

# 3º Encontro de Utilizadores QGIS Portugal

## 17-18 de Junho, 2016 - Porto

**(Selection of) New features in  
QGIS 2.12 - 2.16**



# NaturalGIS

- Active members of the QGIS development team and community
- Contributors of the QGIS Processing toolbox
- Main QGIS testers
- Experienced QGIS trainers
- Services based on FOSS4G

<http://naturalgis.pt/>

# Credits

- **This presentation:** Andreas Neumann (GIS-Fachstelle, Kanton Zug, Switzerland)
- **To all who paid for new features / bug fixing:** QGIS-CH, QGIS-UK, SIGE, Uster, Morges, Vevey, Kt. Solothurn, Kt. Glarus, Kt. Zug, Kt. Basel Stadt, Land Vorarlberg, MEEM, DFAT/Inasafe, Alta ehf, GIS3W, Province Tuscany, Boundless, iTOpen, Sourcepole, Camptocamp, OpenGIS.ch, Norbit, Lutra Consulting, and many (many) more...
- **To all who developed the new functionalities:** Nyall Dawson, Martin Dobias, Jürgen Fischer, Marco Hugentobler, Matthias Kuhn, Sandro Mani, Hugo Mercier, Even Rouault, Denis Rouzaud, Nathan Woodrow, Luigi Pirelli, Victor Olaya, Alexander Bruy, and many (many) more...

# (Visual) Changelogs

<http://www.qgis.org/en/site/forusers/visualchangelogs.html>

<http://changelog.qgis.org/en/qgis/version/2.10.0/>

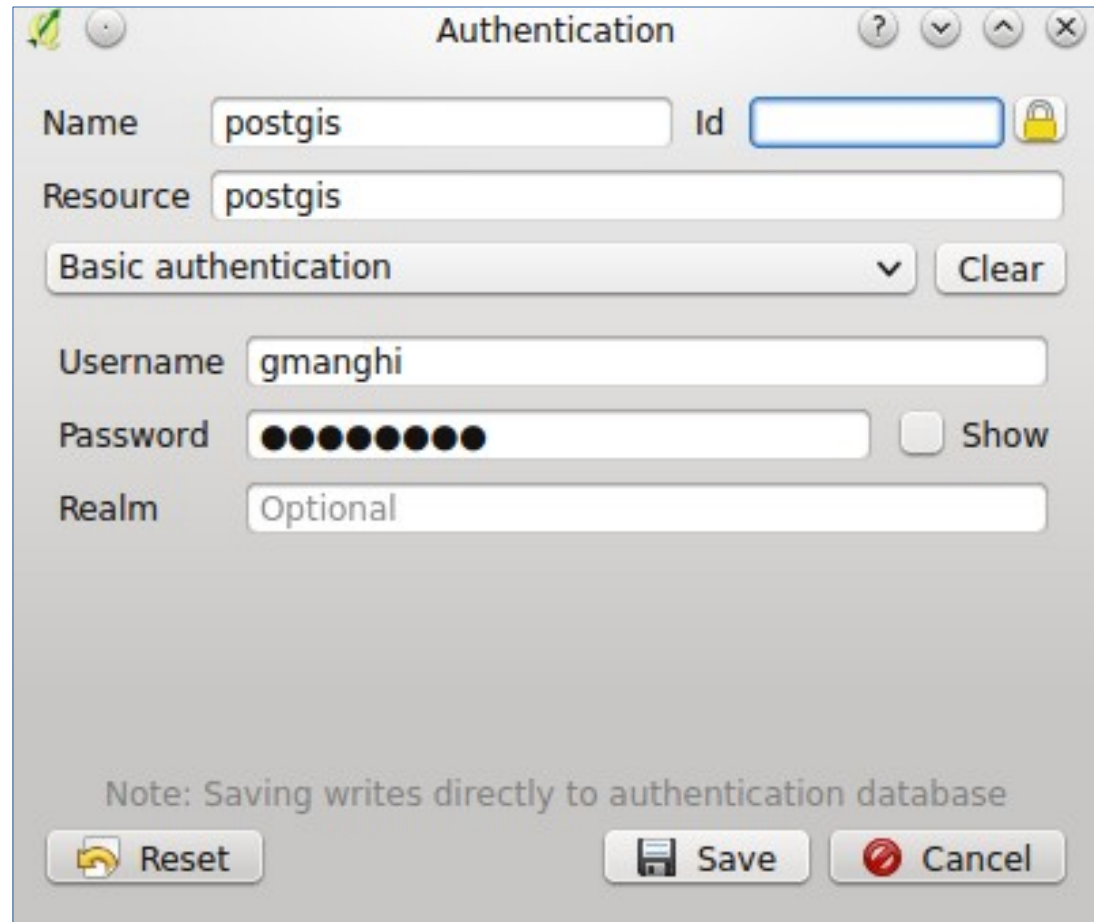
<http://changelog.qgis.org/en/qgis/version/2.12.0/>

<http://changelog.qgis.org/en/qgis/version/2.14.0/>

<http://changelog.qgis.org/en/qgis/version/2.16.0/>

# Security - Encrypted passwords

- Integrated password manager with master password
- Encrypted passwords stored in SQLite DB
- Authentication with keys
- Available for different providers:
  - PostGIS
  - WMS
  - WFS



The screenshot shows the 'Authentication' dialog box in QGIS. It has a title bar with a question mark, a dropdown arrow, an up arrow, and a close button. The dialog contains the following fields and controls:

- Name:** A text box containing 'postgis'.
- Id:** An empty text box with a lock icon to its right.
- Resource:** A text box containing 'postgis'.
- Authentication Method:** A dropdown menu showing 'Basic authentication' with a downward arrow.
- Clear:** A button next to the authentication method dropdown.
- Username:** A text box containing 'gmanghi'.
- Password:** A text box filled with black dots, with a 'Show' checkbox to its right.
- Realm:** A text box containing 'Optional'.

At the bottom, there is a note: 'Note: Saving writes directly to authentication database'. Below the note are three buttons: 'Reset' (with a circular arrow icon), 'Save' (with a floppy disk icon), and 'Cancel' (with a red circle and slash icon).



# Security - Encrypted passwords



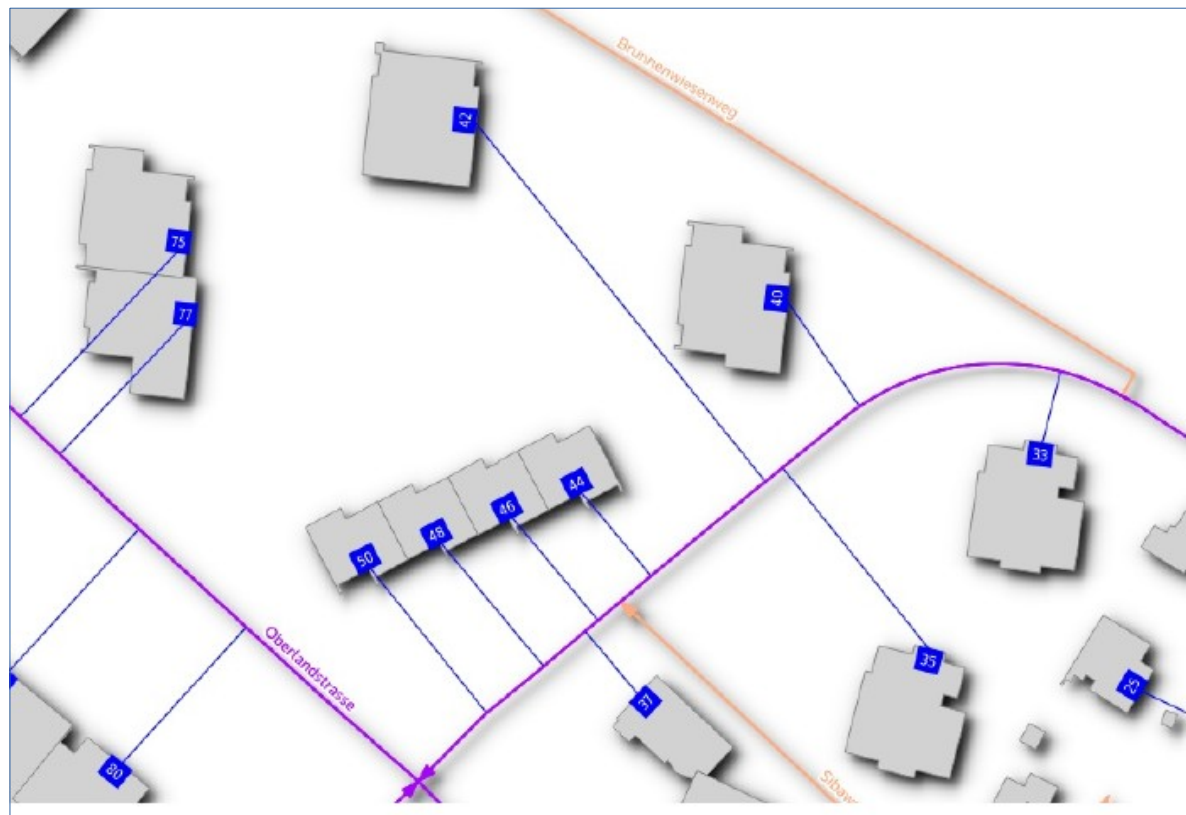
# New geometry model

- Circular Arcs, 3D, M-Values
- possibility to display features with curved type
- editing of curved geometry types, z/m-values
- curve support in WKT and GML
- Curve support in Geopackage (through OGR)



# Live Layer Effects

- Applies to all vector geometries of a layer
- Chainable combination of
  - Source, Transform, Blur, Drop Shadow / Inner Shadow, Inner glow, Outer glow, Colorize
- Combine with transparency and blend modes 2.10





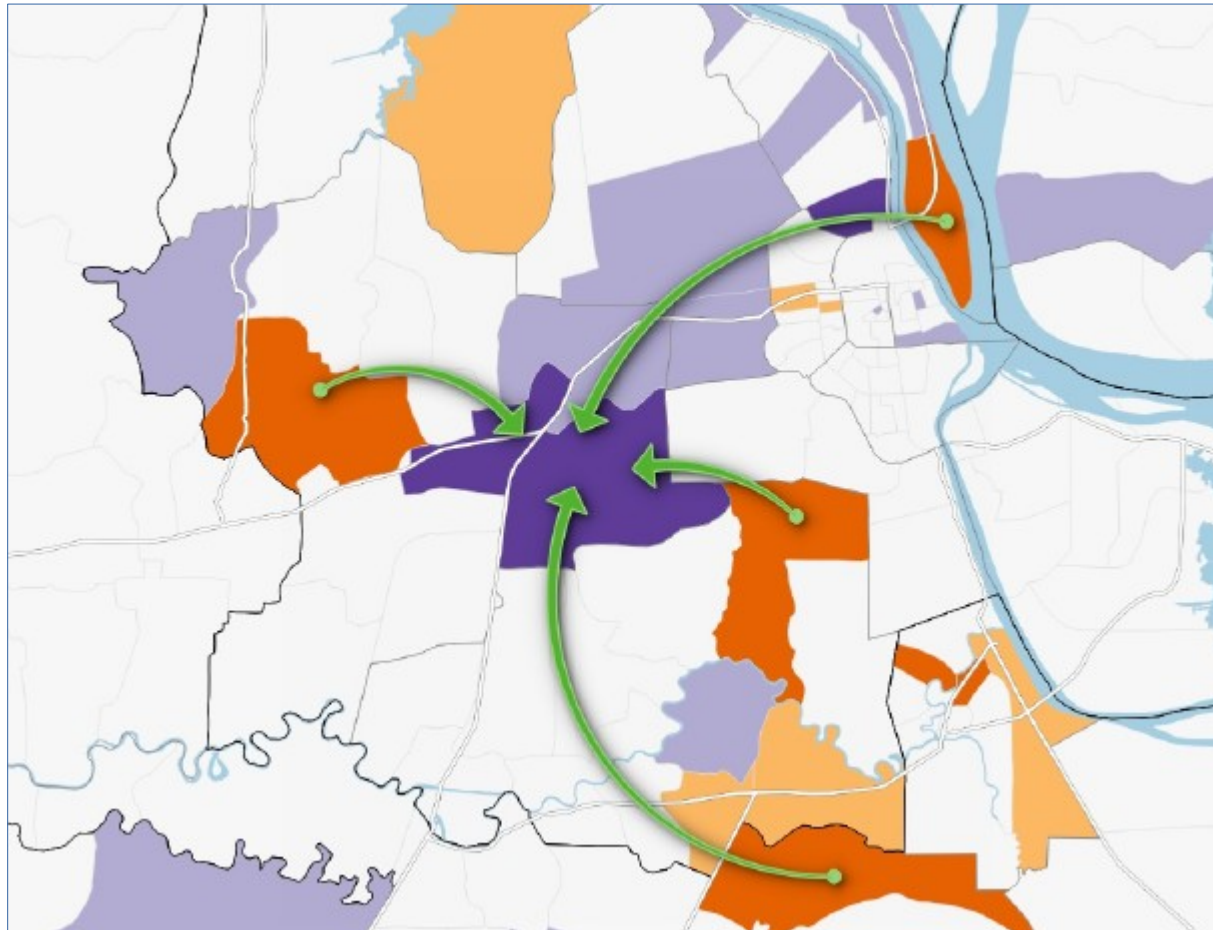
# 2.5D Rendering



# 2.5D Rendering

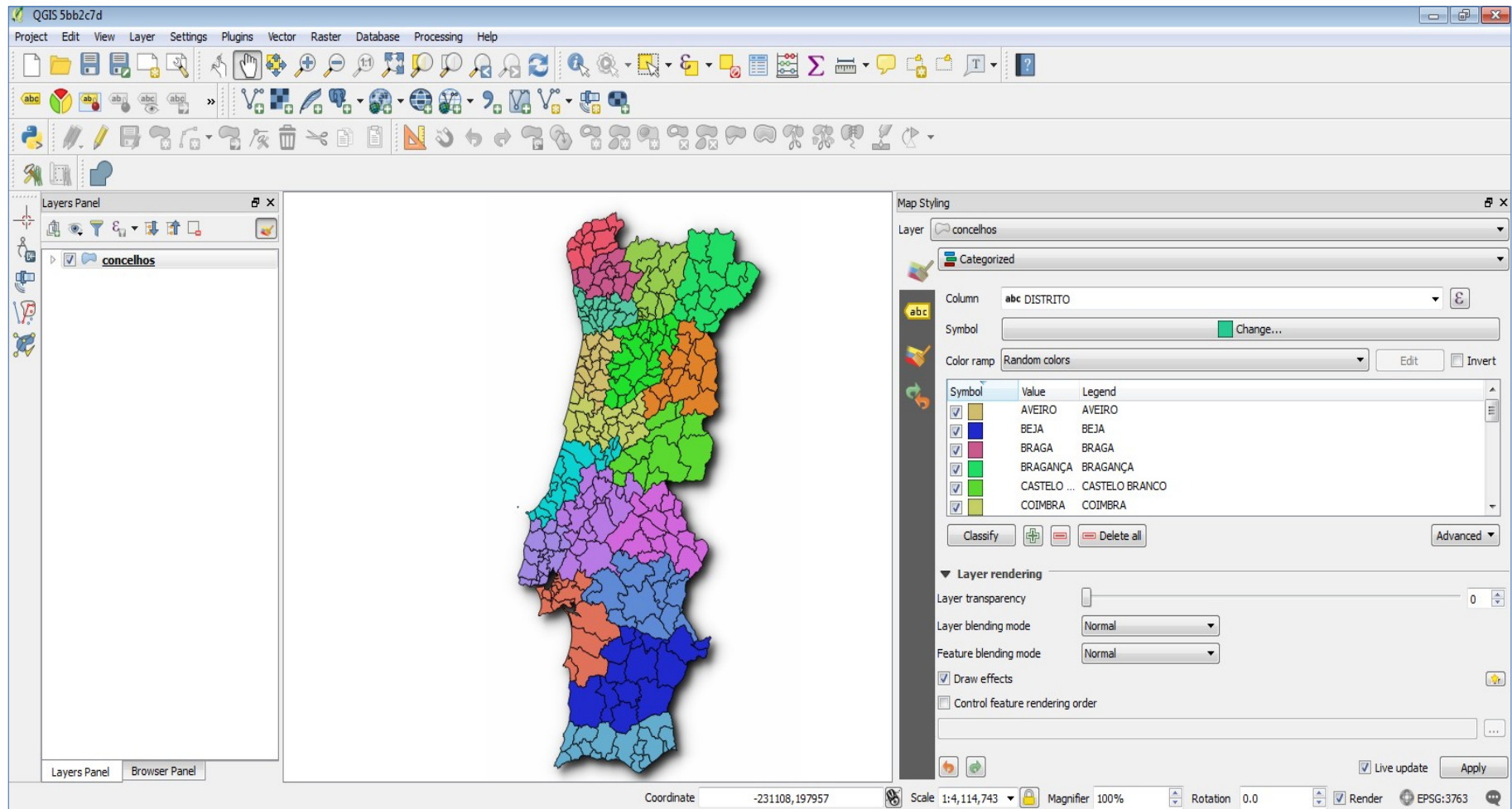


# Curved Arrow Renderer

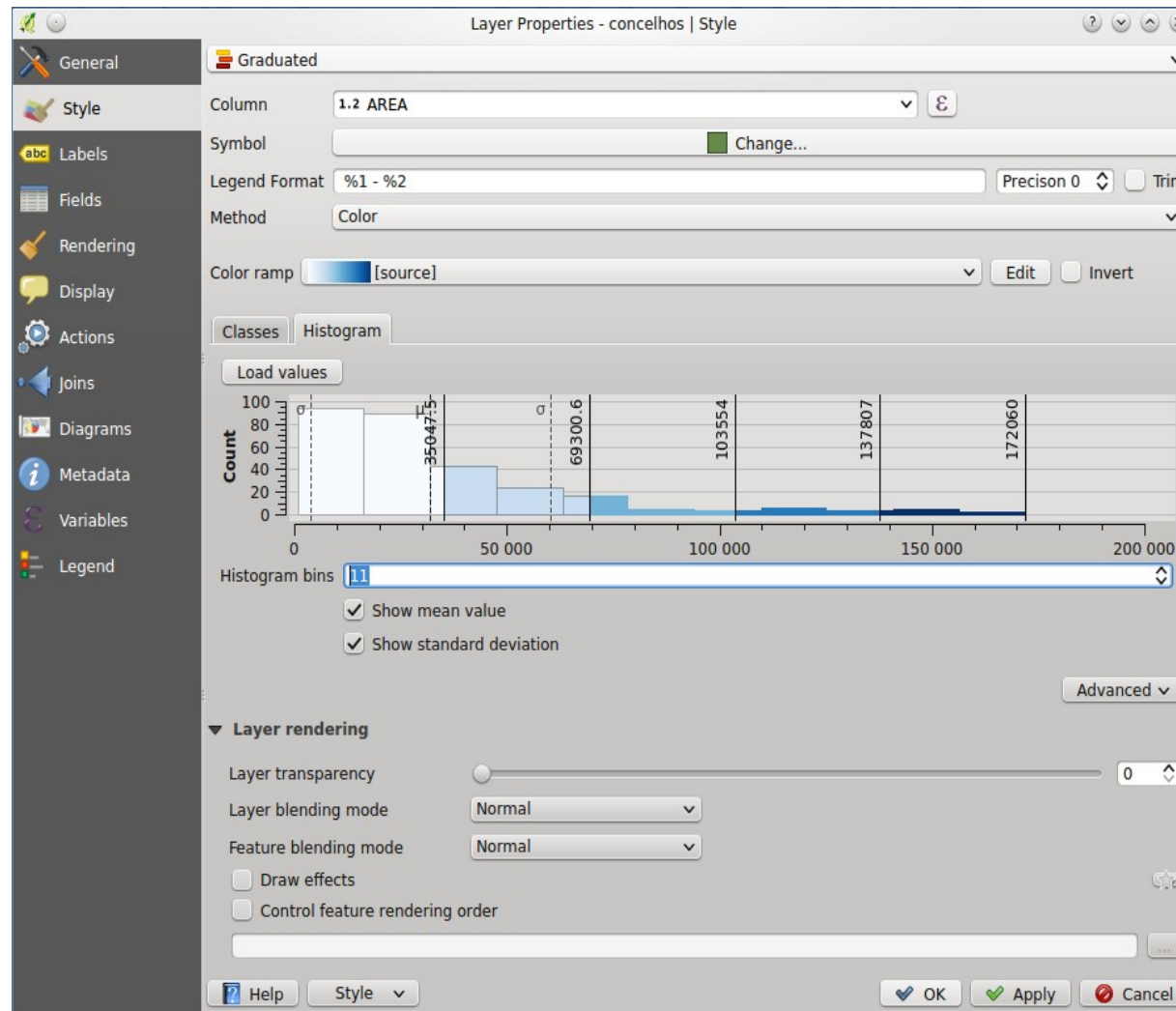




# Map Styling and Labeling Dock: live updates!



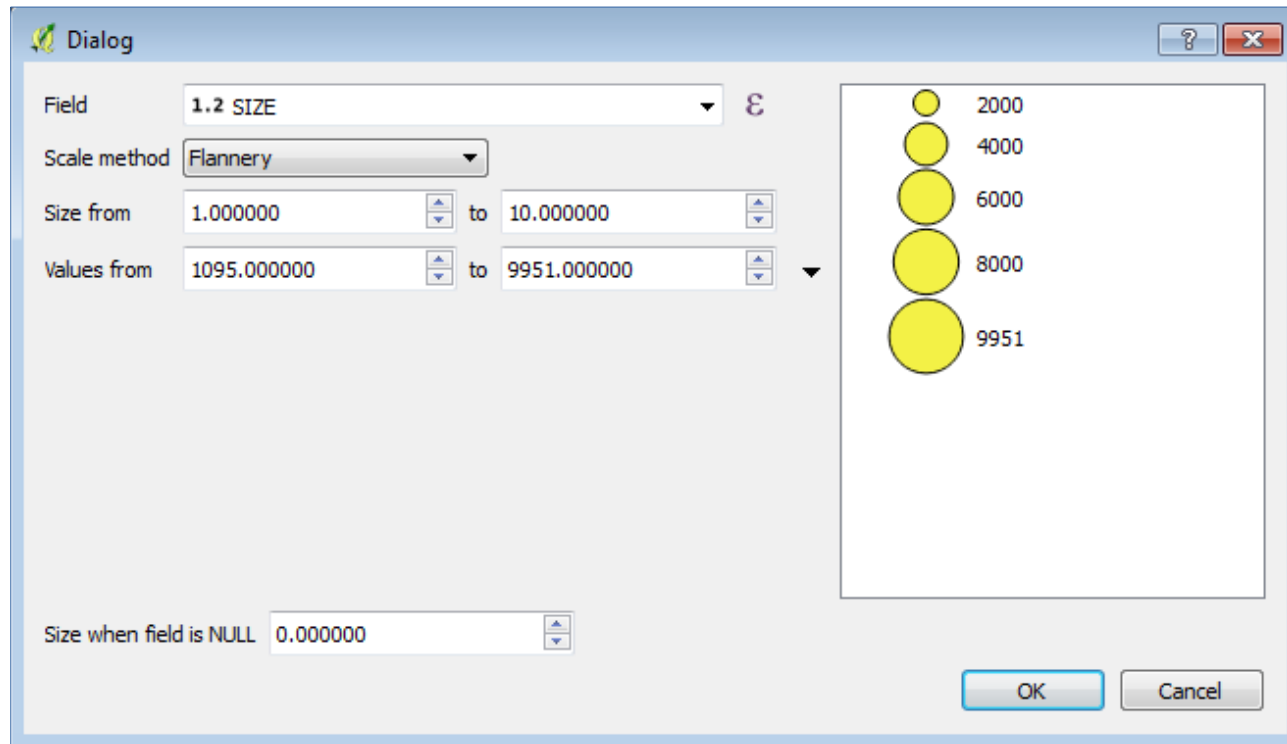
# Graduated Renderer Histogram





# Scaled symbols improvements

- Assistant for different scaling modes and mapping min/max to actual sizes
- Legend in legend tree and print composer
- Legend for components of diagrams



# Labels Improvements

- **Rule based labels!**
- Data-defined Quadrant for point labels
- Draw only labels in polygons, if label fits
- Control priority of label obstacles
- Avoid polygon borders (obstacles)
- Obstacle only layers
- Control label rendering order
- Point labeling according to Krygier/Wood (2011): use “cartographic” priorities for positioning: top right, top left, bottom right, bottom left, middle right, middle left, top (slightly right), bottom (slightly left)
- Consider actual rendered symbol size for labeling point features: apply rendered size to label distance - only available for “cartographic” positioning and consider symbol bounding box as obstacle

# Attribute table improvements

- Multi-Attribute Editing of Selected features
- **Conditional formatting**
- Multi-Attribute Search in Form View
  - Select Features or Filter table
  - Combine selection/filter rules from multiple fields
  - Add or remove from selection or create new selection
  - Filter with AND / OR

Attribute table - concelhos :: Features total: 278, filtered: 278, selected: 0, spatially limited

	CONCELHO	DICO	DISTRITO	AREA
3	★ ALBERGARIA-A-VEL...	0102	AVEIRO	15882.49670
26	★ ANADIA	0103	AVEIRO	21663.47869
31	★ AROUCA	0104	AVEIRO	32910.51861
35	★ AVEIRO	0105	AVEIRO	19746.72192
63	CASTELO DE PAIVA	0106	AVEIRO	11500.52735
82	ESPINHO	0107	AVEIRO	2105.68166
84	ESTARREJA	0108	AVEIRO	10817.32628
127	MEALHADA	0111	AVEIRO	11065.66007
149	MURTOSA	0112	AVEIRO	7308.78096
161	★ OLIVEIRA DE AZEM...	0113	AVEIRO	16110.93482
163	OLIVEIRA DO BAIRRO	0114	AVEIRO	8731.98649
167	OVAR	0115	AVEIRO	14768.32696
204	★ SANTA MARIA DA FE...	0109	AVEIRO	21587.44517
217	SEVER DO VOUGA	0117	AVEIRO	13069.21936
226	SÃO JOÃO DA MADEIRA	0116	AVEIRO	794.29859

Show Features Visible On Map

Conditional Format Rules

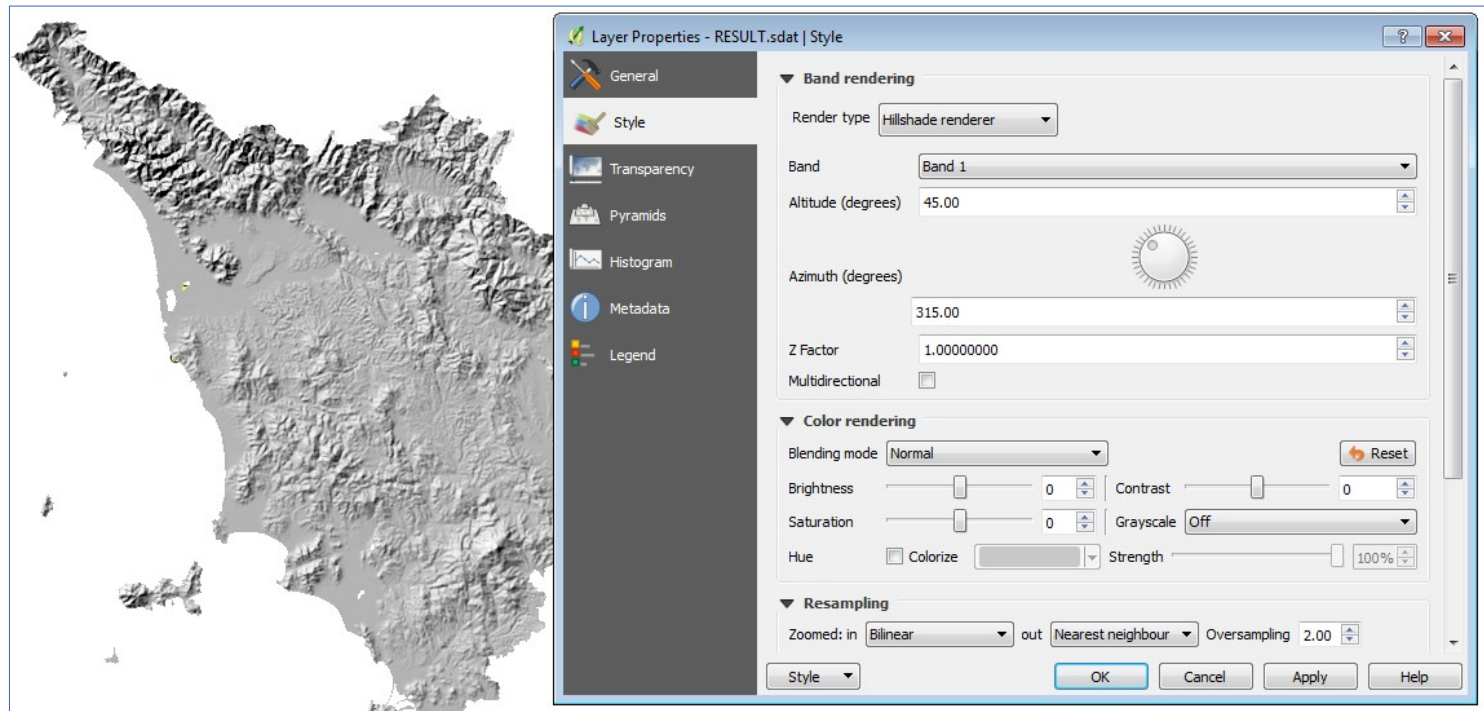
Field: abc CONCELHO

Full row

rule1: "AREA" > 15000

# Raster symbology

- Several general improvements
- Quantile based classification for raster layers
- **Live hillshade renderer**



# Attribute table improvements

- Allow reordering the attribute table columns (via right click on field name header)
- Allow adding a new column to trigger an action to the attribute table
- Columns can be hidden from the attribute table (via right click on field name header)
- QGIS now remembers the width of any resized columns

The screenshot shows the 'Attribute table - Flooded roads' window in QGIS. The title bar indicates 'Features total: 11678, filtered:'. The table has columns for 'TYPE', 'NAME', and others. A context menu is open over the 'NAME' column header, showing options: 'Hide column', 'Set width...', 'Autosize', 'Organize columns...', and 'Sort...'. The table data includes rows for 'Track', 'Cycleway, foot...', and 'Road, resident...'.

TYPE	NAME		
Track	NULL		
Cycleway, foot...	NULL		
Track	NULL		
Cycleway, foot...	NULL		
Cycleway, foot...	NULL	0	NULL
Cycleway, foot...	NULL	0	NULL
Cycleway, foot...	NULL	0	NULL
Road, resident...	NULL	0	NULL
Track	NULL	0	NULL



# Widgets improvements

- Constraints on widgets!
- Line edit with auto-completer for ValueRelation edit widget
- Relation Reference Widget with Drilldown
- Relative path support in file widget, photo widget and webview widget
- External Resource Widget (for linking file and web resources)
- Client-side constraints on input widgets

**Invalid fields:**

- valid: *ELEV should be greater than 400*

ID	1
fk_region	1
ELEV	78
NAME	NOATAK
USE	
valid*	NULL

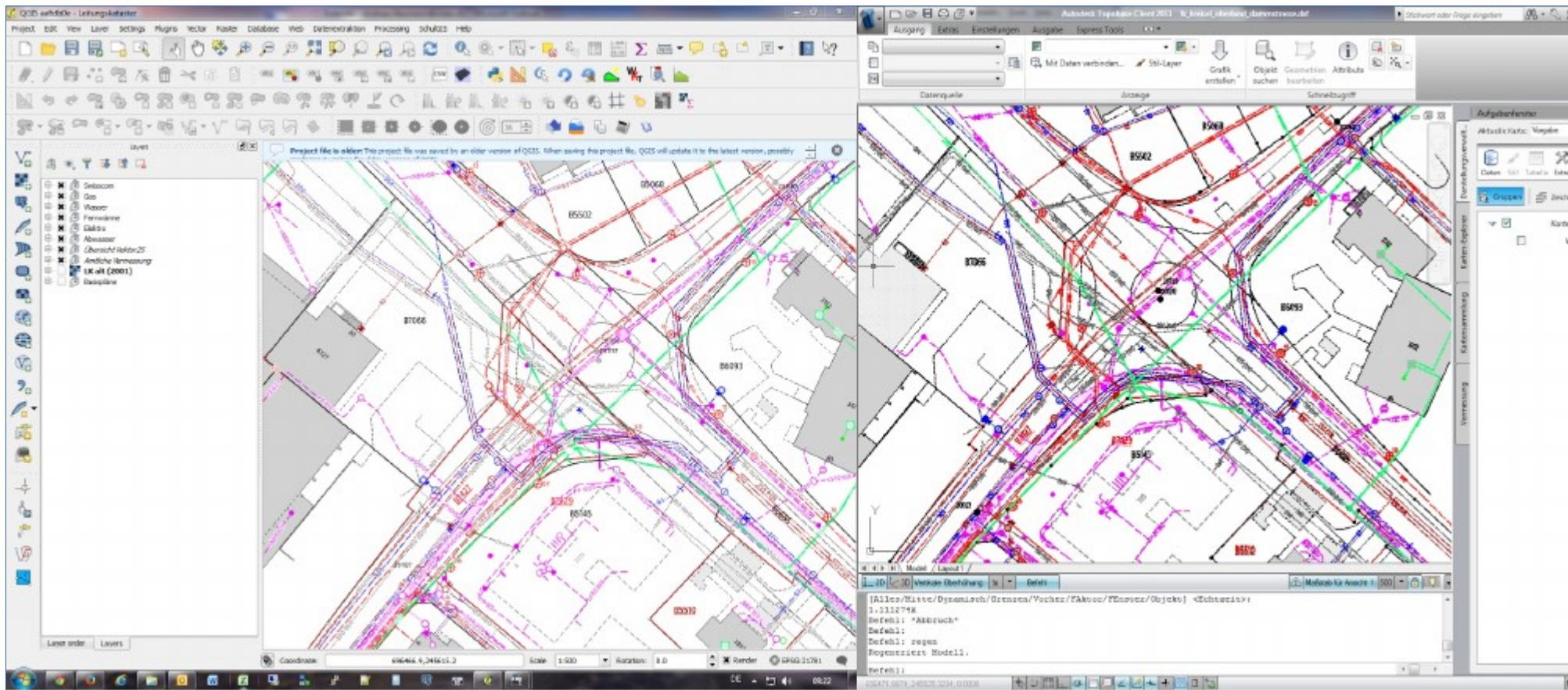
Description: ( ELEV should be greater than 400 ) AND NotNull  
Raw expression: ( ELEV > 400 ) AND ( valid IS NOT NULL)  
Constraint: predicate is False

OK Cancel

# WFS Client Overhaul

- Version autodetection
- On-disk caching of downloaded features
- Background download and progressive rendering
- WFS 1.1 and 2.0 support
- WFS 2.0 GetFeature paging
- Add provider tests
- Support for WFS 2.0 joins
- URI parameter with sql with SELECT / FROM / JOIN / WHERE / ORDER BY clauses
- Handle DateTime fields
- Enable "Only request features overlapping the view extent" by default (and memorize the settings)

# DXF Export Improvements

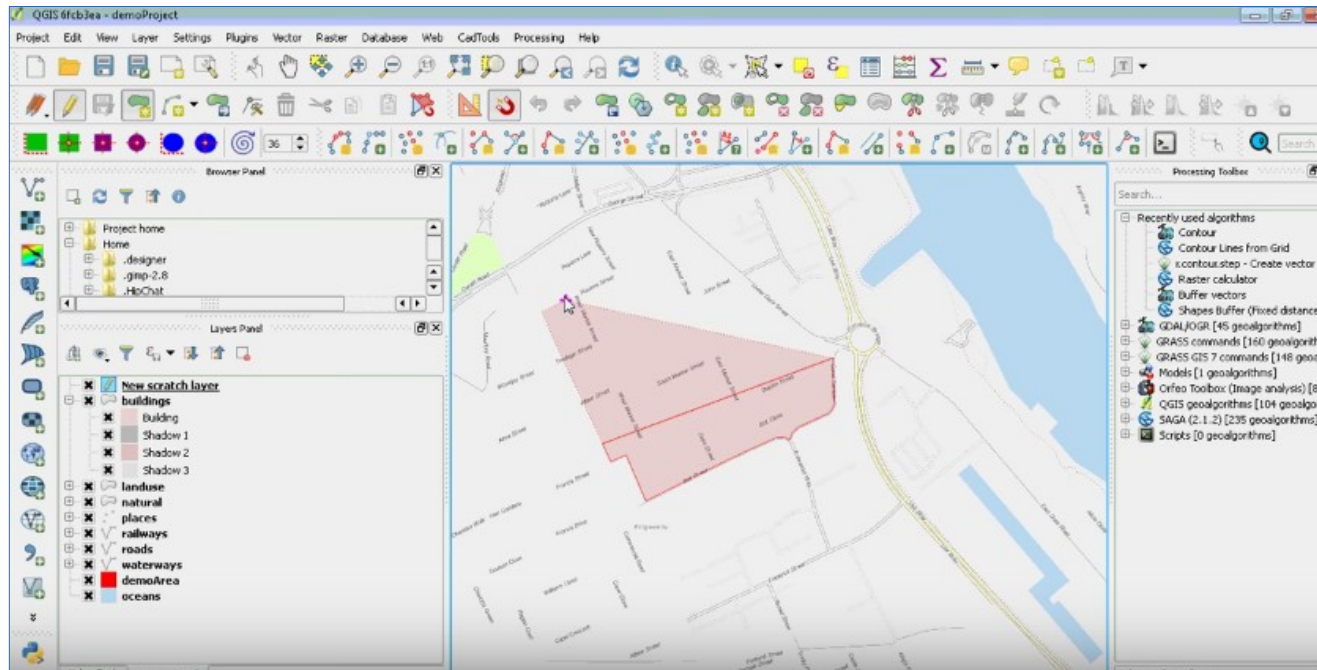


# DXF Export Improvements

- Export with or without symbology
- Export everything or visible extent
- Set scale for rendering rules and filters
- Support of visibility presets
- Support multiline text
- Support solid fills
- Support transparency
- Support line offsets and units properly
- Automatic conversion of simple and SVG symbols to DXF blocks
- Use QGIS layer names, layer title or layer attribute to determine layer name

# Vector editing

- Autotrace digitizing function improved and in QGIS core, see <http://www.lutraconsulting.co.uk/products/autotrace/TraceDigitising>
- Extend linestring with reshape tool
- Point Features: interactive editing of symbol offsets





# Geometry checker

Check Geometries

Settings Result

**Input vector layer**

land\_use

☐ Only selected features

**Geometry validity:**

☒ Self intersections

☒ Duplicate nodes

☒ Polygon with less than 3 nodes

**Allowed geometry types:**

☐ Point ☐ Line ☐ Polygon

☐ Multipoint ☐ Multiline ☐ Multipolygon

**Geometry properties:**

☐ Polygons and multipolygons may not contain any holes

☐ Multipart objects must consist of more that one part

**Geometry conditions:**

☐ Minimal segment length (map units): 0,000000

☐ Minimum angle between segments (deg): 0,000000

☐ Minimal polygon area (map units sqr.): 0,000000

☐ No sliver polygons: Maximum thinness: 1

☐ Max. area (map units sqr.): 0,000000

**Topology checks:**

☐ Check for duplicates

☐ Check for features within other features

☐ Check for overlaps smaller than (map units sqr.): 0,000000

☐ Check for gaps smaller than (map units sqr.): 0,000000

Tolerance: 1E-8

**Output vector layer**

☐ Modify input layer

☒ Create new layer

Browse

Check Geometries

Settings Result

**Geometry check result:**

Object ID	Error	Coordinates	Value	Resolution
455	Self intersection	-20039.5675...		

Export

Total errors: 1, fixed errors: 0

**When a row is selected, move canvas to:**

☒ Error ☐ Feature ☐ Don't move

☒ Highlight contour of selected features

☐ Show selected features in attribute table

☒ Fix selected errors using default resolution

☒ Fix selected errors, prompt for resolution method

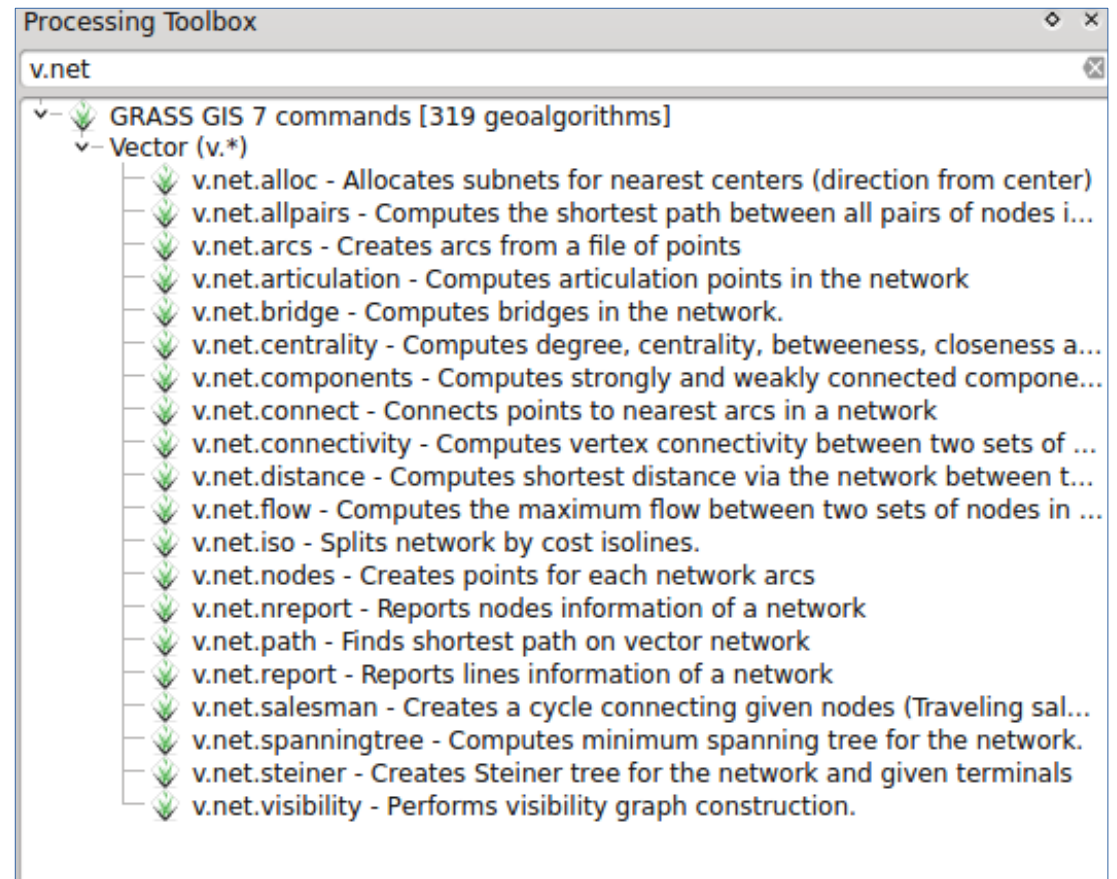
☐ Error resolution settings

Attribute to use when merging features by attribute value: tipo

Close

# Processing

- Models and tools as toolbars icons
- Pre-filled tools
- Added all the missing GRASS modules (i.\*, v.net.\*, etc.)
- Several general improvements and bug fixes



# And much more...

- Save styles in **MS SQL** and **Oracle** databases
- **ArcGIS** Map and Feature REST services
- Control over attributes to export when saving a vector layer
- DB Manager:
  - Support for Oracle connections
  - Multi-tab SQL windows
- GDAL/OGR 2.\* related improvements:
  - Better Geopackage support
  - Support for curves in more data providers (e.g. Geopackage, GML, Interlis, Postgis)
  - Support for reading and writing spreadsheet files (Libreoffice and Excel)
- ...

# Obrigado!



Sistemas de Informação Geográfica

**@naturalgis**

