The
JUMP
Unified Mapping Platform

technology with vision

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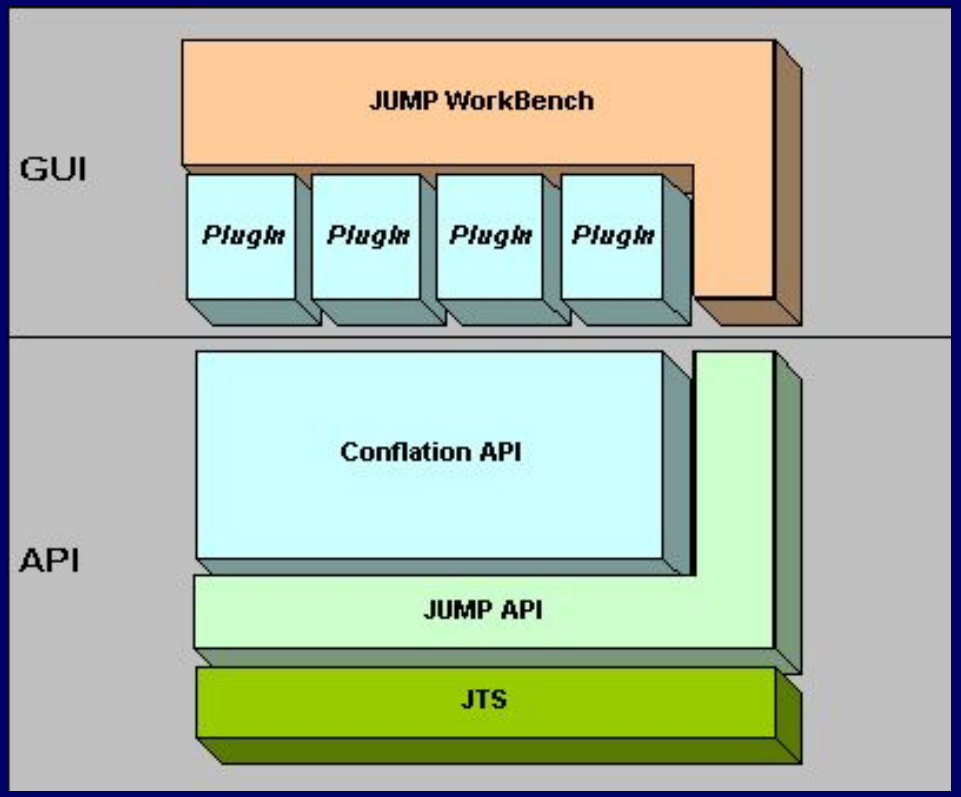
The Java Conflation Suite

- Goals:
  - Address real-world conflation problems
  - Leverage existing spatial tools and modern software development techniques
  - Open development philosophy
  - Build toolbox for performing conflation
- JCS written in 100% pure Java
- JCS is Open Source (GPL license)

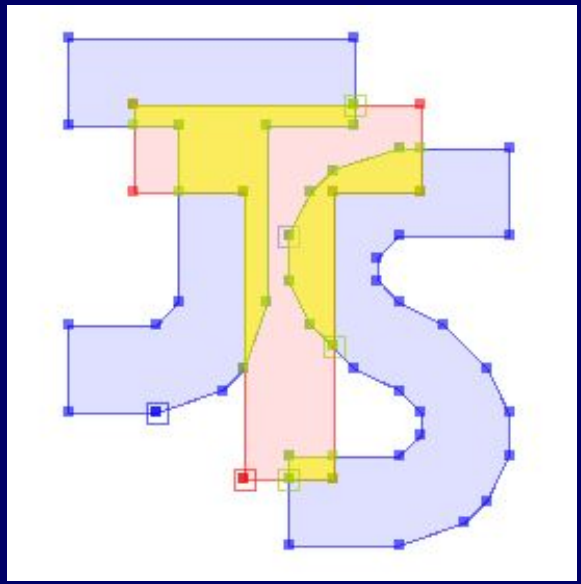
JCS Architecture



- JCS provides:
  - API
  - GUI
- Built using:
  - Java Topology Suite (JTS)
  - Unified Mapping Platform (JUMP)

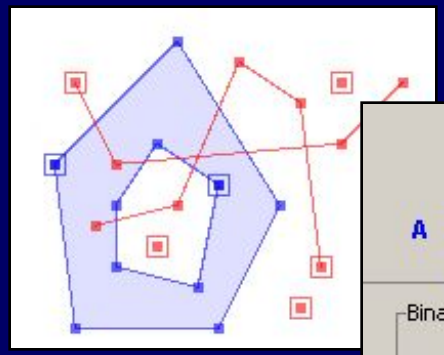
JTS Topology Suite

- Core API for processing Geometry
- Implementation of *OpenGIS Consortium Simple Features Specification*
- Open Source, 100% Java
- Design Features:
  - Fast, production quality
  - Robust
  - Explicit precision model
  - All basic geometry operations



JTS - Geometry Model and Operations

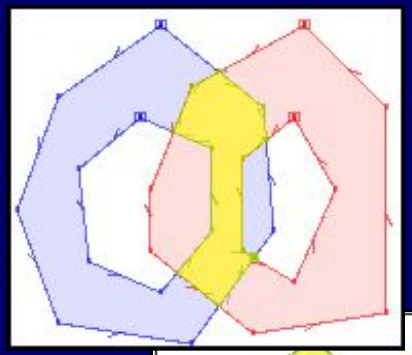
- Geometry model: Points, LineStrings, Polygons, collections
- Spatial predicates (using *Dimensionally Extended 9-Intersection Model)*
- Overlay operations, buffer, convex hull, centroid, etc.

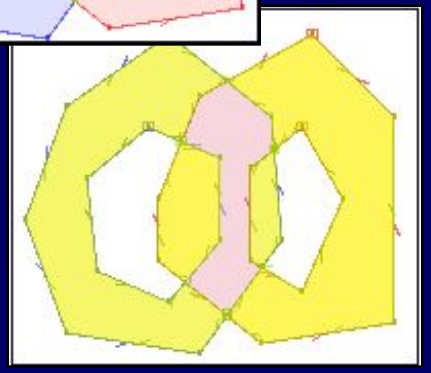


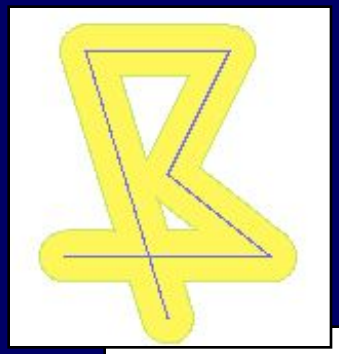
		B		
		Int	*Bdy*	*Ext*
A	*Int*	1	0	2
	Bdy	0	F	1
	Ext	1	0	2

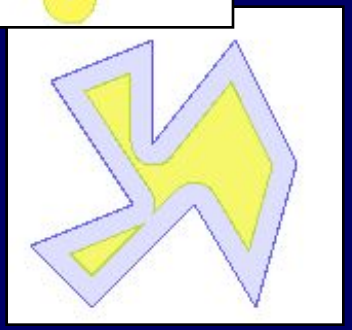
Binary Predicates

	AB	*BA*
Equals	F	F
Disjoint	F	F
Intersects	T	T
Touches	F	F
Crosses	T	T
Within	F	F
Contains	F	F
Overlaps	F	F



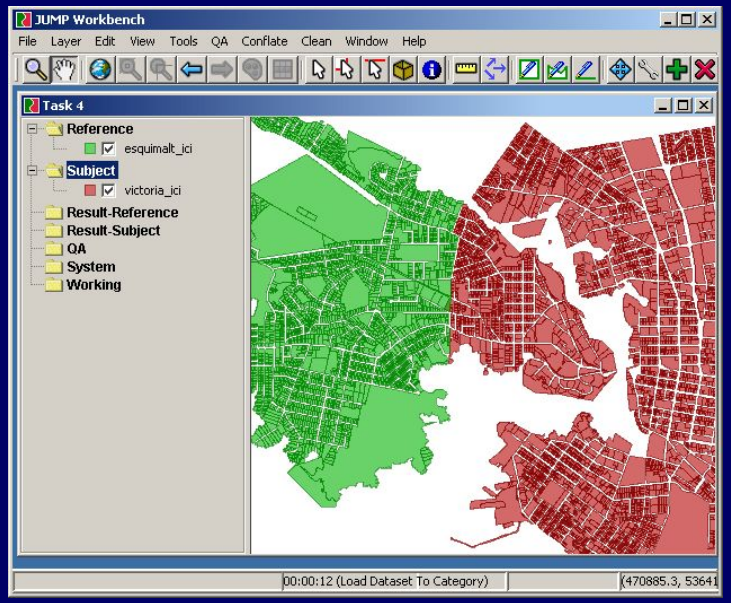






JUMP Unified Mapping Platform

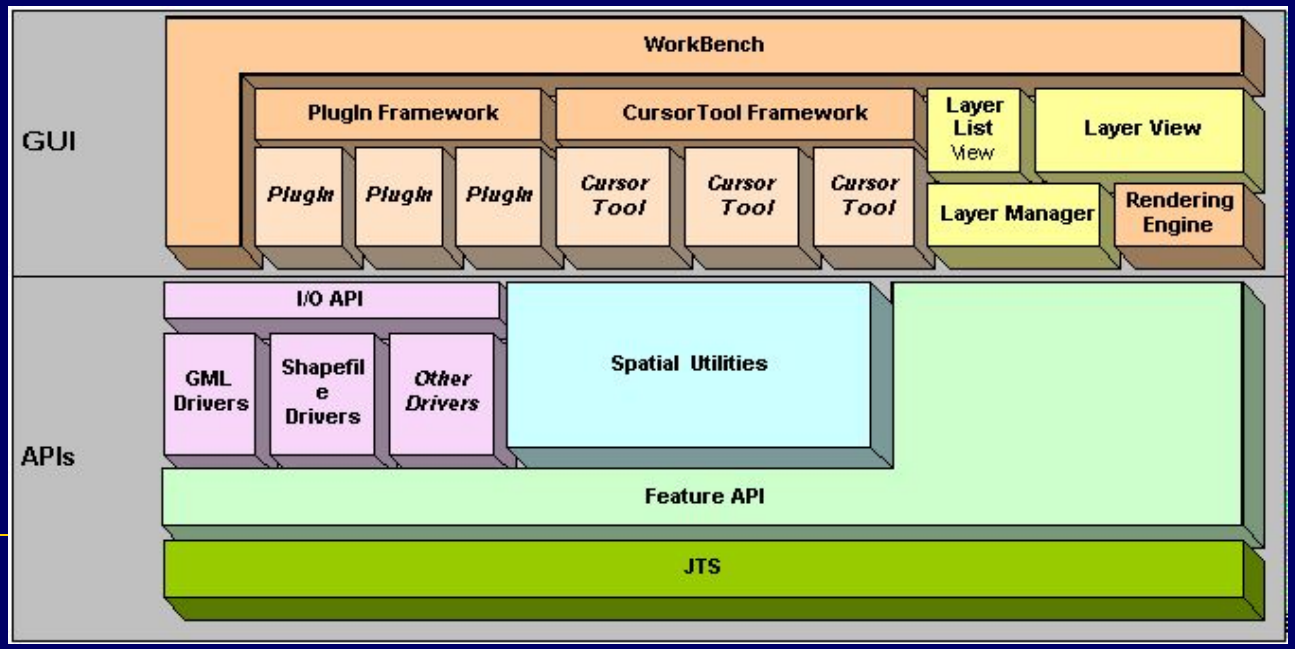
- 100% pure Java
- Open Source (*GPL license*)
- Framework API (*for developers*)
- Workbench GUI (*for users*)



- Design Features:
  - Rich GUI environment for developing spatial algorithms, visualizing data and output
  - Interactive environment for supporting human-assisted spatial processing
  - Leverage all capabilities of Java platform
  - Easily extensible

JUMP - Architecture

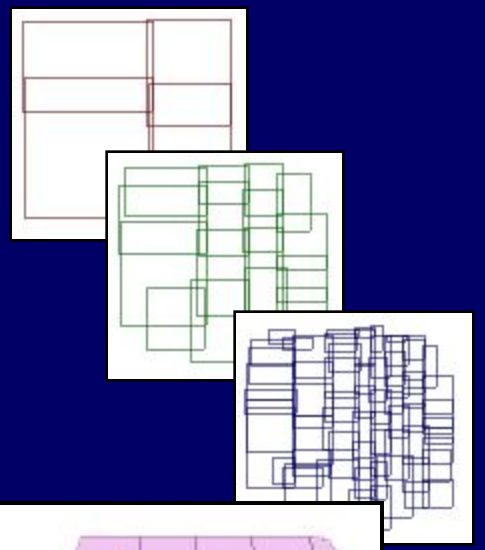
- Highly Extensible
  - DataSources, Plugins, CursorTools, Renderers
- Modular, Reusable
- Takes full advantage of Java Platform
  - Dynamic Linking, Java2D graphics, cross-platform, leverages industry standard APIs (e.g. XML)

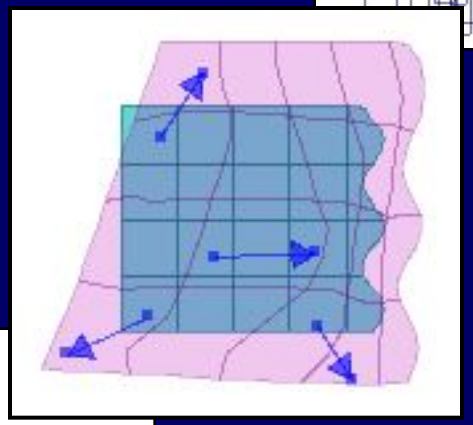


VIVID SOLUTIONS

JUMP – Framework API

- Features with attributes and geometry
- Feature Collections
- Spatial Access Methods
  - Quadtree, STR-Tree, Binary Interval Tree
- Warping
  - Affine Transform
  - Bilateral Interpolated Triangulation
- DataSources
  - Well Known Text, GML, ESRI Shapefile





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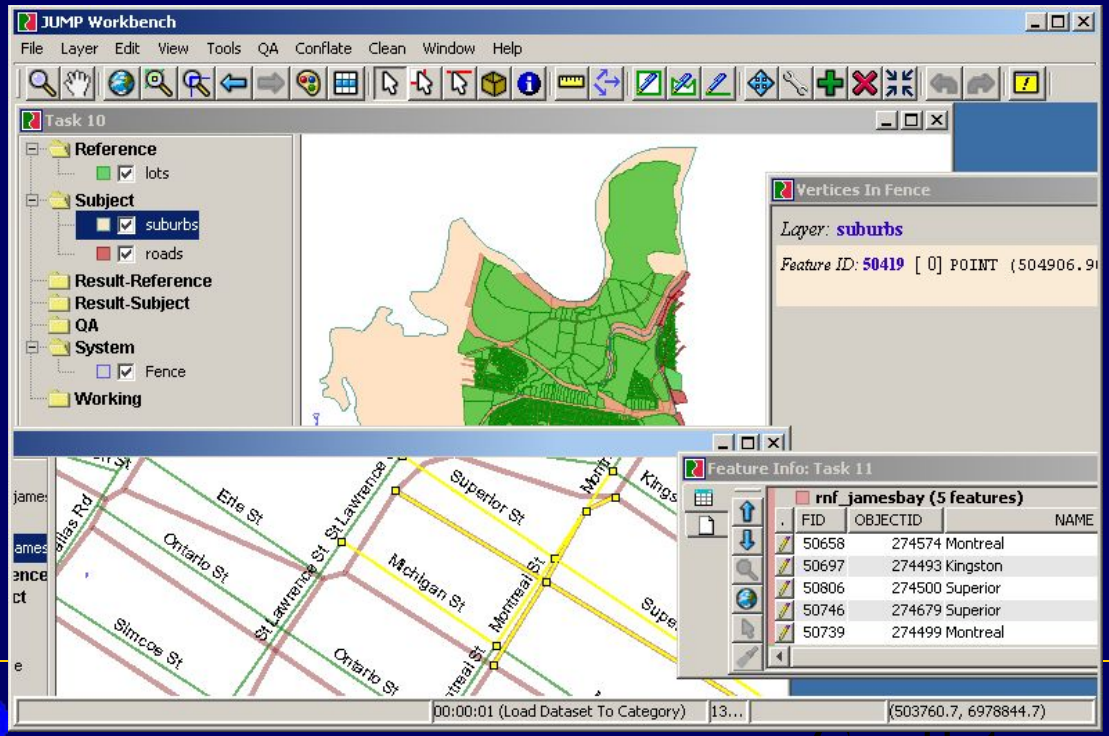
    </GEOMETRY>
  </FEATURE>
```

JUMP Workbench

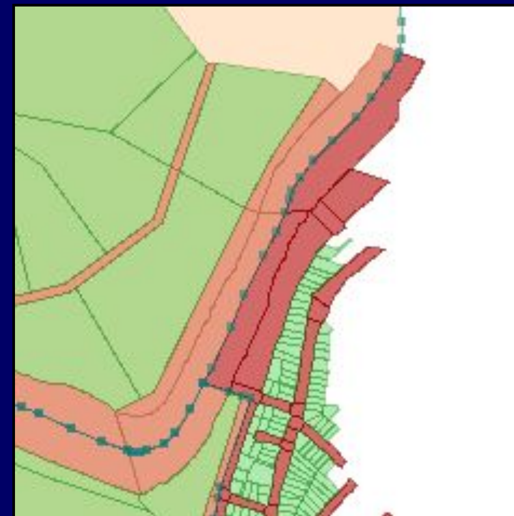
- Multi-Window GUI
- Supports multiple layers of spatial data; rich styling options
- Provides GUI for JUMP API functions
- Geometry & Attribute editing
- Easily extensible via Plugin framework

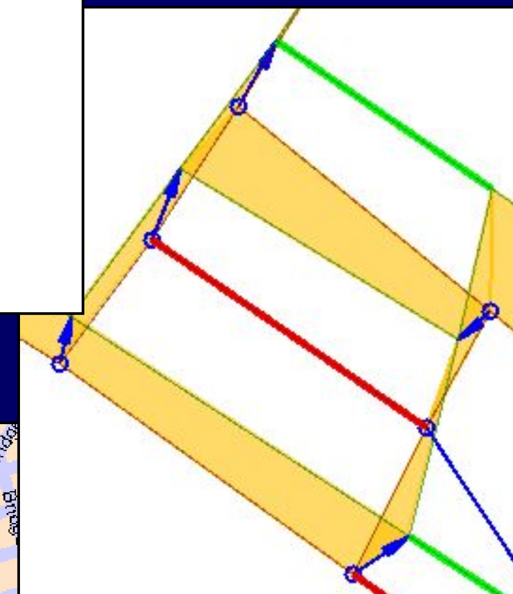


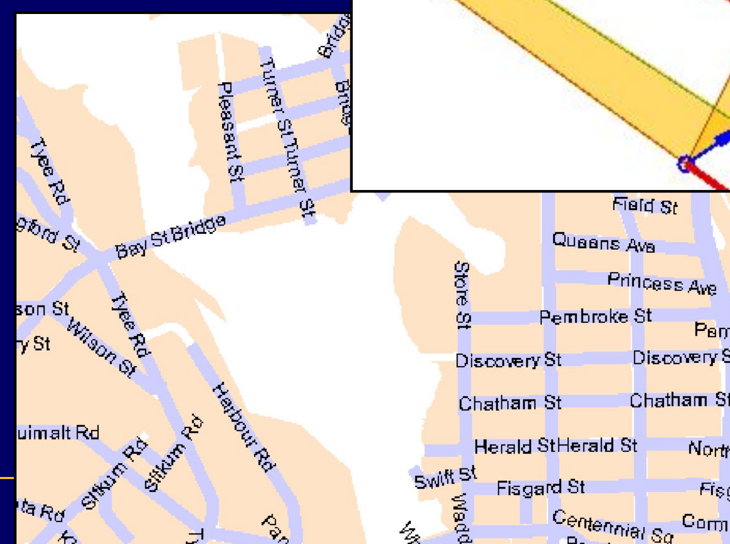
Conflation with JCS

JUMP - Visualization

- Transparency
- Colour theming
  - Fill / Line colour, size
- Line Styles & Decorations
  - e.g. Dashes, Arrowheads
- Labelling
  - Rotation, scale defined by attribute
  - Scaled / absolute size
  - Collision detection

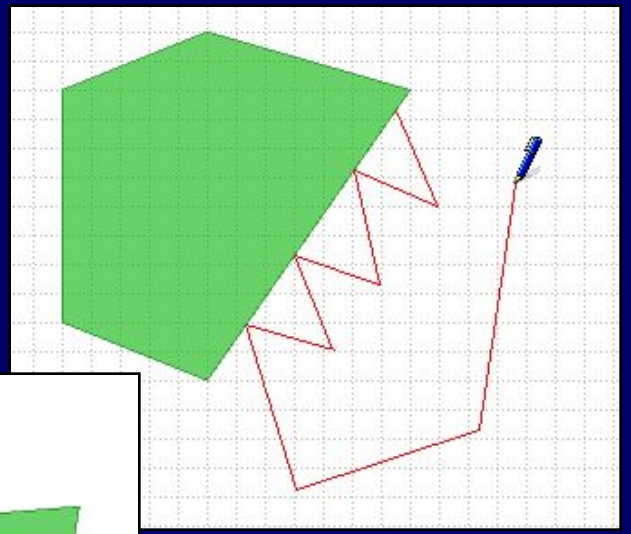


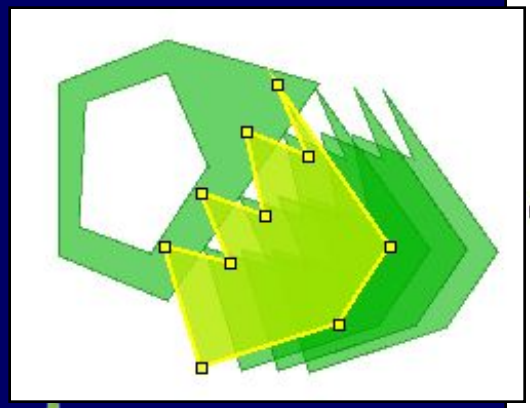


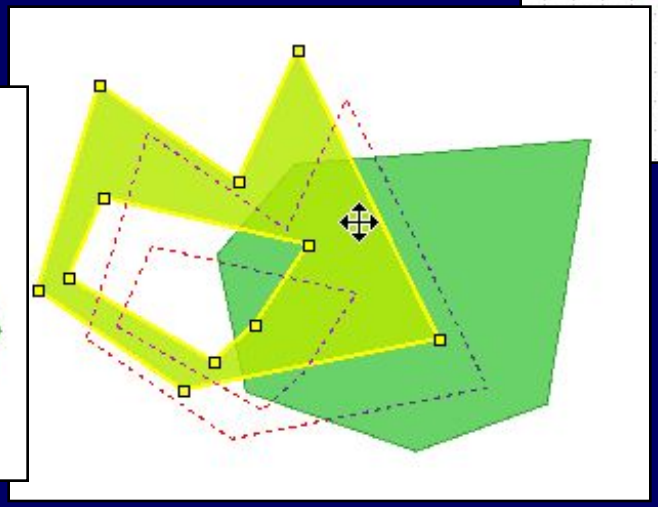


JUMP – Editing

- Create / Move / Delete Points, Lines, Polygons, Holes
- Combine / Explode to create Geometry Collections
- Snap To Vertex / Line / Grid
- Geometry Validation on Edit
- Multi-Level undo
- Cut / Copy / Paste







JUMP – Web Map Server Client

- Display images obtained from OGC-compliant Web Map Servers
- Multiple images / servers
- Transparency
- Also exposed as standalone API