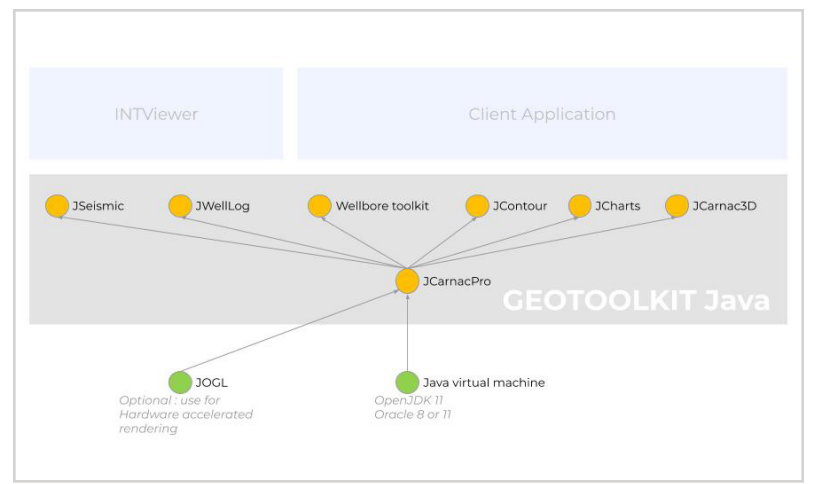# GeoToolkit Java 3.9
Features and Architecture Overview

GeoToolkit Architecture

E&P Libraries and Widgets

WellLog

WellLog Visuals
Log curve
Symbol curve
Square log curve
Gradient curve
Fill between two curves or base line
Gradient fill
Pattern fill
Positive/Negative fill
Reflectivity curve
Marker (tops)
Lithology
Label
Array log
Tad pole
Rose diagram
Image
Seismic image (requires seismic module)
Seismic Wave image (requires seismic module)
Custom/3rd-party visuals

Tracks
Linear
Logarithmic
Axis
Deviated

WellLog Widget
Display single well log data
Vertical or horizontal view
Template support
Interactive tool support
Time or depth-based data
Real-time support
PDF printing
Custom header/footer

Headers
Curve
Fill
Lithology histogram
Track
Collapsed
Custom/3rd-party header

View
View to visualize one or several tracks
Vertical or horizontal view
Supported deviated tracks
Support of interactive tools
Time or depth based data
Customizable track position (suitable for multi-well correlation)
Support visual edition
Support template (XML file format)

Data Formats
LAS
DLIS
OSD (Oklahoma Seismic Data) well log standard reader

Sample Application
Demo of a simple correlation viewer
Demo of a cross-section viewer (multiple wells on top of a seismic section)

Misc
Data filtering (smoothing, interpolation) available
Curve value tooltip

Seismic

View
Seismic widget
Seismic widget with trace header table
Multiple trace header axes
Support multiple seismic in same view (can be used for side by side comparison)

Display Features
Wiggles
Positive/Negative fill
Variable density with custom color map
Trace headers
Decimation and clipping
Vertical or horizontal view
Overlays support
Variable space tracing
Clipping

Data Processing
Interpolation (linear, quadratic, step)
Normalization (maximum, average, RMS, specific limits)
Taper filter
Automatic gain control
API for custom data processing

Data Formats
Local SEG-Y reader
Robust API to implement custom reader

Export
CGM+

Schematics

Display Features
Linear or compressed
Vertical or deviated
Labeling and annotations
Lithology in schematic
Multiple axis (e.g.: TVD & MD)
Options to integrate with your own schematics elements library (SVG)

Reservoir

Features
IJK Reservoir rendering support
Properties, multi properties, and 4D properties support
Unstructured Reservoir rendering support

View
Async loading of reservoir data is supported
Real-time Filtering with multiple filters support
Real-time Filtering with multiple filters support

Data Processing
API for custom data processing

3D

Display Features
Grid
Point set with multiple attributes
Triangulated surfaces with attribute
Polyline with attribute
Graph with node attributes
Simple shapes (cube, sphere, cylinder, ...)
Text
Animations
Picking support for picked value
Split view
Charts (pie, bar, histogram)
Button anchored with 3D space
Utility nodes (progress bar, compass, ...)
Vectors (linear or circular)
Multiview rendering with synchronization
Offscreen rendering
Customizable shader API for custom nodes
Transparency with depth peeling
Triangulated textured surface with isoline rendering for contouring
Triangulated textured surface with normal smoothing
QuadMesh surface render node

Import/ Export
X3D format
jcarnac3d shapes reimport
Load and render a not jcarnac3d x3d file

Data Formats
Volumic Rendering of VDS files
Bricked Data support through VDS and OpenVDS

Contour

Display Features
Isolines with labels
Isolines smoothing
Major-minor isolines intervals
Colormap-based fill
Faults

Formats
Regular rectangular grid
Arbitrary triangular grid

Generic

Supported Platform
Windows
Linux
OSX

Supported Java Version
Java 8
jvm Java 11
Maven build and deploy

OpenGL Pipeline

Features
Rendering delegate for high performance rendering
Rendering of JSeismic shapes
Rendering of JWellLog shapes
Rendering of Wellschematics
Rendering of JContour shapes

Generic Libraries and Widgets (CARNAC Modules)

Base 2D Graphics

Scene Graph: Graphical Primitives
Line
Polyline
Polygon
Rectangle
Ellipse
Arc
Arrow
Generic path (bezier)
Spline
Symbol
Text
Rich text
Image
Tiled image
Groups

Interactive Tools
Cross hair
Rubber-band
Point and area selection
Shape Editor

Axes and Grids
Regular interval
Adaptive (depending on current zoom factor)
Logarithmic
Non-uniform transformation

Plot Layout
Compose plot from several views
Multiple axes
View annotations

Export Options
Image
CGM
SVG
Print and print option dialogue

Data Source
SVG importer

Misc
Color bar
Legends
Color providers
Scrollbars
Persistence
Units
Internationalization/ Localization

Charts

Types
Area
Bar
Plot box
Doughnut
Histogram
Line
Multiple axes line chart
Pie
XY Line chart
Polar
Rose
Tornado
Scatter

INT
Empowering Visualization