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IN THEIR OWN WORDS: GISCORPS VOLUNTEERS WITH THE MEDICAL MISSION EXCHANGE PROJECT IN CENTRAL AMERICA



Juna Papajorgji, GISP, GISCorps founding member and its co-chair.

GISCorps recently completed its tenth project. This project helped the [Medical Mission Exchange \(MMEX\)](#), which is a public health non-profit organization located in the United States. MMEX refers underserved patients to medical specialists in developing countries. Its head, Dr. Paul Gerke, asked GISCorps to help him spatially enable the MMEX website with locations of clinics and hospitals, which serve patients often located in hard-to-reach rural areas. He needed help with four countries: Dominican Republic, Guatemala, Haiti, and Honduras.

As MMEX entirely lacks GIS capacity, I evaluated that a first step could be to create four modest geo-libraries for each of these four countries. These geo-libraries would include municipal boundaries, cities, roads, lakes, rivers, and other natural or man-made landmarks. It would also be imperative that they include coordinates of mission posts and hospitals. The data would have to be available for public use, be obtained for free, and possibly be licensed for re-publication.

This became the task of this mission, which I assigned to a team of five GISCorps volunteers. A team leader coordinated the entire project and each volunteer was responsible for one country. Each of the GISCorps volunteers has contributed their expertise, their computing resources, and no less than fifty hours to the success of this mission.

Building upon the success of the first mission, GISCorps has just set up a second mission with the MMEX. This mission will tie the four geo-libraries with the organization's existing tabular databases and it will integrate these geo-libraries into the overall operational model of the MMEX. Diana Sinton, Chief Program Officer, Latitude GIS Initiative, National Institute for Technology & Liberal Education (NITLE), Vermont, has been selected by the GISCorps to conduct this mission on site.



Clare Brown, GISP – Team Leader, KHAFRA Engineering Co., GIS Department Manager, URISA member.

As a team lead my primary role was to act as liaison between GISCorps co-chair, Juna Papajorgji, MMEX founder, Paul Gerke and the four GISCorps volunteers working on the MMEX project. In addition I also helped facilitate and guide the MMEX volunteers in meeting the objectives of the mission. Knowing that data mining would be challenging in this region (Central America), I did not want to restrict the volunteers in their collection efforts by imposing requirements for data structure and formatting but rather encourage them to find whatever data they could. Once the volunteers had completed their data mining and collection efforts, I compiled the data from all four countries by reformatting, projecting and symbolizing to one standard format.



Danielle Ayan, GISP, Georgia Tech Center for GIS, Research Scientist, Georgia URISA 2006 Vice President, URISA member.

Dominican Republic

I was 1 of 5 volunteers working on the GISCorps MMEX mission. I was responsible for collecting and compiling data for the Dominican Republic (D.R.). The goal was to provide enough referential information for the base map and ultimately link medical missions in the D.R. to their associated largest-scale geographic locations. I was fortunate to find a Dominican professor at Clark University, Dr. Eugenio Mercano, who was very gracious in leading me to public and private sources of D.R. data, including SIGPAS3 (www.sigpas.org). I encouraged a Data Sharing Agreement between MMEX and SIGPAS which will prove mutually beneficial for both organizations. I linked the medical missions to the municipalities, since that was the smallest geographic extent provided by MMEX; however, the D.R. SIGPAS data gets much more detailed and can assist the MMEX to map their missions to the village level. Thanks again to Dr. Mercano and SIGPAS!



Lucia Lovison-Golob - Harvard University, Associate & GIS Advisor to Graduate Students, URISA member.

Guatemala Republic

This has been my first experience as volunteer at the GISCorps and I loved it. I apologize in advance for my long posting, but it is my chance to describe the whole experience, and it may be useful to other colleagues who are considering whether to add yet another commitment to their busy schedule.

I was initially attracted to GISCorps mission and afterwards by of the challenge of creating and populating a geospatial database of the medical and public health services of the Guatemala Republic, and I first read the instructions and objectives from our Team Leader Clare Brown and from Dr. Paul Gerke of MMEX. I visited the MMEX site, then the CDC site, and afterwards the Guatemalan Health Ministry web site. From the MMEX web site, <http://www.mmex.org/links.aspx#17>, I collected data on medical and public health services, and I tried to understand what was relevant to MMEX.

The review of the MMEX site allowed me to better understand the technological level of MMEX, their need for data, and the type of data structure and format needed to ensure the easy integration of my data set into the work of the other GISCorps colleagues. It was apparent that MMEX needed some basic spatial reference units that work across countries, so that MMEX can manage efficiently the scarce medical services and resources and improve the communications among their medical missions.

My goal in visiting the CDC web site, and in particular EpiInfo, <http://www.cdc.gov/epiinfo/>, was to understand the best practices that medical and public health teams have adopted and could have also been embraced by the medical personnel at MMEX. I noticed that, in any country where CDC has activities, they break down their operations at the district/municipality level. Therefore, I decided that the district/municipality would be my spatial unit of reference or key field, combined with the country of operation, so as to facilitate the management of health services supplied to different countries by MMEX. Within each district/municipality, I included the geographic coordinates for each point of interest, such as clinics and hospitals, derived from the Global Gazetteer, or, when not available, the street addresses and contacts of the clinics and hospitals.

After that decision, I built the data and metadata of the medical organizations and services in Guatemala by referring to every possible bibliographic source that I found and checking them with the data and references coming from the Ministry of Health of Guatemala at

<http://www.mspas.gob.gt/cms2/> and other public sources. This process took more time than I had expected, but it was needed since I did not find other available data sources. The tabular dataset is linked through the key fields – district/municipality and country – in order to allow MMEX to make medical referrals to patients in need, which was one of Dr. Gerke’s stated objectives.

During this process, I noticed an enormous need for a reliable database of public and medical services not only from organizations such as MMEX, but also from other NGOs and government organizations and institutions. As a result, I believe that GISCorps has an opportunity to make available or accessible to other organizations or public institutions the resource that we generated for MMEX, if coming from a public domain as for the Guatemala dataset. We also might be able to ask MMEX and perhaps the other participating institutions to offer some “ground-truthing” and keep the geospatial database up-to-date. In fact, I often found the information related to the locations of medical and public health services to be imprecise, out of date, or wrong.

I finished building the geospatial database of the medical and public health services for the Guatemala Republic by linking the key fields – country and district/municipalities -- with the tabular data that I created and tested in ArcGIS9.1 as requested. I submitted to our team leader the geospatial database with other basic datasets (rivers, cities, roads) that I found from the Geography Network.

From a technical point of view, I found a need for a person in each of the countries from which we collected data to provide some degree of “ground truthing.” I also found it critical to assure that some degree of training is offered to the people that eventually will have to manage the geospatial database within MMEX or other organizations. Having taught to international epidemiologists and medical personnel in the past, I think that we need to make sure that the health care providers have access to some basic, not-expensive, tools and know basic functionalities in order to make an effective use of this geospatial resource. Although I enjoyed very much working together with the rest of the group, I missed the presence of a collaborative virtual space where all of us could discuss issues and arrive at decisions together.

Although the geospatial database that I built for Guatemala might be extendable to the Dominican Republic, Haiti, and Honduras, it is a preliminary geospatial database. It constitutes a framework of reference for further work and for the operational model of the MMEX that I understand GISCorps will develop. I commend GISCorps for this and wish Diana Sinton my warmest wishes for good work on site.

Overall my experience with GISCorps has been very positive. I hope that GISCorps of URISA will continue this critical assistance, and I commend every person with whom I worked on this project. As I mentioned in the beginning, given my busy life, I have only a limited amount of time to offer my services to people and organizations in need, and GISCorps allows me to offer my assistance virtually. I look forward to participating in other GISCorps projects.



Claudia Caceres, GIS Specialist, Forests and Rural Productivity Project, Honduras.

Honduras

I discovered GISCorps by chance while browsing the internet. When I saw that there was an opportunity of volunteering to help MMEX in my home country of Honduras, I applied immediately. I had volunteered in the past as a Medical Brigade translator and as a host organization/team leader for several Medical Brigades in Honduras. As such, I have come to understand the importance of information on missions such as these.

For my project with GISCorps I was responsible for mapping the locations of medical missions taking place in Honduras. I already had the spatial data layers for Honduras. These included departments, municipalities, rivers, villages, roads, border customs, forest coverage, dams, lakes, protected natural areas, seaports, rural health centers (with and without doctors), public hospitals, the international boundary of Honduras, and a layer of the Central American region. My challenge was determining the locations of missions in villages that had common names.

This was my first experience with GISCorps, and I feel very proud to have had the opportunity to work with people that have so much experience in GIS. I feel very grateful to have been part of the team. Thank you.



Alfred de Jager, European Commission, Institute for Environment and Sustainability, Italy, GIS expert.

Haiti

Also for me, this is my first experience as a GIS Corps volunteer. I matched the hospital names of a list of Haitian missions to geographical coordinates and moved through the web and our databases to find what ever geodata we have of this country. Also I made some premature web gis solutions,givingaccess to various Caribbean datasets.

I hope that through the GISCorps we can help to unlock the huge amount of geographical data which exist and which can help people in various places of the world. Especially satellite imagery is expanding at a rate that almost nobody can follow but contain information, which can be useful in especially places affected by natural disasters like the hurricanes in the Caribbean.

In the European Commission I work for a research institute allowing me to cooperate with staff of the 25 member states and Norway in setting up plans to assure clean water for this part of the world by 2015. It is an ambitious goal, but by setting such ambitions we assure that things get into motion. My work brings me in various places of high and low technology solutions, in which officials try to cope with the protection of the environment using the means they have and understand.

My contribution to the GISCorps is therefore a little bit scattered, whilst in the office I have access to an enormous amount of technical means, but my time in office is limited. More and more we are now moving to open source solutions to avoid being locked up in the office using expensive equipment to apply GIS technology. It is challenging to work in a moment in time in which we get the GIS tools in the field again. I am looking forward to the next GIS Corps assignment.