DIGITAL MAPPING TECHNIQUES 2019

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The contents of this document are provisional

See Presentations and Proceedings from the DMT Meetings (1997-2019)

http://ngmdb.usgs.gov/info/dmt/
A new field data acquisition tool

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Geologist’s field work for the Geological Survey of Canada often occurs in isolated environments, with no internet access, and with field parties up to 30 geologists in the same camp. Hence, there is a need to collect data efficiently, backup at the end of each day, and manage a large number of photos.

We decided to develop a new tool for collecting data, to replace our old data collection system because Esri’s ArcPad would not be supported in the future. In addition, our team had another look at new hardware and software technologies that have improved over time. This presentation is an overview of our development.
A new field data acquisition tool

An overview

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Geological Survey of Canada
Context

Geologist’s field work for the Geological Survey of Canada often work in isolated environments, with no internet access, and with field parties up to 30 geologists in the same camp. Hence, there is a need to collect data efficiently, backup at the end of each day, and manage a large amounts of photos.

We decide to develop a new tools for collecting data to replace our old data collection system as ArcPad from Esri was nearing it’s end. In addition, our team had another look at new hardware and software technologies that have improved over time. This presentation is an overview of our development.
Presentation

• How did it come to this? ;-)
• Constrain and choice
• Hardware
• Three components
• Conclusion
Why

• Ending of ArcPad
  – Development of GanFeld and Shapefile was close to the end

• No internet connection in the field
  – Esri Collector need to have internet connection when we start development

• New hardware
  – Tablet are more efficient than ever but...
Constrain and Choice

**CONSTRAIN**
- Must be not to different than our previous acquisition tool
- Must have a GIS part
- Must be fast
- Must control scientific language
- Must work offline

**CHOICE**
- Choose Windows 10 instead of Android because we thought it’s easier to develop and have less maintenance with OS update
- No cost
- Manage multi project
- Manage multi device
Hardware choice

Panasonic Toughpad FZ-M1 and FZ-G1

- i5 core, 128 gig, swappable batteries (large battery is good for 8 hours, small battery, 3 hours of work)
- Ruggedized
- Gps included
- Camera included but and maybe...
Behind the software

• Database: Sqlite
• Language: C#
• ArcGIS Runtime SDK for .NET
• Super programmer
Software

• Easy to install but must be in Dev environment

• Managing multi-project inside of it

Also a series of tools to manage data
Software: 3 components

1. **GIS** to have the possibilities to see background data

2. **Data collection** with picklist to maintain integrity of the data

3. **Management**
Software: GIS

• TPK format
  – Very efficient
  – Support scale dependencies
  – Esri properties only
• Minimum capabilities
• Layers transparency
Software: Collecting Data

• Flow base
Software: Collecting Data

• Flow base
• Or specific feature (Quick)
  – Sample
  – Photo
  – Measure
  – Waypoint
Software: Flow base

For Photo

• One or more

• If you want to describe you must add 1 by 1 or later
Software: Quick info

Warning to indicates incompleteness
Software: general management

- Switch between Map and Field Notes
- Backup Data
- Select Field Books
- Setting
Software: Setting

• Visibility
Software: Setting

- Visibility
- Picklist
Software: Setting

- Visibility
- Picklist
Software: Setting

- Visibility
- Picklist
- Other
Software: Setting

- Visibility
- Picklist
- Other
- About
Software: project

- Full backup
- Restore / Add
- Upgrade
Tools to manage data outside
Tools to manage data outside

- 9. Make a sample reports for each geologist to check if there is some mistake
- 10. Google Earth kml to look at the data without ArcGis or our software
- 11. Geotag to include xy coordinates to the photo and some metadata (geologist, description of the photo)
- 12. Prepare Excel sample template to upload data in our corporate system
Data Model
Conclusion: Positive

• Managing dictionaries is a main enhancement
  – (adding new terms, control order of the pick list, shown not shown, default value)
• TPK is very efficient but specific to Esri
• More control on validation (structure measurement)
• Use real view due to Sqlite instead of Shapefile
• Multi project
• Windows 10 on different hardware
Conclusion: Negative

• Windows 10 is under development
  – Newer version give us problems
    • Windows version vs esri extension
    • Windows version vs Panasonic tools (pen)
• Esri extension is under development
  – We have to adjust code to newer version
• Sqlite was suppose to be editable in ArcGis but still not. Editable in QGIS, and you can directly edit in our app.
More for field...

- Managing photos
- UAV and cliff
- Power in the field
More

• New unified data model
• Tools for compilation in ArcMap