Versioning and tracking changes of vector data

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Data

- Where?
  - GIS data
- When?
  - Now?
- Who?
  - ???
Meta-data

Data about data

- Is boring!
- Difficult to:
  - Capture
  - Manage
  - Discover
Changing data

Harold Fisk, 1944. Map of courses of the Mississippi River (1765-1932) - via BLDGBLOG
Problems to solve

Problem...what problem?!

- Changelog
  - Geometry
  - Database
- Audit trails
  - Source of changes
- Managing data
  - Avoid duplication
- Collaborative work
- Data conflict resolution
Geodiff

https://github.com/lutraconsulting/geodiff

1. Start with a base vector
2. Modify data (geometry + database)
3. Changes:

geodiffinfo createChangeset
tvector2 vvector1 changeset.json
Detecting changes

Polygon 1

| Name | poly1 |

Polygon 2

<table>
<thead>
<tr>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>poly1b</td>
</tr>
<tr>
<td>poly2</td>
</tr>
</tbody>
</table>
Detecting Changes

```json
"table": "vector1",
"type": "update",
"changes": [
  {
    "column": 0,
    "old": "1",
    "new": null
  },
  {
    "column": 1,
    "old": "MultiPolygon (((547334.3077 166264.2467, 544773.8624 169867.1050, 547618.8817 174276.7618, 559069.6821 175823.5583, 562039.2266 168729.1302, 560421.0283 165244.0797, 554766.7115 162585.8256, 54763.1843 160478.0864, 544569.492 162754.7578, 547334.3077 166264.2467)),

    "new": "MultiPolygon (((544882.5701 166301.1835, 544773.8624 169867.1059, 547618.8817 174276.7618, 559069.6821 175823.5583, 562039.2266 168729.1302, 560421.0283 165244.0797, 554766.7115 162585.8256, 54763.1843 160478.0864, 544569.492 162754.7578, 544882.5701 166301.1835)))"
  },
  {
    "column": 2,
    "old": "poly1",
    "new": "poly1B"
  }

"table": "vector1",
"type": "insert",
"changes": [
  {
    "column": 0,
    "old": null,
    "new": "2"
  },
  {
    "column": 1,
    "old": null,
    "new": "MultiPolygon (((542262.4611 179180.7554, 540684.0022 178707.2417, 540179.0011 176339.6733, 542073.0557 175392.646, 544377.4899 176213.403, 545324.5162 178170.5929, 544787.8674 179527.9987, 542262.4611 179180.7554)))"
  },
  {
    "column": 2,
    "old": null,
    "new": "poly2"
  }
]```
Geodiff: client and server side
Mergin

https://public.cloudmergin.com/
https://github.com/lutraconsulting/mergin-py-client

- Handle changes (server-side)
- Storage
- Authentication/authorization
- User-friendly interface
- Data sharing
### Project History

<table>
<thead>
<tr>
<th>Version</th>
<th>Created</th>
<th>Author</th>
<th>Files changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>v4</td>
<td>Tue, 08 Oct 2019 06:54:46 GMT</td>
<td>mrtinv</td>
<td>0 0 1 0</td>
</tr>
<tr>
<td>v3</td>
<td>Mon, 07 Oct 2019 13:09:32 GMT</td>
<td>mrtinv</td>
<td>0 0 1 0</td>
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<td>saber</td>
<td>0 0 1 0</td>
</tr>
</tbody>
</table>

**Author:** saber

**Created:** Tue, 08 Oct 2019 17:00:42 GMT

**Files changes:**

- Modified (1)

**survey.gpkg:** 136.00 kB
Example use case
Mergin in action

For data collection from surveyors

Sources of changes:

- Desktop application (QGIS)
- Mobile
  (https://inputapp.io)
Using Mergin - data collection
Mergin client: QGIS
Data from QGIS desktop
Mergin client in Input app
Added values

Using Mergin for field work

- Offline editing
- Versioning of non-geospatial data
- Easy synchronisation of data
Remaining features

- Visual presentation of changelogs
- Support for more formats