Summary Information

	3D Slicer	Ginkgo CADx	XMedCon	Weasis	ImageJ	DicomBrowser
Software name?	3D Slicer	Ginkgo CADx	XMedCon	Weasis	ImageJ	DicomBrowser
Number of developers	100	3	2	8	18	3
Initial release date?	1998	2010	2000	2010	1997	2012
Last commit date?	02-08-2020	21-05-2019	03-08-2020	06-08-2020	16-08-2020	27-08-2020
Status?	alive	alive	alive	alive	alive	alive
License?	BSD	GNU LGPL	GNU LGPL	EPL 2.0	OSS	BSD
Software Category?	public	public	public	public	public	public
Development model?	open source	open source	open source	open source	open source	open source
Num pubs on the software?	22500	51	185	188	339000	unknown
Programming language(s)?	C++, Python, C	C++, C	C	Java	Java, Shell, Perl	Java, Shell
…	…	…	…	…	…	…

Installability

	3D Slicer	Ginkgo CADx	XMedCon	Weasis	ImageJ	DicomBrowser
Installation instructions?	yes	no	yes	no	yes	no
Instructions in one place?	no	n/a	no	n/a	yes	n/a
Linear instructions?	yes	n/a	yes	n/a	yes	n/a
Installation automated?	yes	yes	yes	yes	no	yes
messages?	n/a	n/a	n/a	n/a	n/a	n/a
Number of steps to install?	3	6	5	2	1	4
Numbe extra packages?	0	0	0	0	1	0
Package versions listed?	n/a	n/a	n/a	n/a	yes	n/a
Problems with uninstall?	no	no	no	no	no	no
…	…	…	…	…	…	…
Overall impression (1..10)?	10	8	8	7	6	7
…	…	…	…	…	…	…

Correctness/Verifiability

…	…	…	…	…	…	…

Any reference to the requirements specifications of the program or theory manuals?	unclear It has a roadmap for the next big version change, but nothing for previous ones. https://www.slicer.org/wiki/Documentation/Labs/Slicer5-roadmap	unclear	unclear	unclear	unclear	unclear
What tools or techniques are used to build confidence of correctness?	automated testing, Doxygen	automated testing	unclear	automated testing, assertions used in the code	automated testing assertions used in the code Javadoc other (https://imagej.net/Debugging)	automated testing
If there is a getting started tutorial?	yes	no	no	no	yes	no
Are the tutorial instructions linear?	yes	n/a	n/a	n/a	no	n/a
Does the getting started tutorial provide an expected output?	no Only about how to load and view data	n/a	n/a	n/a	no https://imagej.net/Getting_Started	n/a
Does your tutorial output match the expected output?	n/a	n/a	n/a	n/a	n/a	n/a
Are unit tests available?	yes	yes	unclear	yes	yes	yes

	CircleCI https://github.com/Slicer/Slicer/blob/2da03dcc5ac9383d825598cfc58d24c1aa2158cd/CONTRIBUTING.md				yes https://imagej.net/ Travis	
Is there evidence of continuous integration? (for example mentioned in documentation, Jenkins, Travis CI, Bamboo, other)		no	no	no		no
Overall impression?	7	5	4	5	7	5

Additional comments? (can cover any metrics you feel are missing, or any other thoughts you

Surface Reliability

Did the software "break" during installation?	no	no	no	no	no	no
If the software installation broke, was the installation instance recoverable?	n/a	n/a	n/a	n/a	n/a	n/a
Did the software "break" during the initial tutorial testing?	no	n/a	n/a	n/a	no	n/a
If the tutorial testing broke, was a descriptive error message displayed?	n/a	n/a	n/a	n/a	n/a	n/a
If the tutorial testing broke, was the tutorial testing instance recoverable?	n/a	n/a	n/a	n/a	n/a	n/a
Overall impression?	9	7	7	7	9	7

Additional comments? (can cover any metrics you feel are missing, or

Surface Robustness

Does the software handle unexpected/unanticipated input (like data of the wrong type, empty input, missing files or links) reasonably? (a reasonable response can include an appropriate error message.)	yes	yes	yes	yes	yes with a clear message	yes
For any plain text input files, if all new lines are replaced with new lines and carriage returns, will the software handle this gracefully?	n/a	n/a	n/a	n/a	n/a	n/a
Overall impression?	9	9	9	9	9	9

Additional comments? (can cover any metrics you feel are missing, or any other thoughts you have)

Surface Usability

Is there a getting started tutorial?	yes	no	no	no	yes	no
Is there a user manual? ({yes, no})	yes	no	yes	yes	yes	yes
Are expected user characteristics documented?	no	no	no	no	no	no

What is the user support model? FAQ? User forum? E-mail address to direct questions? Etc.	FAQ, user forum, training tutorials, Github issue	FAQ, E-mail, Github issue	FAQ, E-mail	FAQ, Github issue	FAQ, Troubleshooting, user forum, Github issue	E-mail
Overall impression?	8	7	5	6	8	5

Additional comments? (can cover any metrics you feel are missing, or any other thoughts you

Maintainability

What is the current version number?	4.10.2	3.7.1	0.16.2	3.6.1	2.1.0	1.7.5
Is there any information on how code is reviewed, or how to contribute?	yes There is a developer manual https://www.slicer.org/wiki/Documentation/Nightly/Developers	no	no	yes https://nroduit.github.io/en/getting-started/#developer-documentation	yes https://imagej.net/Development.html	no

	yes	yes	yes	yes	yes	yes
Are artifacts available? (List every type of file that is not a code file – for examples please look at the 'Artifact Name' column of https://gitlab.cas.mcmaster.ca/SEforSC/se4sc/-/blob/git-svn/GradStudents/Olu/ResearchProposal/Artifacts_MiningV3.xlsx)	Acknowledgements API documentation Authors Bug tracker Build file Change request Developer's Manual Executable files FAQ Installation Guide License Makefile Project Plan README Release notes Source code Test cases Troubleshooting guide Tutorials User Manual Version Control	Authors Bug tracker Build file Change request FAQ License Makefile README Source code Troubleshooting guide Version Control	Acknowledgements Bug tracker FAQ Installation Guide License Makefile README Source code Troubleshooting guide User Manual Version Control	Bug tracker Change request Developer's Manual FAQ License README Release notes Source code Test cases Tutorials User Manual Version Control	Acknowledgements API documentation Authors Bug tracker Build file Change request Developer's Manual Executable files FAQ Installation Guide License Makefile Project Plan README Release notes Source code Test cases Troubleshooting guide Tutorials User Manual	Authors Change request License README Source code Tutorials User Manual Version Control
What issue tracking tool is employed?	Github	Github	SourceForge	Github	Github	BitBucket
What is the percentage of identified issues that are closed?	91.65%	56.25%	0.00%	89.30%	52.49%	n/a
What percentage of code is comments?	17.45%	18.70%	14.36%	9.04%	5.86%	11.86%
Which version control system is in use?	Github and SVN	Github	git	Github	Github	git
Overall impression?	9	6	4	8	8	4

**Additional comments?
(can cover any metrics
you feel are missing, or**

Reusability

How many code files are there?	3901	1058	257	1041	45	62
Is API documented?	yes	no	no	no	yes	no
Overall impression?	10	8	4	8	5	3

**Additional comments?
(can cover any metrics
you feel are missing, or**

**Surface Understandability
(Based on 10 random
source files)**

Consistent indentation and formatting style?	yes	yes	yes	yes	yes	yes
Explicit identification of a coding standard?	yes	no	no	yes https://nroduit.github.io/en/getting-started/guidelines/	yes https://imagej.net/Coding_style	no
Are the code identifiers consistent, distinctive, and meaningful?	yes	yes	yes	yes	yes	yes
Are constants (other than 0 and 1) hard coded into the program?	no	no	no	no	no	no
Comments are clear, indicate what is being done, not how?	yes	yes	yes	yes	yes	yes
Is the name/URL of any algorithms used mentioned?	yes	yes	unclear	yes Graham Scan algorithm	yes https://imagej.net/TrackMate_Algorithms	unclear

Parameters are in the same order for all functions?	yes	yes	yes	yes	yes	yes
Is code modularized?	yes	yes	yes	yes	yes	yes
Overall impression?	9	7	6	8	9	6

Additional comments? (can cover any metrics you feel are missing, or

Visibility/Transparency

Is the development process defined? If yes, what process is used.	yes It has a guide for making contributions to the code. https://www.slicer.org/wiki/Documentation/Nightly/Developers/Tutorials/ContributePatch	no	no	no	yes https://imagej.net/Development_Life cycle	no
Are there any documents recording the development process and status?	yes The release details https://www.slicer.org/wiki/Release_Details and the Labs recording completed and on-going features https://www.slicer.org/wiki/Documentation/Labs	no	no	no	yes https://imagej.net/tickets/	no

Is the development environment documented?	yes There is an instruction on setting up dev env on different OS https://www.slicer.org/wiki/Documentation/Nightly/Developers/Build_Instructions	no	no	yes https://nroduit.github.io/en/getting-started/building-weasis/	yes https://imagej.net/IDEs	no
Are there release notes?	yes The release details https://www.slicer.org/wiki/Release_Details	no	no	yes https://github.com/nroduit/Weasis/blob/master/CHANGELOG.md	yes https://imagej.net/ImageJ2_development_releases	no
Overall impression?	9	4	4	7	9	4
Additional comments? (can cover any metrics you feel are missing, or						

Repo Metrics (Measured via git_stats)						
Number of text-based files.	3901	1058	257	1041	45	62
Number of binary files.	798	212	2	214	42	7
Number of total lines in text-based files.	784626	632107	144742	158642	10925	8907
Number of total lines added to text-based files.	4719180	863932	414757	514448	2740542	24070
Number of total lines deleted from text-based files.	3934551	231825	270015	348317	2729538	15163
Number of total commits.	26216	201	2377	2127	8952	88

Numbers of commits by year in the last 5 years. (Count from as early as possible if the project is younger than 5 years.)	778, 1033, 855, 776, 536	169, 17, 7, 8	4, 0, 55, 13, 7	240, 303, 164, 135, 70	58, 32, 29, 8, 11	n/a
Numbers of commits by month in the last 12 months.	54, 50, 83, 48, 46, 45, 129, 110, 58, 94, 49, 5	0, 0, 0, 0, 7, 0, 0, 0, 1, 0, 0, 0	0, 0, 0, 0, 0, 0, 0, 0, 5, 0, 1, 1	10, 18, 17, 6, 10, 9, 3, 2, 12, 8, 19, 7	1, 1, 0, 0, 0, 2, 1, 0, 0, 0, 4, 4	n/a
Repo Metrics (Measured via scc)						
Number of text-based files.	3386	974	202	1027	40	54
Number of total lines in text-based files.	709143	361207	129991	156551	10740	7375
Number of code lines in text-based files.	501451	257144	96767	123272	9681	5505
Number of comment lines in text-based files.	123729	67536	18663	14156	629	875
Number of blank lines in text-based files.	83963	36527	14561	19123	430	995
Repo Metrics (Measured via GitHub)						
Number of stars.	379	102	n/a	339	794	n/a
Number of forks.	171	31	n/a	178	285	n/a
Number of people watching this repo.	25	24	n/a	48	89	n/a
Number of open pull requests.	22	2	n/a	0	3	n/a
Number of closed pull requests.	644	4	n/a	34	33	n/a
Number of months on GitHub.	16	65	n/a	113	114	n/a
Accessed date.	2021-07-26	2021-07-26	n/a	2021-07-26	2021-07-26	n/a

3DimViewer	Horos	OsiriX Lite
3	21	9
unclear	unclear	2004
03-03-2020	03-04-2020	06-11-2019
alive	alive	alive
Apache	GNU LGPL 3.0	unclear
public	public	public
open source	open source	open source
31	unknown	19,800
C++, Cmake	C, Objective-C++	C, Objective-C++
…	…	…

no	no	yes
n/a	n/a	yes
n/a	n/a	yes
yes	yes	no
n/a	n/a	n/a
7	2	8
0	0	0
n/a	n/a	n/a
no	no	no
…	…	…
6	7	7
…	…	…

…	…	…

unclear	unclear	unclear
unclear	automated testing	automated testing
no	no	no
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
unclear	yes	yes

no	no	no
3	5	6

no	no	no
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
7	7	7

yes	yes	yes
n/a	n/a	n/a
9	9	9

no	no	yes
no	no	yes
no	no	no

Contact form	FAQ, user forum, Github issue	FAQ, Github issue
5	6	7
4.1.3	3.3.6	5.8
no	no	no

	yes	yes
	Bug tracker	Bug tracker
	Build file	Change request
	Change request	Executable files
yes	FAQ	FAQ
Bug tracker	License	Installation Guide
Build file	Makefile	README
Change request	README	Release notes
License	Release notes	Source code
Makefile	Source code	Test cases
README	Test cases	Tutorials
Source code	Tutorials	User Manual
Version Control	Version Control	Version Control
BitBucket	Github	Github
30.77%	32.96%	unclear
13.75%	25.90%	24.16%
git	Github	Github
5	6	5

757	2620	2523
no	no	no
6	9	9

yes	yes	yes
no	no	no
yes	yes	yes
no	no	no
yes	yes	yes
	yes	yes
unclear	MSRG Algorithm	MSRG Algorithm

yes	yes	yes
yes	yes	yes
6	8	8

| no | no | no |

| no | no | no |

no	no	no
	yes	yes
	https://github.com/ horosproject/horos /releases	https://github.com/ pixmeo/osirix/relea ses
no		
4	5	5

757	2620	2523
169	360	406
249097	1125172	1105644
388699	5040890	3892029
139609	3914165	2784741
34	11411	10754

	154, 79, 267, 25,	
0, 1, 3, 2, 1	26	4, 3, 7, 1, 0
0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0	9, 0, 7, 1, 8, 14, 3, 0, 0, 0, 0, 0	0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0

730	2346	2270
240627	912496	873025
178065	561617	544304
33097	236360	210923
29465	114519	117798

n/a	316	293
n/a	117	204
n/a	60	74
n/a	5	0
n/a	130	53
n/a	78	103
n/a	2021-07-26	2021-07-26