

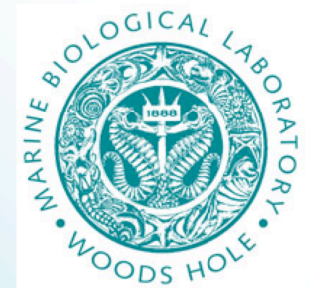
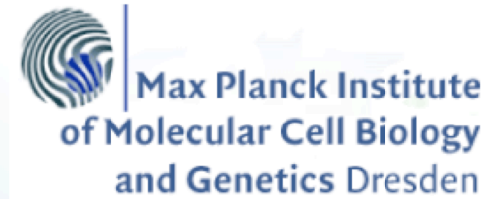


ImageJ2

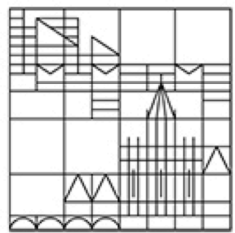
- Support the next generation of image data
- Interoperate and collaborate with other projects
- Broaden the ImageJ community
- Reuse each others' work wherever practical
- Provide a central online resource for ImageJ
 - Program downloads, a plugin repository, developer resources and more



Why ImageJ2?



Universität
Konstanz



And anyone who wants to contribute!

Who Develops ImageJ2?

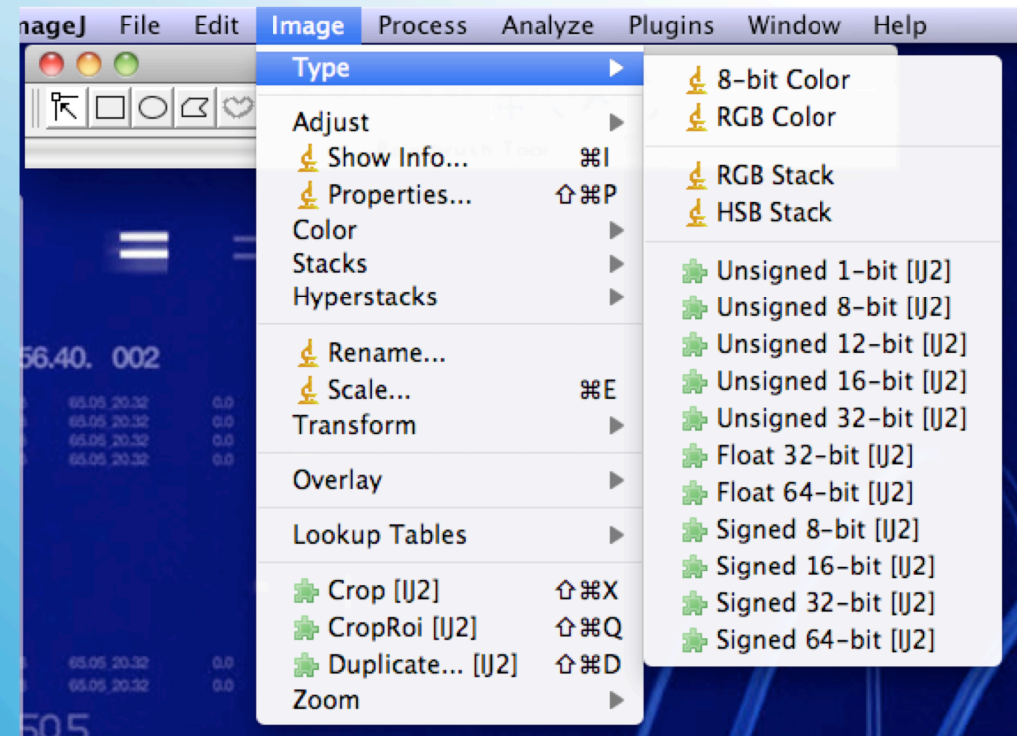
- Preserve backwards compatibility
- Maintain good performance
- Support N-dimensional imaging
- Use common input and output for data
- Minimize complexity
- Employ open source software dev. practices

Guiding Principles

- Supports most ImageJ1 plugins and macros
- Many new pixel types
- Multidimensional data beyond 5D
- Import and export of many file formats
- Improved region of interest (ROI) tools
- Truly headless
- Automatic updates
- Easily install additional plugins (e.g., Fiji >350 plugins!)
- 175 new/reimplemented core ImageJ2 plugins so far

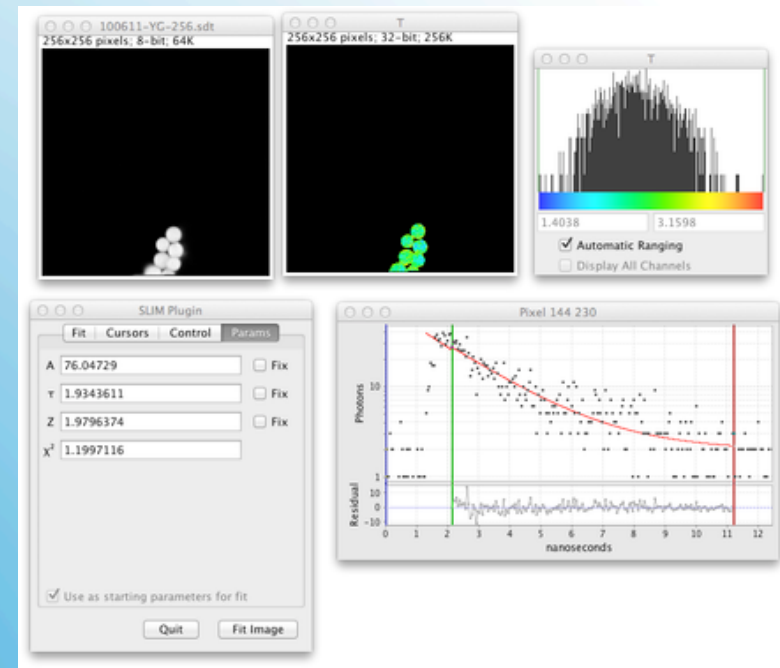
ImageJ 2.0.0-beta2

- Based on ImgLib2 library
- Any data source (files, URLs, DBs...)
- N-dimensional images
- Unlimited pixel types
- Write algorithms once



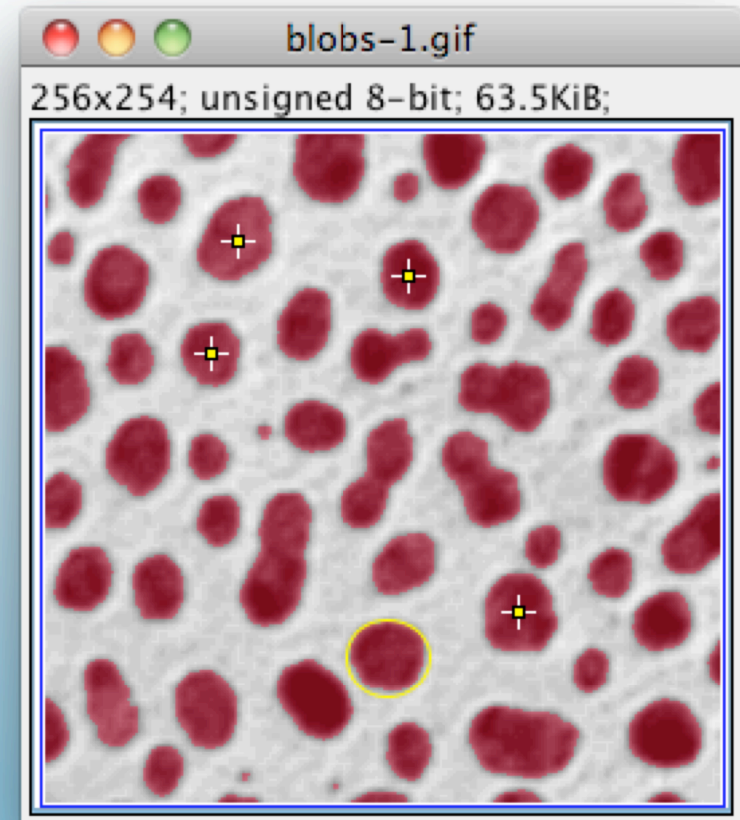
Data Model

- The user interface provides views of the data
- Show multiple datasets in one window
- Or multiple windows showing the same dataset
- Composite any # of channels
- Fully pluggable



Displays and Visualization

- ROIs are functions that identify samples upon which to operate
- Overlays are visuals superimposed over a dataset, often (but not always) linked to ROIs



Regions of Interest


```

@Parameter(label = "Short")
private Short oShort;

@Parameter
private BigInteger bigInteger;

@Parameter
private BigDecimal bigDecimal;

@Parameter(label = "char")
private char pChar;

@Parameter(label = "Character")
private Character oChar;

@Parameter(label = "String")
private String string;

@Parameter(label = "multiple choice", choices = { "The",
    "fox", "jumps", "over", "the", "lazy", "dog" })
private String choice;

@Parameter
private File file;

@Parameter
private ColorRGB color;

@Parameter(persist = false)
private Dataset dataset;

@Parameter(label = "spinner", style = WidgetStyle.NUMBER_
    max = "1000")
private int spinnerNumber;

@Parameter(label = "slider", style = WidgetStyle.NUMBER_
    max = "1000", stepSize = "50")
private int sliderNumber;

@Parameter(label = "scroll bar", style = WidgetStyle.NUMBER
    min = "0", max = "1000")
private int scrollBarNumber;

@Parameter(label = "x", callback = "xChanged")
private float x;

@Parameter(label = "2x",
    description = "Demonstrates callback functional")

```

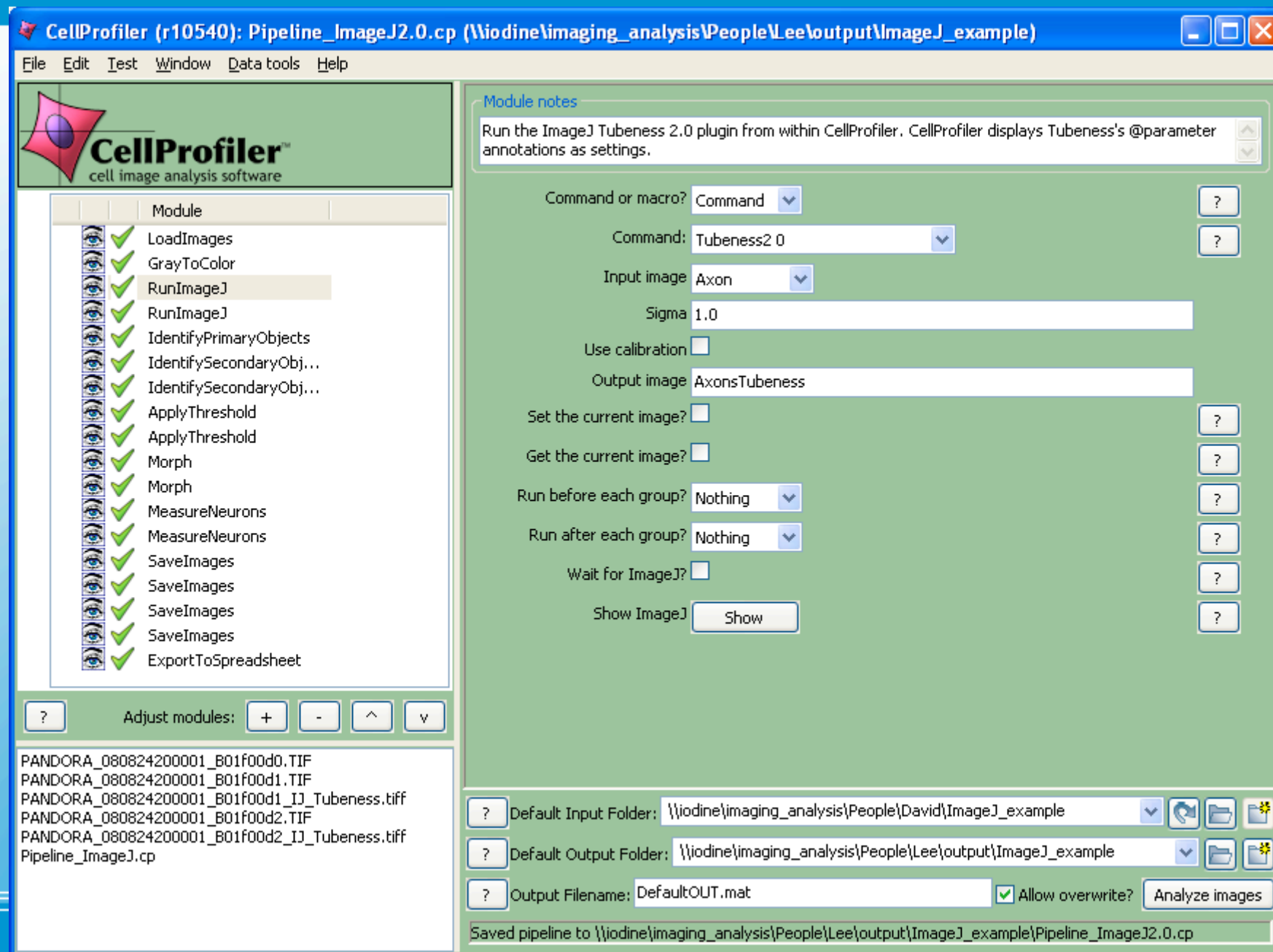
Parameter Tester

Short	233
BigInteger	1,000,000
BigDecimal	20,000,000.245
char	z
Character	q
String	fibonacci
multiple choice	jumps
File	<input type="text"/> <input type="button" value="Browse"/>
Color	<input type="color" value="#FF8C00"/>
spinner	380
slider	<input type="range" value="324"/> 324
scroll bar	<input type="range" value="779"/> 779

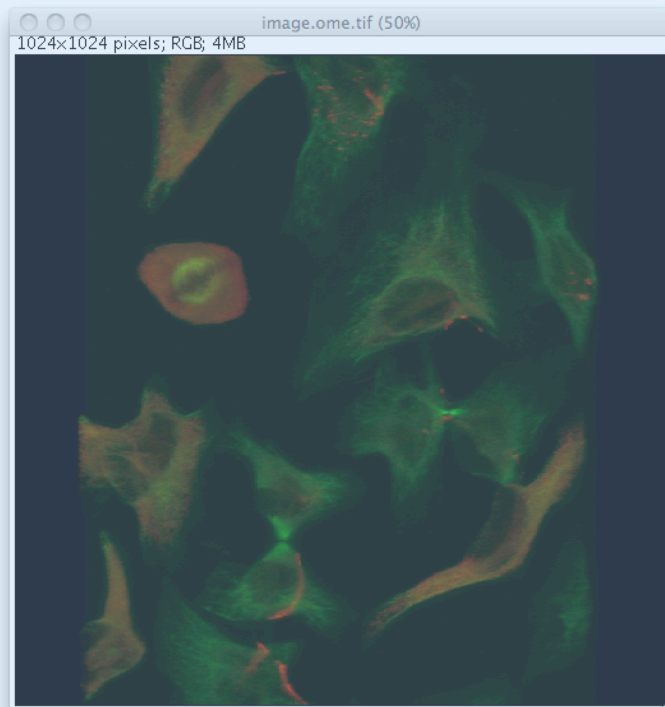
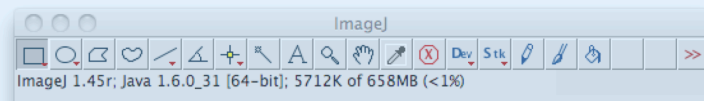
Plugin Framework

- Provides widgets for several UI styles:
 - Swing
 - “Pure” AWT
 - Eclipse SWT
 - Apache Pivot
- Custom UIs possible
- Can run headless
- Use ImageJ2 as a library to execute plugins

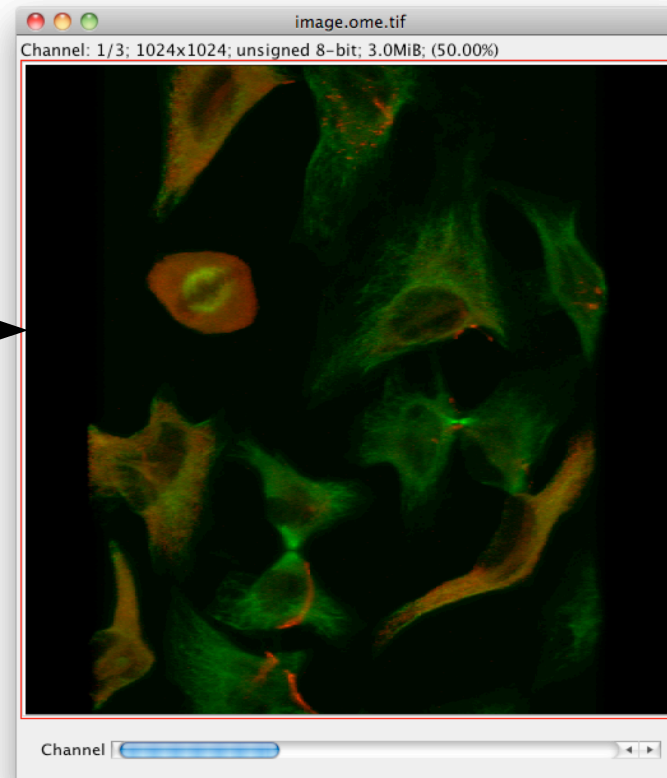
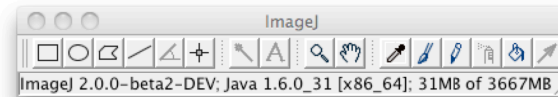
User Interface



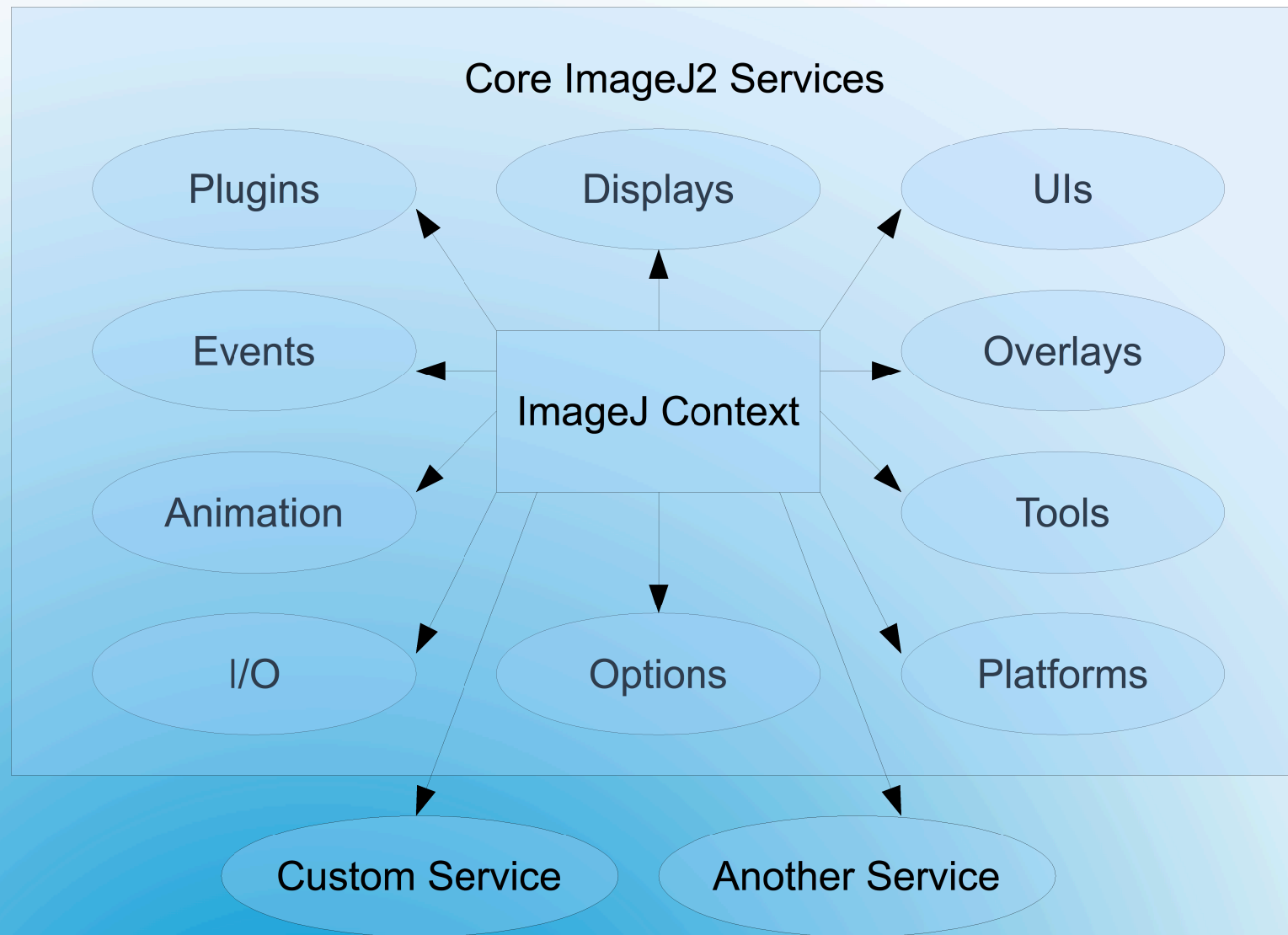
Interoperability



Invisible ImageJ1

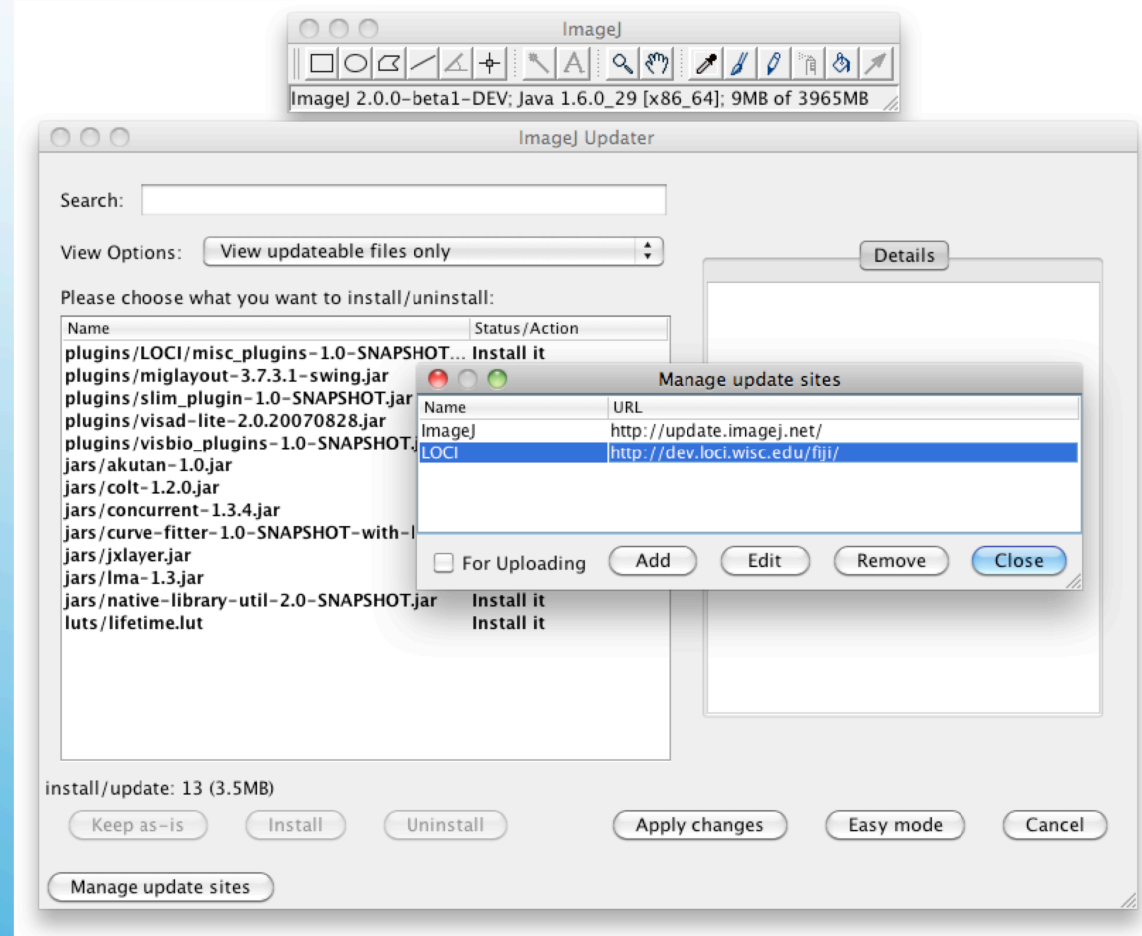


Compatibility



Service Architecture

- Keeps ImageJ2 plugins up-to-date
- Installs new plugins
- Anyone can create an update site and upload their own plugins to it
- Compatible with existing Fiji update sites (including fiji.sc)



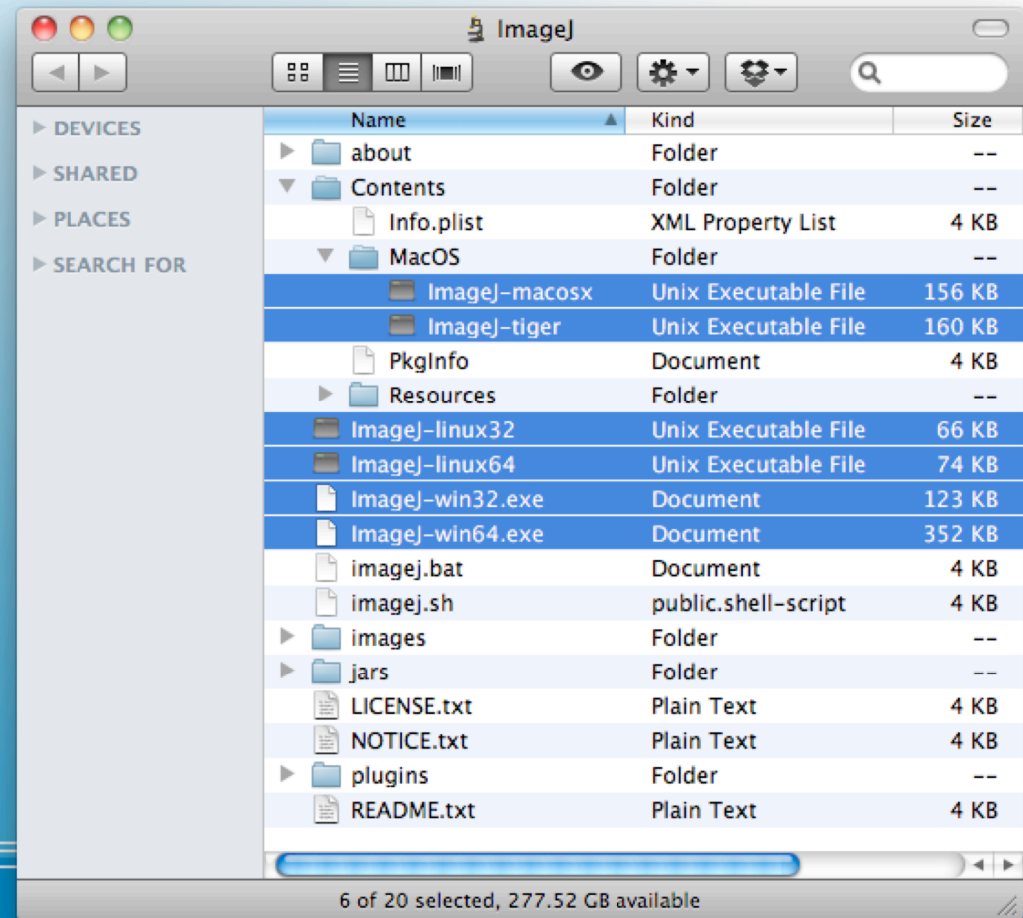
ImageJ Updater

- Uses SCIFIO (SCientific Image Format Input & Output) library for reading and writing data
- New formats can be added as SCIFIO plugins



Data I/O

- Many options for launching ImageJ2
- Run scripts in batch mode
- Multiple platforms
- Run headless



Launcher

- Release one beta per month
- Big green button
- Better integration with native code
- Website: central plugins listing
- Application-driven development



Future Directions