

## Finding the way: Geomatic Support Team creates maps in Nepal

By: *Lucy Ellis*

The Disaster Assistance Response Team (DART) is ready to go on a moment's notice. When the call comes in, they grab their bags, head to the airfield, and need to be ready to take action when they hit the ground.

When the DART arrived in Nepal, there was an important question to answer: where do we go and where are we needed the most?

The region of activity was determined by the DFATD-led Interdepartmental Strategic Support Team in consultation with the Nepalese authorities, but the actual roads to be taken and the outlying villages to go to needed to be decided on the ground.



Sindhupalchok District, Nepal. 5 May 2015 – Captain James Borer, a civil-military cooperation officer attached to the Canadian Armed Forces Disaster Assistance Response Team and Captain Animesh Adhikari, liaison officer for Nepalese National Army, discuss with local authorities about roads status, in Sindhupalchok District, Nepal during Operation RENAISSANCE 15-1 on May 5, 2015. (Photo: Corporal Kevin McMillan, Canadian Forces Combat Camera)

Master Corporal (MCpl) Denis Carriere is a member of the DART Geomatic Support Team; he develops highly detailed maps that guide DART members and other partners as they move from community to community. His work draws upon millions of points of continually updated crowdsourced data as well as satellite imagery and existing topographical maps.

“As soon as we got the call we started downloading street maps and a bit of imagery,” said MCpl Carriere. “Time is very limited and lots of work needed to be done as soon as we hit the ground in Nepal. For me to be able to support Canadian Armed Forces operations with Geomatic Support, I rely on OpenStreetMap (OSM) for my core Geospatial data. This enables me to create accurate topographic mapping products for troops deploying in the field that are providing aid relief to remote areas.”



Nepal. 7 May 2015 – Master-Corporal Denis Carrière, a geomatics technician from the DART explains mapping details to Prabhas Pokharel and Megha Shrestha, both volunteers for Kathmandu Living Labs, a group of young people working to harness human potential and creativity by leveraging open data and civic technology on May 7, 2015. (Photo: Captain Gabriel Rousseau, Canadian Forces Combat Camera)

The mapping process started while MCpl Carriere was en route to Nepal. Members of his team in Kingston and Ottawa conducted data collection from sources such as OSM. When he arrived in Kathmandu, the data was ready for him to download.

The Humanitarian OpenStreetMap Team (HOT) is a non-governmental organization (NGO) that started contributing to humanitarian relief operations following the earthquake in Haiti in 2010.

“We were able to revise all the maps of the priority areas and added roads, buildings and other significant objects. We received free satellite imagery offered for this response to identify the informal camps and the most affected villages. We also have analyzed potential helicopter landings,” said Pierre Béland, a digital volunteer based in Canada and coordinator for this HOT response.

Since arriving in Nepal, MCpl Carriere has also linked up with Kathmandu Living Labs (KLL) who are coordinating the mapping effort in Nepal. HOT interfaces with a large network of OpenStreetMap volunteers from around the world who contribute from the internet to the database – KLL provides them with direction about what areas need to be mapped.

“They’re the big powerhouse here in Nepal,” said MCpl Carriere. “They’re doing great work here.”

Once he collected all of the data and identified important features such as residential areas, road networks, landmarks, and clusters of outlying villages, MCpl Carriere was able to develop his maps.

DART members who go out into the community to conduct road clearing, provide medical care, and complete other engineering tasks take a physical copy of the maps to navigate by. The deployed DART members have extensive training and experience with using these products.

“Once you leave the main hub, you don’t have internet or wi-fi or any connectivity, so a hardcopy map, a GPS and a compass is what the typical soldier would use for navigation,” said MCpl Carriere.

OSM Open data is updated each 30 minutes. Offline Road Navigation data can also be used on tablets to be imported in OSMand (Android and iOS).

MCpl Carriere is working closely with HOT and KLL, and his maps have been useful for partners as well as for DART members.



Nepal. 7 May 2015 – Master-Corporal Denis Carrière, a geomatics technician from the DART talks about Nepal mapping with members of Kathmandu Living Labs, a group of young people working to harness human potential and creativity by leveraging open data and civic technology on May 7, 2015. (Photo: Captain Gabriel Rousseau, Canadian Forces Combat Camera)

“The DART Geomatic Support Team works with local organizations and international volunteers through the internet to create detailed maps in Nepal,” said Pierre Béland. “Coming in Nepal, Denis knew what was possible. Quite informally, we rapidly exchanged information. Denis went to meet Kathmandu Living Labs OSM contributors. From this, we published his maps of Nepal produced from OSM.”

As each person contributes back to the mapping system, it develops the quality of the data and increases the ability for NGO’s, military responders, and government agencies to operate in the area. The highly detailed maps and databases of imagery ensure that remote villages are located by humanitarian actors and can receive aid. It is a truly collaborative effort that demonstrates the importance of old school tactics being combined with new technology.