IMPLEMENTING DELGAMUUK'W

Biography of Dennis Sheppard
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Dennis was born and raised in the east coast province of Newfoundland where he earned a Bachelor of Science degree from Memorial University in 1990. Immediately following his university degree, he attended the College of Geographic Sciences in Lawrencetown, Nova Scotia. While there, he completed an intensive 1-year program in information systems and remote sensing. In 1992 he moved to Lethbridge where he taught at Lethbridge Community College. During the same time, he also completed a Master of Science degree from the University of Lethbridge. He is currently serving as an academic assistant with the Department of Geography responsible for the operation of the GIS, Remote Sensing, and Geographic Data Analysis laboratories. In January of 1997, he founded Geotec Mapping Solutions Inc. as result of a TUS contract with the Kaska Dene.

It is good to be here again today. I am going to talk to you this morning a little bit about the T.U.S. project I've worked with Russell [Collier] and Doug [Elias] and Terry [Tobias] with the Adams Lake and Neskonlith. I've titled my talk "Land Use and Occupancy Mapping: Best Practices," for obvious reasons. I added a little colour today. Got a little more adventurous.

First I'd like to talk to you about an overview of the T.U.S. data capture methodology, or process. What I first get via bus or mail or courier is a stack of plastic overlays. The very first step is sorting those out by N.T.S. map sheets, so that I could start to begin the process of creating the databases, creating the map layouts, the structures. I then create... once the templates are created, I then copy those so that each individual overlay is digitized as an individual map. Those have to be registered to an N.T.S. map sheet for digitizing -- and I discussed the registration process just very briefly yesterday, the technique of identifying a point on the digitizer with the map attached to it and identifying the same point in your digital database. By doing that you're registering, or adjusting, coordinates on the board to the coordinates in the real world. Once all the map sheets are created and the databases have been added, you need to create topology, or create the interrelationships between data features, and generate output in the form of maps and reports. So here is an example -- I've used the digital camera, so it's a little bit fuzzy -- but an example of what some of the overlays look like. You'll notice on this one there is just a series of points and lines. There are [dear?] points and there are X points, which are just occupancy sites. Here is a small area right here identified as a burial site. You see the type of thing that I am receiving and why I mentioned yesterday that it would be very difficult to use the scanning technology because a lot of this is in, for starters, not a uniform colour; not all burial sites are in one colour or not all berry-picking sites are in a different colour. So it's important that you can't distinguish it in that way, that's why I go with the method of digitizing. Down here in the other corner, in the lower right corner, you'll see that there is a single polygon outlining this blue marker which has at least three labels coming off it. There is a specialty tree, a berry, and a food plant. And there is another reason for abandoning the scanning technique, because that would only be identified as one feature, and I need it on three different layers of information. You can see at on some points it gets quite busy. The guys I have digitizing for me sometimes complain that their eyes are getting sore.

The software that I use is called PAMAP and the reasons I use it, for starters, was because it's a lot more economical than some commercial copies. Some are between $5,000 and $6,000, which is still a lot of money if you're scraping for change, but compared to $32,000 it's a real bonus. The reason I wanted this one is it has all the functionality, but it's a lot more economical. Another thing that I liked about PAMAP was that it stores things on the basis of layers, or levels of information. So unlike some G.I.S. software packages which store an individual map as an individual file, PAMAP allows you to store sixty-four layers of information in the same map file. So what I have done is created the first nine levels, or point levels, and the next fifty-three levels are polygon levels. So all that information that you saw on the previous page, the page with all those points and lines, I decided it was better to separate that. So rather than trying to capture it all on the same layer, I decided to separate it so each of the individual types of information was sorted out onto layers. Again, PAMAP facilitated that quite nicely.

The process of T.U.S. digitizing.... As I mentioned the N.T.S. map sheet is taped to the digitizer, the plastic overlay is registered to it based on corner registration marks, and it's manually digitized by this little puck which has a crosshair in the centre and you push the "2" button an awful lot. You can actually hold down the "2" button and trace the polygon, but it results in a lot of extra data, far too many points, so that if you actually do a little hiccup, you end up with a loop, which is not good. Basically everywhere there is a [vertice?] or a change in the line direction, someone pushed a button "2" -- just to give you an idea. Once the line or the point has been digitized, a database tag is added, and when a database tag is added it brings up this "select attribute to edit" window, where you're given the ability to enter the attribute information. So for

example, the tag ID is automatic, you put in the N.T.S. map sheet number, the PIN -- which is the registration number for the individual being interviewed -- the feature -- in this case, "TT," which is a code for trout in our case; we went with a two character so that it would be uniform -- and a local ID -- which is a composite of the input attributes, so it's a link to an external database. In my mind it made sense because if I just saw the local ID I could tell you which map sheet it was on, which PIN or who did it, and what feature it was. So I went with that breakdown. Once they're complete, you end up with a table similar to the lower right here, which is browsing the database, and you could have endless number of records. I think were are into the thousands of records now.

It became clear quite early on that the process had to be automated even for digitizing. It's really not difficult work, but it can be very tedious. It has to be perfect. With PAMAP having sixty-four layers, every time you digitize a new layer you have to set an active level. Where do you want to store the data? What do you want it to look like? What color line do you want? What color point you want? What size? So what I did was I automated all of that, wrote a little mini-batch program for each of these buttons and so when the digitizer -- the person -- sees a "B" labelled on the overlay, they click the "B" button and they're ready to go and start tracing; they see a "GA," and so on. So it really automated it and cut the time way down. The points were grouped slightly, so the nine point levels... if you click on big game, or for example the one you could see here is fish, it shows you the options that come up under fish: there is salmon, trout, dollyvarden, kikinik, I think it is. So depending on which button you push, it sets all the correct options.

Unfortunately, I just walked in a little bit late this morning and I heard there was some mention of scale this morning, but I am going to touch on it again and discuss the importance of scale when you're creating your T.U.S. database. As I mentioned yesterday, you have to think ahead to your long term goals. If you want to be really just an archival process or just a presentation process, then the much smaller scale, or 1:250,000, is probably sufficient. However, if you want to start getting involved in integrated resource management, ideally you want to go into something like 1:20,000, which would coincide with the provincial government. And to give you some idea for those who aren't that comfortable with scale, on 1:250,000 there is sixteen 1:50,000 map sheets that fall in that and one hundred 1:20,000 map sheets. So if you get a chance to look at some of our overlays that we brought with us, they were digitized at 1:50,000 but we've joined them together and merged them so that they are plotted at 1:250,000. So we only have sixteen map sheets per piece of plastic right now. If you're dealing with 1:20,000, it's a factor of six and a quarter, because sixteen versus a hundred is a factor of six and a quarter times the amount of pieces of plastic you have to deal with, times the number of map sheets you have to buy. So the cost of many things goes up by about six and a quarter, and that could be significant. In our case we've gathered now 692 overlays, so multiply that by six and a quarter. It makes a significant difference. Again, the functionality: presentation versus operational. The smaller scale, being 1:250,000, it's more presentation than archival purposes versus the 1:20,000, which is really good for operational planning.

This graph is not based on any number or any collection of numbers, so it's really just representative. And I've tried to give you an impression, a visual impression, of small scale, 1:250,000, so small objects are small; large scale, 1:20,000, objects are large: presentation purposes, operational planning purposes. Unfortunately there is a fairly steep curve with dollars, so the larger the scale, the more dollars it is going to cost just in terms of the basic things of administering, buying plastic, buying map sheets, digitizing. But you go for the larger scale and you can do different things with it, more detailed work with it. You have to work it out amongst yourselves and decide what you as a group want to do.

Just an example of what we have done with it to date. There was a wood lot survey, or proposed wood lot, near the Seymour Arm and we input the line -- the boundary of the wood lot -- and then wanted to see if any traditional activities fell within or even near by it so, if necessary, there could be some influence on how it was managed or whatnot. Fortunately there was nothing inside of it. This is a zoom, sort of, on the top half of that map, with this little line being the top half of the proposed wood lot. I choose an example here which showed up quite well, a pit house where polygonal areas were identified and in some cases were identified by more than one individual. So it highlights area of intense use; so the darker more reported, more often. Another thing which showed up nearby, but again fortunately not within, were some fishing activities. And there were a couple of others but they weren't quite as dramatic as those. There were a few rock paintings, but they were quite far south, so not really at risk.

I wanted to talk again -- I had mentioned it yesterday, but can't emphasize enough how important it is do data storage and backup. There is a wide range of media available. Again, I've used the exact same picture. It's a high density, 5 gigabyte backup tape, a 640 meg -- actually when you format it, about a 500 meg -- re-writeable CD-ROM -- re-writeable in that you could actually erase and write it again, so it's not a write once -- and zip disk for smaller projects up to 100 megabytes. There's a wide range media available and this is just a small slice. I'd recommend, T.U.S. or not -- any project -- you do regular backups and keep on- and off-site backups. I do that myself. If, for example, something happens and my office

burns down, I have my data still; it's at another site. So it is very important to have two copies because you could find yourself quite out of luck if you've lost your original, and only, copy; basically, back to square one.

The T.U.S. site inventory database which was required by the government -- and I think originally required to be done by hand -- representing almost 7,100 pages of sheets that would have to be filled in by hand. We were able to replicate that using ACCESS again. Unfortunately, ACCESS is not loaded on this so I can't show the flashy database layout. But I created a template, or report form, which I thought looked pretty darn close to the T.U.S. site inventory form produced by the government. So you could fill it in, or report what you want, or not report what you want, what you need to, and what you won't need to. Actually looking at the last presenter this morning, I was quite interested and I think that it could be improved again to include some of the more detailed stuff that's not necessarily reported if it's not needed. But it's a good resource. It's possible to generate these reports, not necessarily manually -- because as I said before there are close to 7,100 records and that would just take forever, and it would be a useless task, really, because you could do it so much easier if the data is already entered, complete with coordinates. That just doesn't make sense. Once the data has been entered and in your database, you could to start to do summary tables. You could say, "okay there were something like twenty-five black bear points identified and thirty battle polygons," and so on. I have just clipped the top page of it. The top of the table I have is a complete listing of all the features. Once you get it automated and into the computer, it's quite easy to start generating reports and queries and it's quite useful. The hardest part is getting it in there, but once it's in there you have a powerful tool.

I want to put up the same information as I identified yesterday, why I say "and remember." Information planning and cooperation I think are paramount to the success. Based on some of the information-sharing discussions I heard, cooperation might be limited; you might want to pick and choose who you cooperate with. But certainly information planning and cooperation with the right people is the key to succeeding. You need to make informed decisions. If you can benefit from someone else's experience, whether they're good or bad, you may as well take advantage of it. Do yourself, or have done for you, a user-needs analysis, because it -- I am mostly referring to if you're going to get into implementing a G.I.S. of some sort -- because if you're not informed, it's like going to buy a car if you've never driven a car. Or, a better example, going to Future Shop to buy a computer if you've never used a computer. If you don't have informed decisions, you may not get exactly what you want and you won't find that out until after your cheque is cashed, unfortunately.

The final point that I would like to leave you with is that information and research equals power, and I think you should remember that. It is a powerful tool that you could use, either to share with others or to use in terms of, like, litigation cases, where you have the information, you could back up your claims fairly quickly. You could get a quick turn around. It's a powerful tool that you should get your hands on and use to you advantage. That's all I have to say for today.