New QGIS functions for power users

Dr. Marco Hugentobler, Sourcepole
Twitter: @sourcepole
Content

▸ Version history
▸ Live Layer effects
▸ New geometry classes
▸ Geometry checker
Version history

- QGIS 2.8 LTS  20.02.2015
- QGIS 2.10    26.06.2015
- QGIS 2.12    23.10.2015

Visual changelogs:
Live layer effects (2.10)

- Image modifications based on symbol or symbol layer
- 'Photoshop' for QGIS
- Chainable sequence of:
  - Source
  - Transform
  - Blur
  - Drop shadow / inner shadow
  - Inner glow / outer glow
  - Colorize
- Combination with transparency and blend modes
Live layer effects (2.10)
Live layer effects (2.10)
New Geometry Core - Motivation

- QgsGeometry works fine, but difficult to extend
- Limited to points and linear geometries
- Curved geometries can only be displayed using ST_CurveToLine
- Problem: curve is lost when editing
New Geometry Core - Goals

- Support for SQL/MM curved geometries
  - CircularString
  - CompoundCurve
  - CurvePolygon
  - MultiCurve
  - MultiSurface

- Z and M values

- Should be extensible with new types (e.g. Bézier-Splines)

- Compatibility with current QgsGeometry interface
New Geometry Core - Support

Support depends on provider and data source

Data Sources
- PostgreSQL
- Formats
- Oracle
- ...

Providers
- QgsPostgresProvider
- QgsOgrProvider
- QgsOracleProvider
- ...

Core
New Geometry Core – State QGIS 2.10

- New geometry kernel (XYZM/Curves)
- QGSGeometry compatibility class
- Segmentation for geometry processing (intersection, buffering, etc.)
- Support in PostGIS provider
- Python bindings
State QGIS 2.12

- Visualization, measurement of length / area directly on curve (if planar measurement)

- Construction tools:
  - Arc with start point / curve point / endPoint
  - Arc with start point / end point / radius

- Support in marker line renderer

- Node editor as part of node tool
New Geometry Core - Architecture

- Retains QgsGeometry interface
- Easily extensible with new geometry types
- Abstract geometry engine

QgsGeometry

QgsAbstractGeometry

QgsPolygon
QgsCurvePolygon
QgsSurface

QgsLineString
QgsCircularString
QgsCompoundCurve

QgsMultiPoint
QgsMultiCurve
QgsMultiSurface

QgsPoint

QgsGeometryCollection

QgsGeometryEngine

QgsGeos

New QGIS functions for power users
New Geometry Core - Conclusions

✔ Support for curves, Z and M values
✔ Easily extensible
✔ Compatibility with legacy interface
   ‣ Existing plugins will keep working
✔ Opens up the possibility for 3D functionality

⚠ Geometry engine (GEOS) limitations:
   ‣ Segmentation for analysis operations
   ‣ Missing M values support (patch available)
Geometry Checker - Errors

Self intersections
Duplicate nodes
Holes
Segment length
Minimum angle
Minimum area
Sliver polygons
Duplicates
Feature within feature
Overlaps
Gaps

FOSS4G 2015
New QGIS functions for power users
Geometry Checker - Setup

- Select checks to perform
Geometry Checker – Errors overview
Geometry Checker – Fix error

Select how to fix error "Minimal area":
- Merge with neighboring polygon with longest shared edge
- Merge with neighboring polygon with largest area
- Merge with neighboring polygon with identical attribute value, if any, or leave as is
- Delete feature
- No action

Show selected features in attribute table
Fix selected errors using default resolution
Fix selected errors, prompt for resolution method
Error resolution settings
Attribute to use when merging features by attribute value: [id]
Geometry Checker – Error tracking
Geometry Checker – Fix multiple errors
Thank you!

Marco Hugentobler
marco@sourcepole.ch