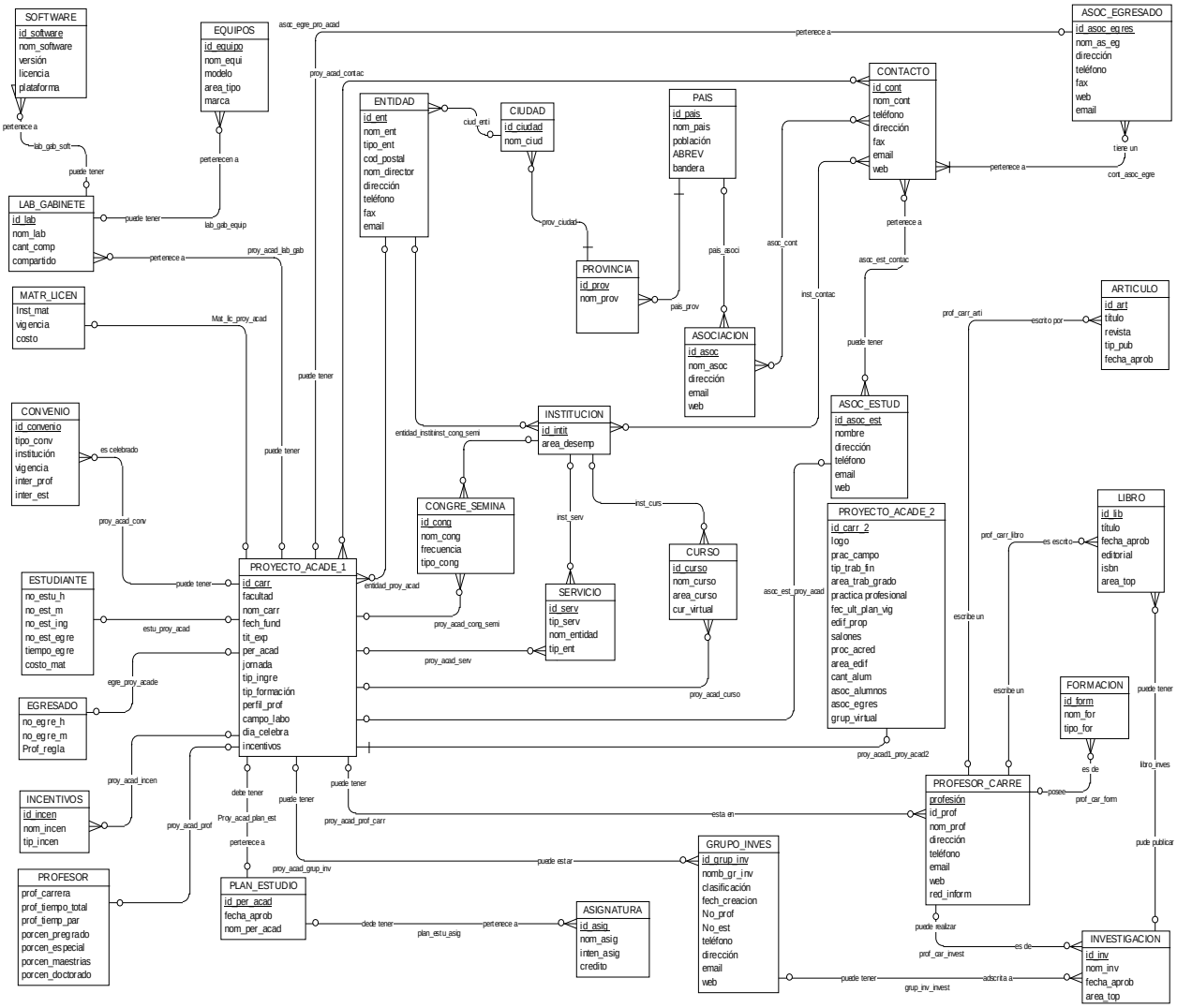
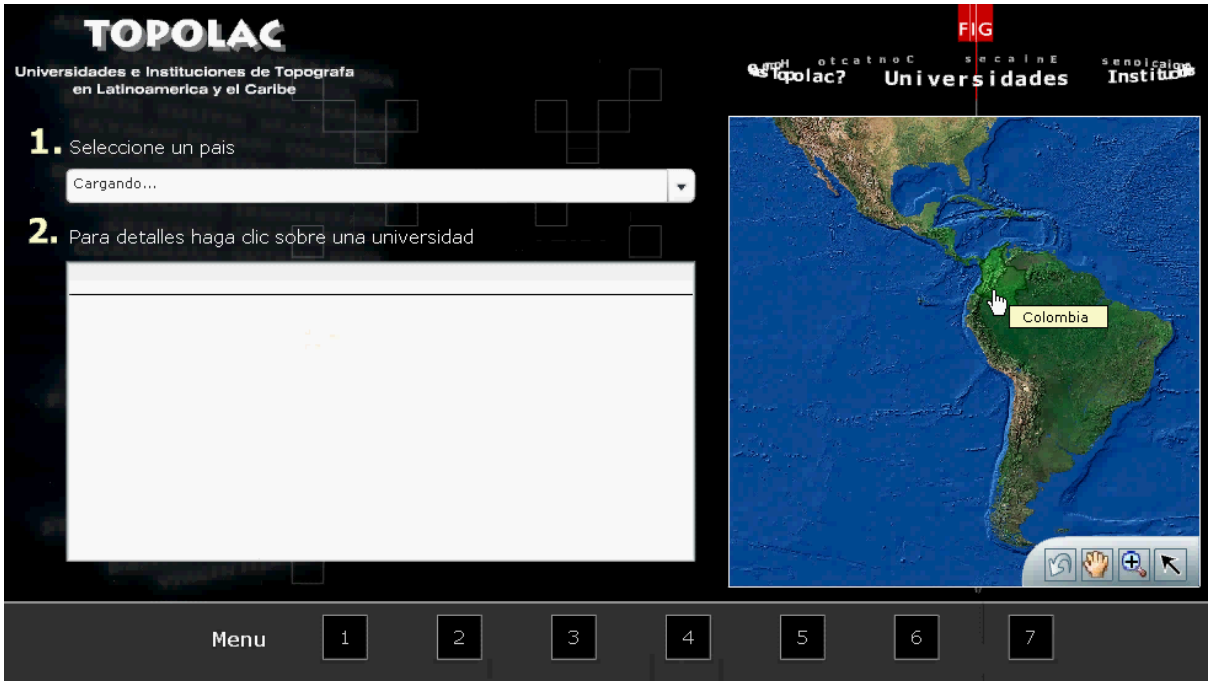


Figure 1. Model Entity Relationship

Figures 2. View - Begin TOPOLAC

Figures 3. View - Information TOPOLAC



Figures 4. View - Consults Universities.

COUNTRIES THAT WOULD PARTICIPATE IN TOPOCAL

Related Institutions in Latin America

ITEM	COUNTRY	ORGANISM	WEB
1	ARGENTINA	INSTITUTO GEOGRAFICO MILITAR	www.igm.gov.cr/
2	BOLIVIA	INSTITUTO GEOGRAFICO MILITAR	www.sc.cbn.net/%7Eigm
3	BRASIL	INSTITUTO BRASILEÑO DE GEOGRAFIA	www.ibge.gov.br/
4	COLOMBIA	INSTITUTO GEOGRAFICO AGUSTIN CODAZZI	www.igac.gov.co
5	COSTA RICA	INSTITUTO GEOGRAFICO NACIONAL	
6	CUBA	MINISTERIO DE LAS FUERZAS ARMADAS REVOLUCIONARIAS	www.cuba.cu/memorial/minfar.htm
7	CHILE	INSTITUTO GEOGRAFICO MILITAR	www.ign.cl/
8	ECUADOR	INSTITUTO GEOGRAFICO MILITAR	www.igm.gov.ec/
9	EL SALVADOR	INSTITUTO GEOGRAFICO NACIONAL	www.cnr.gob.sv
10	GUATEMALA	INSTITUTO GEOGRAFICO NACIONAL	www.ign.gob.gt
11	GUYANA	NATURAL RESOURCES MANAGEMENT PROJECT	www.iwokrama.org/
12	HONDURAS	INSTITUTO GEOGRAFICO NACIONAL	www.cigeo.unitec.edu/hc.htm
13	JAMAICA	NATIONAL LAND AGENCY SURVEYS AND MAPPING DIVISION	www.home.cwjamaica.com
14	MEXICO	INSTITUTO NACIONAL DE ESTADISTICA GEOGRAFIA E INFORMATICA	www.inec.gob.mx/
15	NICARAGUA	INSTITUTO NACIONAL DE ESTADISTICA Y CENSOS	www.inec.gob.ni
16	PANAMA	INSTITUTO GEOGRAFICO NACIONAL TOMMY GUARDIA	www.mop.gob.pa/ignta
17	PARAGUAY	SERVICIO GEOGRAFICO MILITAR	
18	PERU	INSTITUTO GEOGRAFICO NACIONAL	
19	REPUBLICA DOMINICANA	INSTITUTO CARTOGRAFICO MILITAR	www.icm.mil.do
20	URUGUAY	SERVICIO GEOGRAFICO MILITAR	www.sgm.ejercito.gub.uy
21	VENEZUELA	SERVICIO AUTONOMO DE CARTOGRAFIA Y GEOGRAFIA NACIONAL	www.igvsb.gov.ve

UNIVERSITIES FOR COUNTRIES

ITEM	PAIS	CIUDAD	UNIVERSIDAD	WEB
1	ARGENTINA	BAHIA BLANCA	UNIVERSIDAD NACIONAL DEL SUR	http://www.uns.edu.ar/
2	ARGENTINA	BUENOS AIRES	UNIVERSIDAD DE BUENOS AIRES	http://www.uba.ar/
3	ARGENTINA	CATAMARCA	UNIVERSIDAD NACIONAL DE CATAMARCA	http://www.unca.edu.ar/
4	ARGENTINA	CORDOBA	UNIVERSIDAD NACIONAL DE CORDOBA	http://www.unc.edu.ar/
5	ARGENTINA	CORDOBA	UNIVERSIDAD NACIONAL DE CORDOBA	http://www.unc.edu.ar/
6	ARGENTINA	CORRIENTES	UNIVERSIDAD NACIONAL DEL NORDESTE	http://www.unne.edu.ar/
7	ARGENTINA	LA PLATA	UNIVERSIDAD NACIONAL DE LA PLATA	http://www.unlp.edu.ar/
8	ARGENTINA	ROSARIO	UNIVERSIDAD NACIONAL	http://www.unr.edu.ar/
9	ARGENTINA	SAN JUAN	UNIVERSIDAD NACIONAL DE SAN JUAN	http://www.unsj.edu.ar/
10	ARGENTINA	SAN MIGUEL	UNIVERSIDAD NACIONAL DE TUCUMAN	http://www.unt.edu.ar/
11	ARGENTINA	SANTIAGO DEL ESTERO	UNIVERSIDAD NACIONAL DE SANTIAGO DEL ESTERO	http://www.unse.edu.ar/
12	ARGENTINA	SANTIAGO DEL ESTERO	UNIVERSIDAD NACIONAL DE SANTIAGO DEL ESTERO	http://www.unse.edu.ar/
13	BOLIVIA	LA PAZ	UNIVERSIDAD MAYOR DE SAN ANDRES	http://www.umsanet.edu.bo/
14	BRASIL	ARARACUARA	FACULTADES LOGATTI	
15	BRASIL	BELO HORIZONTE	INSTITUTO EDUCACIONAL "CANDIDA DE SOUZA"	
16	BRASIL	CAMPO GRANDE	UNIVERSIDADE PARA O DESENVOLVIMIENTO DO ESTADO E DA REGIAO DO PANTANAL	

17	BRASIL	CRICIUMA	UNIVERSIDADE DO EXTREMO SUL CATARINENSE	http://unimais.virgula.terra.com.br
18	BRASIL	CURITIBA	UNIVERSIDADE FEDERAL DO PARANA	http://www.udesc.br/
19	BRASIL	PORTO ALEGRE	UNIVERSIDADE FEDERAL DO RIO GRANDE DO SUL	http://www.ufrgs.br/
20	BRASIL	PORTO ALEGRE	UNIVERSIDADE FEDERAL DO RIO GRANDE DO SUL	http://www.ufrgs.br/
21	BRASIL	PRESIDENTE PRUDENTE	UNIVERSIDADE ESTADUAL PAULISTA	http://www.unesp.br/
22	BRASIL	RECIFE	UNIVERSIDADE FEDERAL DE PERNAMBUCO	http://www.di.ufpe.br/
23	BRASIL	RIO DE JANEIRO	INSTITUTO MILITAR DE ENGENHARIA	http://www.ime.eb.br/
24	BRASIL	RIO DE JANEIRO	UNIVERSIDADE FEDERAL RURAL DO RIO DE JANEIRO	http://www.unicap.br/
25	BRASIL	SAO CARLOS	UNIVERSIDADE FEDERAL DE SAO CARLOS	http://www.ufs.br/
26	BRASIL	SAO PAULO	UNIVERSIDADE DE SAO PAULO	http://www.usp.br/
27	BRASIL	SAO PAULO	UNIVERSIDADE DE SAO PAULO	http://www.usp.br/
28	BRASIL	TERESINA	UNIVERSIDADE FEDERAL DO PIAUI	http://www.crub.br/ufpi.htm
29	BRASIL	VICOSA	UNIVERSIDADE FEDERAL DE VICOSA	http://www.ufv.br/
30	CHILE	ANTOFAGASTA	UNIVERSIDAD DE ANTOFAGASTA	http://www.uantof.cl/
31	CHILE	CONCEPCION	IUNIVERSIDAD DE CONCEPCION	http://www.udec.cl/
32	CHILE	SANTIAGO DE CHILE	UNIVERSIDAD DE TECNOLOGIA METROPOLITANA	http://www.utem.cl/
33	CHILE	SANTIAGO DE CHILE	UNIVERSIDAD DE TECNOLOGIA METROPOLITANA	http://www.utem.cl/
34	CHILE	SANTIAGO DE CHILE	UNIVERSIDAD DE SANTIAGO DE CHILE	http://www.usach.cl/
35	CHILE	SANTIAGO DE CHILE	INSTITUTO NACIONAL DE CAPACITACION PROFESIONAL	http://www.inacap.cl/inacap_des/index.php
36	CHILE	SANTIAGO DE CHILE	INSTITUTO NACIONAL DE CAPACITACION PROFESIONAL	http://www.inacap.cl/inacap_des/index.php
37	CHILE	SANTIAGO DE CHILE	UNIVERSIDAD BERNARDO O`HIGGINS	http://www.ubohiggins.cl/
38	CHILE	SANTIAGO DE CHILE	UNIVERSIDAD BERNARDO O`HIGGINS	http://www.ubohiggins.cl/
39	COLOMBIA	BOGOTA	UNIVERSIDAD DISTRITAL FRANCISCO JOSE DE CALDAS	www.udistrital.edu.co
40	COLOMBIA	BOGOTA	UNIVERSIDAD DISTRITAL FRANCISCO JOSE DE CALDAS	www.udistrital.edu.co
41	COLOMBIA	BOGOTA	UNIVERSIDAD DISTRITAL FRANCISCO JOSE DE CALDAS	www.udistrital.edu.co
42	COLOMBIA	BOGOTA	UNIVERSIDAD DISTRITAL FRANCISCO JOSE DE CALDAS	www.udistrital.edu.co
43	COLOMBIA	CALI	UNIVERSIDAD DEL VALLE	http://www.univalle.edu.co/
44	COLOMBIA	CALI	UNIVERSIDAD DEL VALLE	http://www.univalle.edu.co/
45	COLOMBIA	TOLIMA	UNIVERSIDAD DEL TOLIMA	http://www.utolima.ut.edu.co/
46	ECUADOR	GUAYAQUIL	UNIVERSIDAD LAICA "VICENTE ROCAFUERTE"	http://www.ulaicavr.com/
ITEM	**PAIS**	**CIUDAD**	**UNIVERSIDAD**	**WEB**
47	ECUADOR	LOJA	UNIVERSIDAD NACIONAL DE LOJA	http://www.unl.edu.ec/
48	ECUADOR	SANGOLQUI	ESCUELA POLITECNICA DEL EJERCITO	www.espe.edu.ec/
49	GUYANA	TURKEYEN	UNIVERSITY OF GUAYANA	http://www.sdnp.org.gy/uog/
50	PARAGUAY	ASUNCION	UNIVERSIDAD NACIONAL DE ASUNCION	http://www.una.py/
51	PARAGUAY	ASUNCION	UNIVERSIDAD NACIONAL DE ASUNCION	http://www.una.py/
52	PERU	LIMA	UNIVERSIDAD NACIONAL DE INGENIERIA	http://www.uni.edu.pe/
53	PERU	LIMA	UNIVERSIDAD NACIONAL FEDERICO VILLAREAL	http://www.unfv-bib.edu.pe/
54	PERU	LIMA	UNIVERSIDAD NACIONAL FEDERICO VILLAREAL	http://www.unfv-bib.edu.pe/
55	PERU	PUNO	UNIVERSIDAD NATIONAL DEL ALTIPLANO	http://www.unap.edu.pe/
56	TRINIDAD	ST. AUGUSTINE	UNIVERSITY OF THE WEST INDIES	www.uwimona.edu.jm
57	URUGUAY	MONTEVIDEO	UNIVERSIDAD DE LA REPUBLICA	http://www.rau.edu.uy/
58	URUGUAY	MONTEVIDEO	UNIVERSIDAD DE LA REPUBLICA	http://www.rau.edu.uy/
59	VENEZUELA	CARACAS	UNIVERSIDAD CENTRAL DE VENEZUELA	http://www.ucv.ve/
60	VENEZUELA	MARACAIBO	UNIVERSIDAD DEL ZULIA	http://www.luz.ve/

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