Pacific GIS/RS User Conference – Thursday 1st December 2016

Session 2 – Discussion Session

1. Herve Damlamian - UAV Tool or Toys?

Legal Requirements in the Pacific Region

- The following experiences was shared by the Republic of Marshall Islands i.e.
    - As a formality, the Director for Civil Aviation is informed of the time and location of the drone flight. A demonstration flight below 200m is required before officially flying a drone.
- Flying a drone depends on the category of the software that is being used and on the airport radius.
- Is the tool or toy accurate enough to provide the information that is required by the Fiji survey regulation i.e the Fiji government invests a lot in the survey of native lands therefore it would be useful to identify if the use of UAV tools would be effective in carrying out this work. Is there a need to review regulations that it is able to accommodate the requirements of using UAV tools?
- World Bank is now working with Patrick Mayer on collating the different requirements of flying a UAV, per country in the Pacific.
- It will be useful to have Standard Operating Procedures (SOPs) in place on how to apply the requirements at a local setting. Currently this is handled on a personal connection basis.

Should you Purchase or Lease a UAV?

- In the case of the Fiji Forestry Department, it is uncertain if a budget for leasing UAVs exists. This would be annual contracts or bi-annual contracts if a budget is available. The Ministry will need to invest in the first lease and into staff capacity development, which needs to be done on a regular basis. A better option would be to purchase or hire the machine or a consultant when the need arises e.g for Post TC Winston.
- There isn't a one size fits all option. Purchasing a UAV would be the best option if survey work is carried out on a regular basis. On a one-off basis, it would be appropriate to lease the machine or connect with a commercial company to provide trainings to staff when the need arises.

Potential Breakthrough

- Bright horizon for topography mapping.
- Focal plane array/solid state LIDAR: LIDAR on a microchip.
- Warehouse Security – the installation of security sensors which has a drone connected and sitting on the charging station. Once the sensor detects movement, the drone fly's to where the problem is located, it takes a picture of the situation and sends an image back to security headquarters. It is a cost effective approach for large organisations.
- The whole question of whether a drone is a toy or a tool depends on how it is used. An appropriate tool is needed to carry out the appropriate work.

Improve UAV data distribution

- Lessons learnt from Tropical Cyclone Pam response included the need to look at better ways to share and distribute in a timely manner, information that is collected with a drone.
- It is important to consider sharing metadata or a flight plan. This enables one to know who is flying on a certain day or who has already covered a particular area.
  - During TC Pam response, coordinators were assigned on the ground to link UAVs operations while results were communicated back through phone conversations. Because there was not a central location where the situation could be seen in real time, the operation depended on people working round the clock to provide the information needed.
- A GIS/RS network of people with various expertise is being established by Patrick Mayer. Such an approach will be beneficial in improving coordination.

2. **Marco Bernasocchi - Think open think future**

The following are some of the benefits of Open Source software highlighted by Bernasocchi i.e

- It enables people to share their work, save time and improves knowledge and learning. Individual knowledge is limited whereas a collective knowledge is powerful. There is much more knowledge in a group of people with different interests than a single person.
- It allows the motivated individual to be more creative in finding solutions to a problem.
- It allows knowledge to be shared and made available.
- Is a sustainable project.

The following questions and statements allowed discussions to take place and experiences to be shared in terms of the use of open source software i.e

a. *What do you think hinders you and why would you not consider embracing open source / open data?*
b. *If its free there must be a catch*
c. *Its for geeks only – I don't code anything*
d. *I never had to use so it must be irrelevant*
e. *I can't get corporate support*
f. *I don't care*

Discussions

- There is more than one option which can become a confusing process, while at the same time it requires licenses at some stage.
- People have that sense of ownership in the work that they have produced e.g my data is power and if I share it what will it be used for?
- There is no right answer to weather one should have a commercial software or an open source software, because it depends on the purpose for which it is being used.
- In terms of saving costs it is recommended to always choose open source software's at the beginning of a project and later on consider the purchase of commercial software's if it is required.

- At some stage of using the software, there is a need to engage professional or expert support to progress with the work and this can incur charges on a project, which is not always cheap.
- Capacity development in code writing is to be considered for Ministries that they are familiar with new systems and programs and to provide technical support when needed.

3. Mapping Forest Degradation

In terms of detecting forest degradation, what are your experiences? Are there experiences in the room with the use of remote sensing?

- Free data provided by digital globe showed only secondary species like African Tulips, Climber and Tree Ferns but not forest degradation, therefore focusing on Climber species will indicate the level of degraded forests. Another option would be the use of radar to indicate forest degradation because it has the ability to penetrate the forest and mapping the forest floor.
- Its important to identify if the degradation is caused by, and manifested through a reduction of canopy cover or is degradation occurring at the lower forest layer. With this information it is possible to identify which parameters can be used to measure degradation through remote sensing. The concept of having vegetation reference sites is one that is being practiced in Queensland, Australia i.e when assessing the different quality of vegetation, they refer back to the reference site, a more stable environment with the right conditions and which enables them to quantify the different degradation levels of various sites.
- There is a need for countries to define 'What is forest degradation?. Following this, it is important to identify and track the use of forests which could result in a cost-benefit analysis because we cannot always rely on different types of remote sensing and UAVs for verification. Field assessments and measurements focusing only on forest activities with a greater impact apart from low impact activities is also a useful approach.

Over the years technology have become cheaper and easier to handle with more investment placed on training people with the use of new technology and tools.

4. Illegal Fishing – are we even interested?

In the pacific islands there is not a lot of opportunities for people to monitor activities in their economic zones.

The following were directed to the audience to trigger some discussions and allow the sharing of experiences and knowledge with illegal fishing.

a. *What are the costs involved to be able to detect illegal fishing activities?*
b. *What is the time frame for surveillance products to be made available?*
c. *What is the best product to use? UAVs, aircraft or satellite?*
d. *Can we trust the EEZ boundaries and are they accurate?*

- There are three different types of vessels i.e Recreation, Transport and Fishing vessels. It is possible to identify the vessel type through satellite images which can only cover hotspots. Satellite images is available for a short period and gets delivered within 6 to 8 hours of it being captured. There is a need to improve this process and to identify a solution for where image data can be delivered faster and timely.
- Palau engaged Aerosonde Ltd, a private UAV company to carry out surveillance around the country's EEZ, however the work did not cover 200 miles of the EEZ. Palau is therefore looking into launching the surveillance from boats and recovering it back on boats at sea so that it covers an extended range.
- If you know where the hotspots are, than you're more likely to catch illegal fishing boats.
- Tuvalu highlighted that it might be worthwhile to consider the possibility for the fisheries sector and other industries in the Pacific to invest in near real time observations to monitor the movement of maritime vessels.

5. Litea Biukoto – Risk Modelling & Impact Forecasting Tools

Two challenges highlighted i.e

i.   Information still resides on machines that are not shared or networked and there is no centralised database.
ii.   There's limited data and information sharing between agencies i.e national agencies and institutes/organisations that support activities in-country.

There is an opportunity to:

- Use partnerships to produce risk information and to build the capacity of counterparts.
- Improve data sharing with procedures and protocols in place. How can this be done and progressed?

Discussions

- From a supplier point of view, when an event takes place, the data is openly available. The datasets and the derived information is released in a sensible way and through a central department like the Lands Department.
- In terms of metadata, a lot of data is physically received from individuals and governments but the data is provided without any information. A solution that is used in the pacific region is the use of the PacGeo portal to store data and maps with appropriate metadata and information.
- A recent project in New South Wales, Australia, looked at locating government spatial data. It was identified that 11 government portals provided spatial data. All the portals were using open data principles while most of them were using open data standards and protocols. It was understood in the past that centralisation didn't work but the question is how can we get the portals to link and relate to each other?
- The willingness to share data is hindered by uncertainty of weather it is legal to share certain data. What kind of support is needed by countries to ensure that countries overcome this barrier because data is as good as it is being used?