New QGIS functions for power users

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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:**
  - https://www.qgis.org/en/site/forusers/visual changelog28/index.html
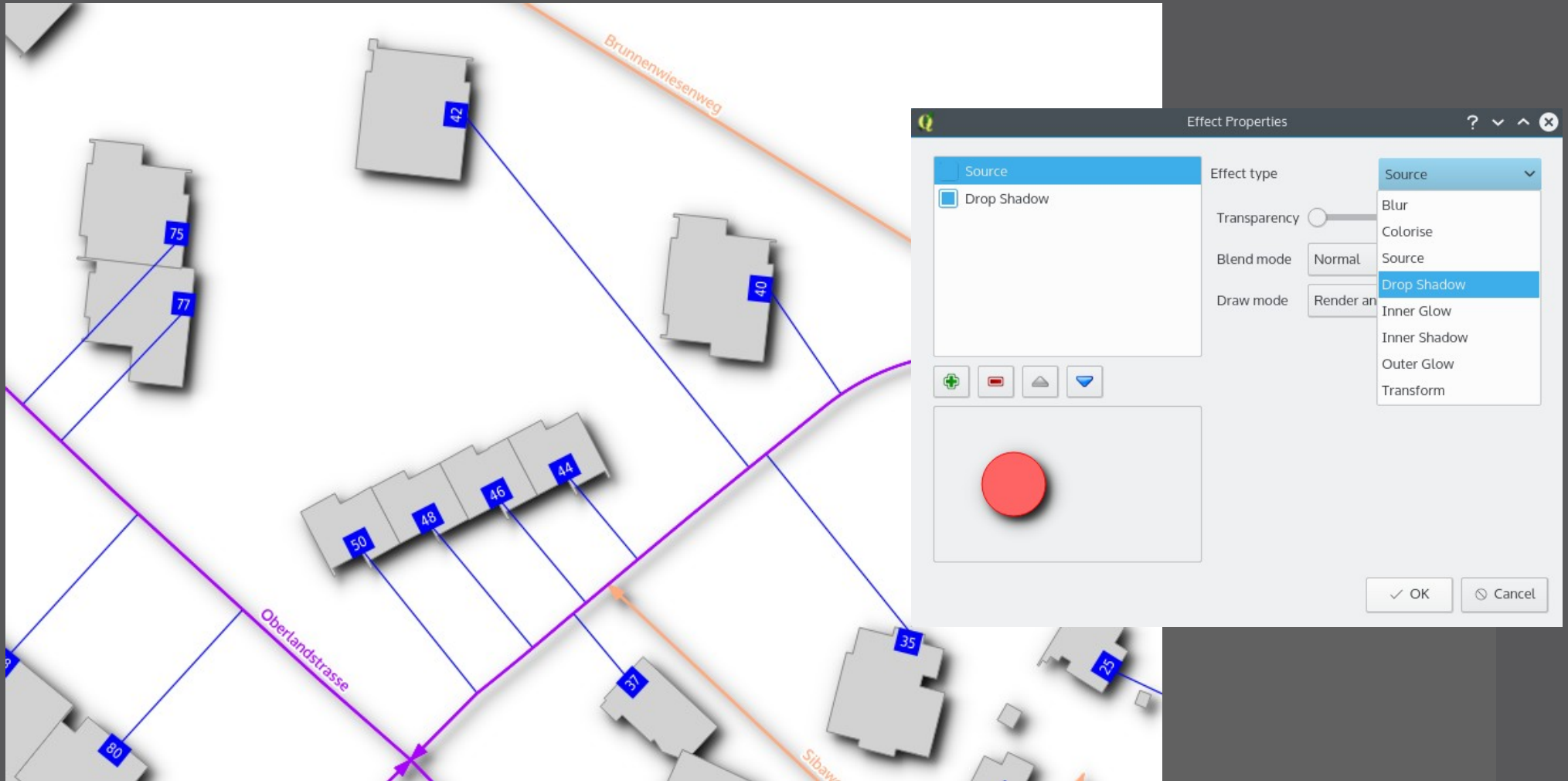 - https://www.qgis.org/en/site/forusers/visual changelog210/index.html

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

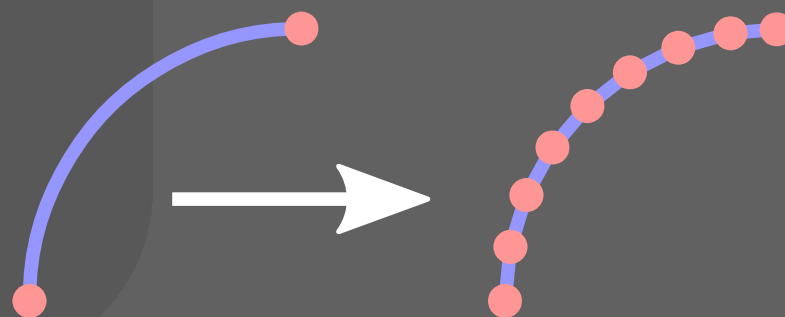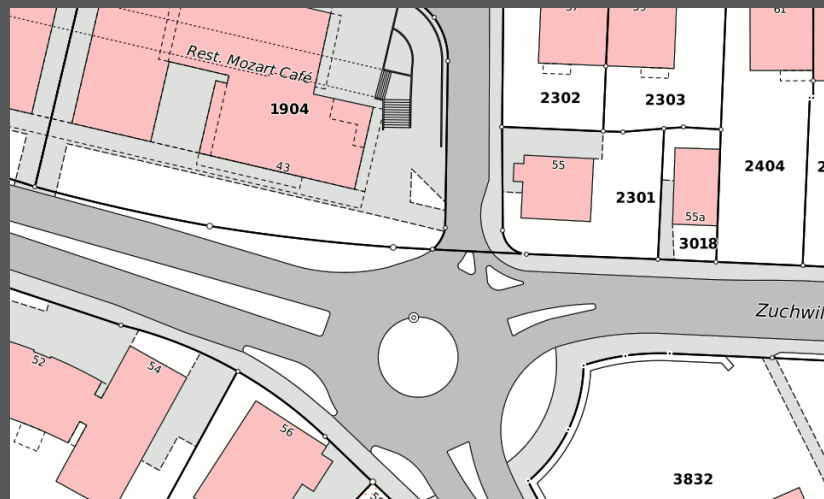- **Combination with transparency and blend modes**

Live layer effects (2.10)
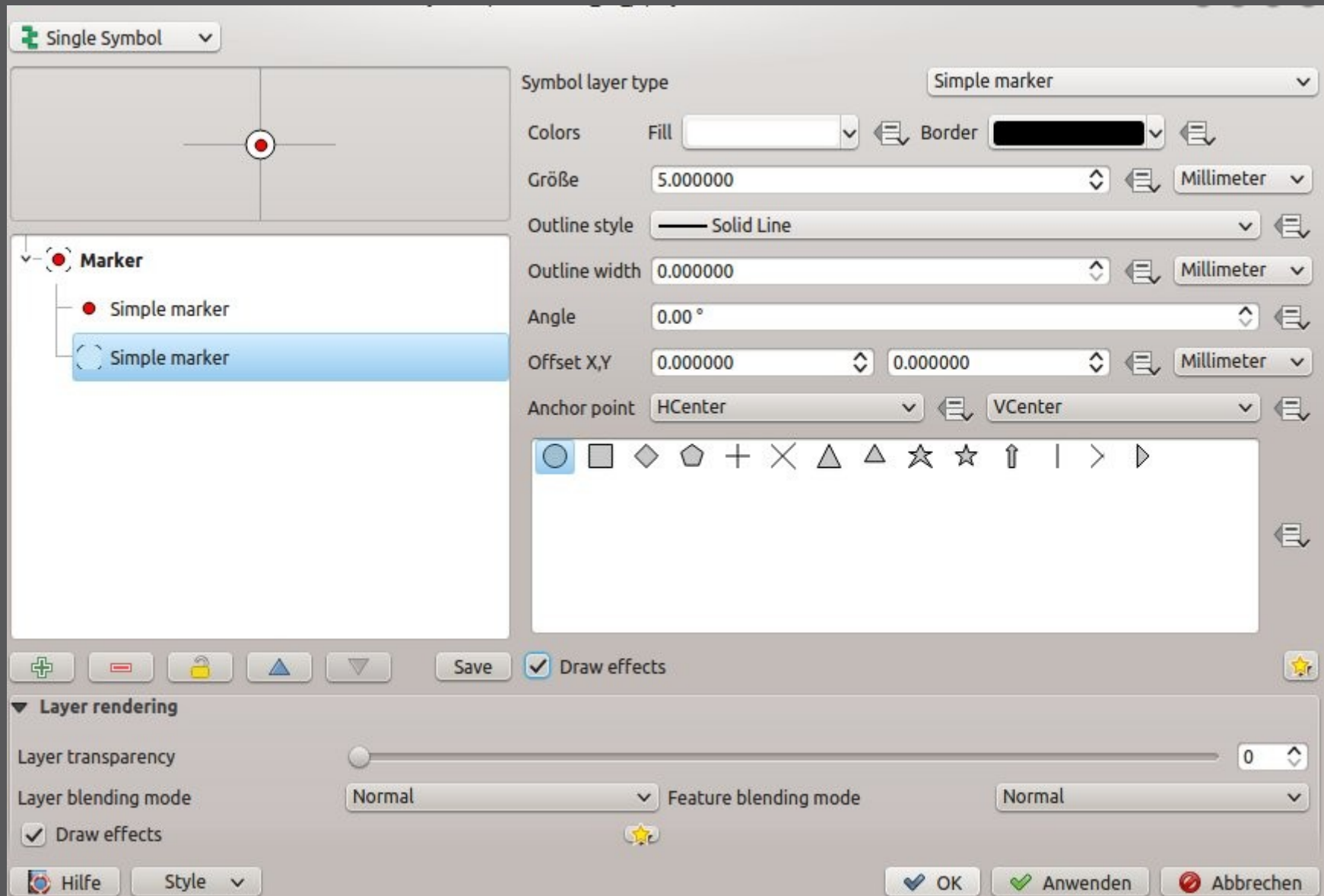
Live layer effects (2.10)

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

Data Sources

Providers

PostgreSQL	⟷	OgsPostgresProvider	⟷	Core
Formats ⟷ GDAL	⟷	OgsOgrProvider	⟷	
ORACLE	⟷	OgsOracleProvider	⟷	
…	⟷	…	⟷	
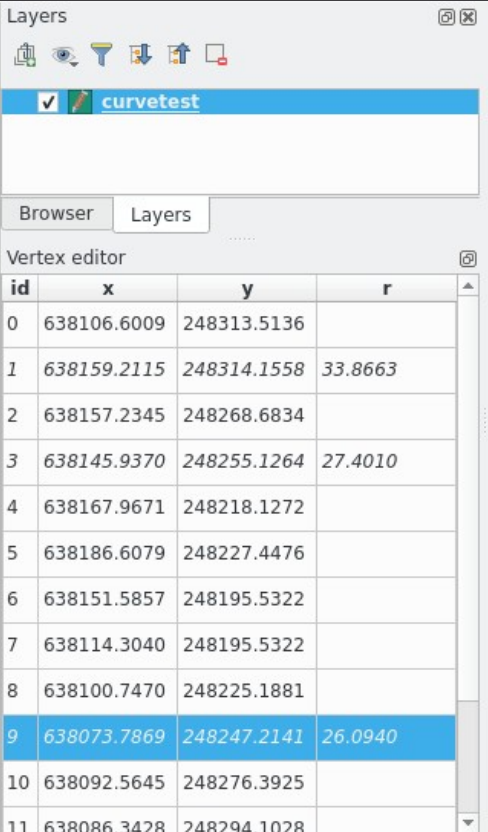
❯ **Support depends on provider and data source**

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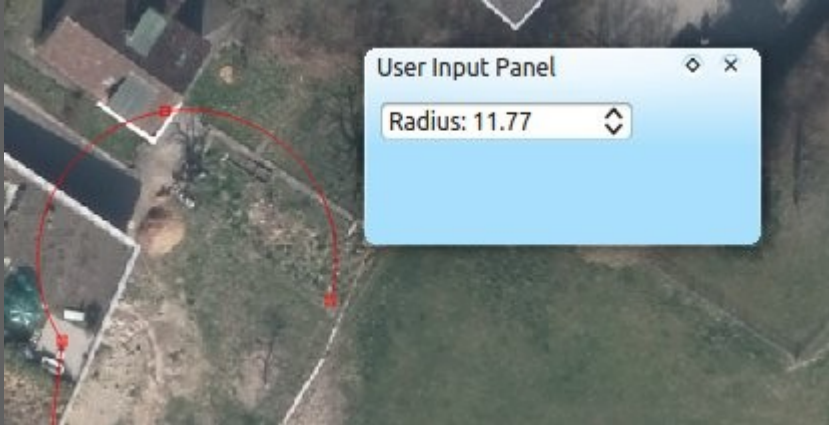
- **Visualization, measurement of length / area directly on curve (if planar measurment)**

- **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**

Layers

☑ 🖉 curvetest

Browser | Layers

Vertex editor

id	x	y	r
0	638106.6009	248313.5136	
1	638159.2115	248314.1558	33.8663
2	638157.2345	248268.6834	
3	638145.9370	248255.1264	27.4010
4	638167.9671	248218.1272	
5	638186.6079	248227.4476	
6	638151.5857	248195.5322	
7	638114.3040	248195.5322	
8	638100.7470	248225.1881	
9	638073.7869	248247.2141	26.0940
10	638092.5645	248276.3925	
11	638086.3428	248294.1028	

User Input Panel

Radius: 11.77

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New Geometry Core - Architecture

QgsGeometryEngine

QgsGeometry

QgsGeos

QgsAbstractGeometry

QgsSurface

QgsCurve

QgsPoint

QgsGeometryCollection

QgsCurvePolygon

QgsLineString

QgsMultiPoint

QgsPolygon

QgsCircularString

QgsMultiCurve

QgsCompoundCurve

QgsMultiSurface
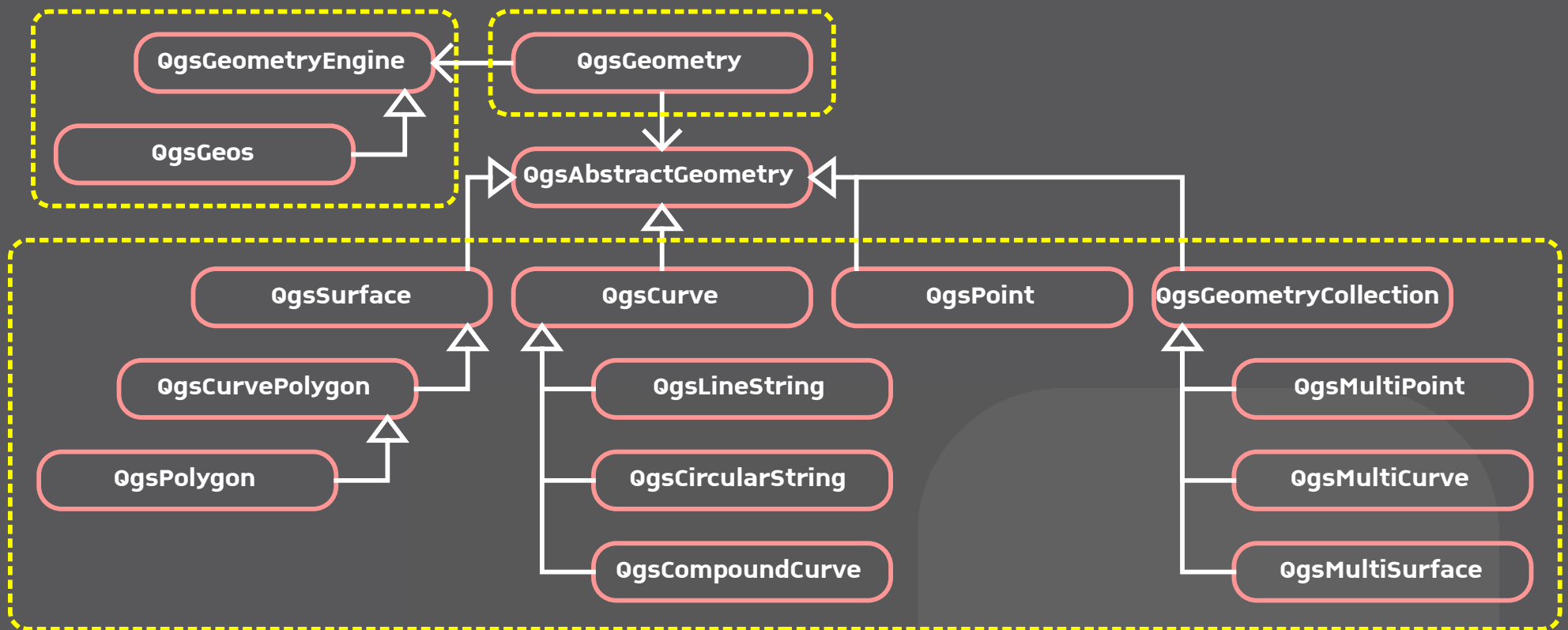
❯ **Retains QgsGeometry interface**

❯ **Easily extensible with new geometry types**

❯ **Abstract geometry engine**

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
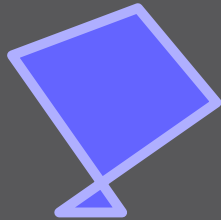
Duplicate nodes
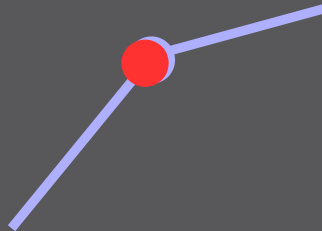
Holes

Segment length
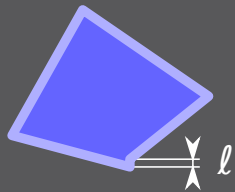
Minimum angle
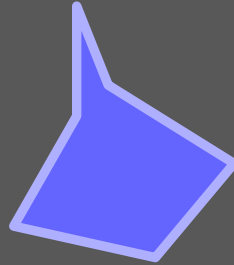
Minimum area

Sliver polygons
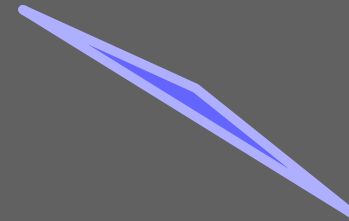
Duplicates
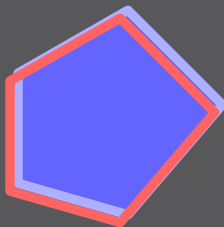
Feature within feature

Overlaps

Gaps

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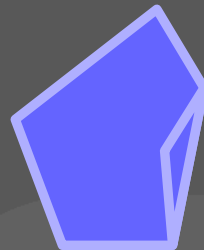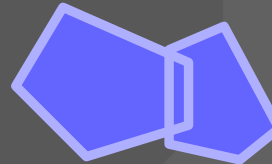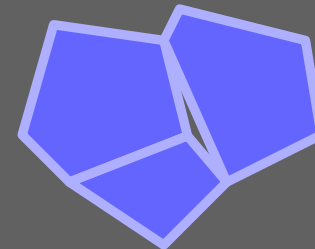
Geometry Checker - Setup

> **Select checks to perform**

Geometry Checker – Errors overview

Geometry Checker – Fix error

Geometry Checker – Error tracking

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Geometry Checker – Fix multiple errors

Thank you!

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