



# GeoEasy<sup>os</sup> 3.1

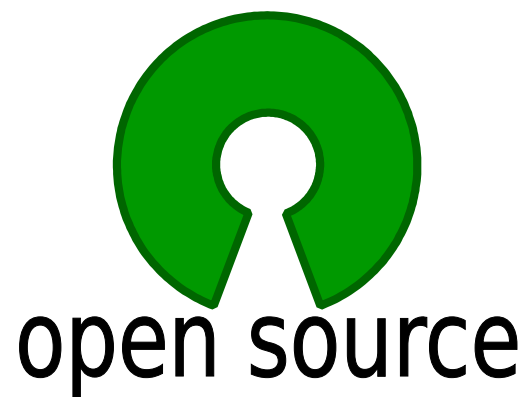
The development of the GeoEasy program started in 1997. Twenty years later in 2017 it has become free software under GPL license, freely available for everybody. The ComEasy module of the project was released under open source license from the beginnings (see <https://github.com/zsiki/ComEasy>). The core development of GeoEasy is made on Linux operating system, using Tcl/Tk script language, thanks to the Tcl/Tk ports to several operating system the program can be used on Linux, on Windows (32 and 64 bit version), on Android tablets and on OSX machines. Intensive tests of the code were made on Linux and Windows only.

## New features:

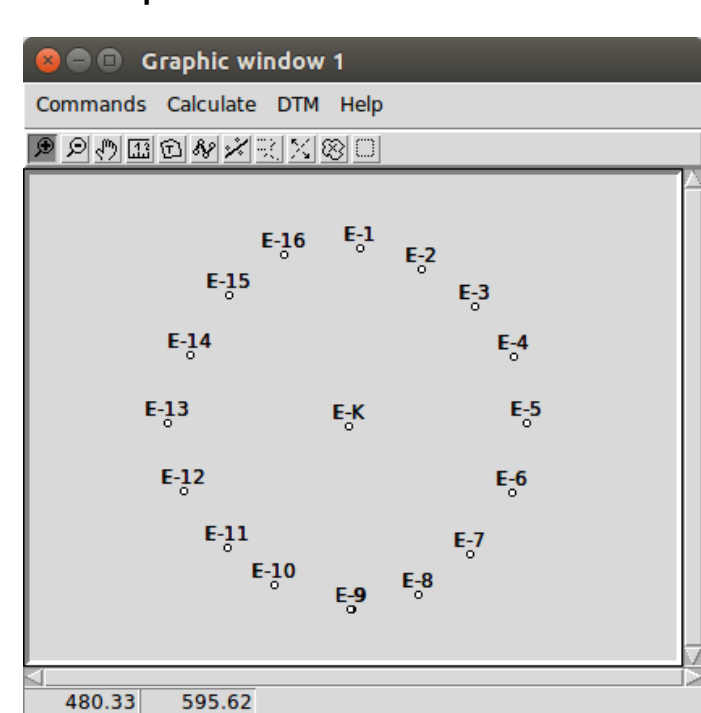
- German, Czech, Russian GUI
- Tcl console for your scripts
- Portable windows release
- Variable column widths in field-books
- Parallel line regression
- Circle regression
- Regression fixed radius
- Vertical transformation
- KML export of coordinate list
- Many bug-fixes
- More than 400 commits and 72 issues solved after 3.0

## Objectives

- User friendly graphical user interface
- Modular, extendable structure
- Direct process of data from total stations
- Flexibility and openness connecting to other programs
- Educational and professional usage



Graphic window



Download the binary releases for Windows and Linux:  
[http://digikom.hu/english/geo\\_easy\\_e.html](http://digikom.hu/english/geo_easy_e.html)

Field-book

Station number	Point number	Signal height	Horizontal angle	Vertical angle	Slope distance
Reference object	Instrument height	Horizontal ref. angle			Horizontal distance
kalvaria		1.450			
ordogorom	5004		328.7886		
kalvaria	5002	1.300	363.7417		
szegvar			377.5179		954.730
ordogorom	231		78.9108		
ordogorom	5004		258.7759		
ordogorom	5002		302.0500		
ordogorom	331.1481		371.4846		
ordogorom	5004		379.9639		1117.280
magyarlak	58.6701		223.3142		
gurgoghegy	5002		236.2438		
szegvar	323.2898		394.9256		
kalvaria	32.9941		56.8861		1078.440
kuphegy	5004				

Coordinate list

Point number	Point code	Easting	Northing	Elevation
		Easting prem.	Northing prem.	Height prem.
101		89817.601	3124.333	125.316
102		89888.176	3112.641	126.834
103		90043.336	3181.331	127.003
201		90257.641	3134.366	124.375
202		90112.929	3206.322	120.762
231		88568.240	2281.760	
232		88619.860	3159.880	
301		90543.542	2842.501	139.243
302		90467.022	2904.657	137.432
303		90443.190	2958.541	139.844
5001		89562.497	3587.526	180.000
5002		90587.628	2590.110	138.800
5003		89398.565	2775.084	118.425
5004		90246.207	2195.193	
gurgoghegy		84862.540	3865.360	
kalvaria		91515.440	2815.220	111.920
kuphegy		90050.240	3525.120	
magyarlak		86808.180	347.660	
ordogorom		90661.580	1475.280	
szegvar		91164.160	4415.080	130.000

## Development tool

- Console window to run ad-hoc Tcl commands
- Extend the functionality of GeoEasy with user defined scripts loaded from file
- Write your own app using GeoEasy as a library



## Regression circle

Calculation results

2017.11.01 12:10 - Circle  
Y0 = 477.688 X0 = 589.631 R = 29.568

Point num	E	N	dE	dN	dR
E-1	479.390	619.630	-0.027	-0.478	-0.479
E-2	489.810	616.200	0.151	0.332	0.364
E-3	498.750	610.025	0.180	0.174	0.251
E-4	505.080	601.470	-0.250	-0.108	-0.273
E-5	507.319	590.356	-0.071	-0.002	-0.071
E-6	504.929	578.789	0.232	-0.092	0.249
E-7	497.890	568.570	0.267	-0.278	0.385
E-8	489.140	561.830	-0.190	0.461	-0.499
E-9	478.040	559.480	-0.007	0.584	-0.584
E-10	465.190	563.560	-0.284	-0.592	0.657

RMS=0.417

## Surveying calculations

- Edit field-books
- Intersection, resection, orientation, ...
- Traversing, trigonometric line
- Coordinate transformations
- Coordinate list and field-book import (several formats)
- DXF export

## Regression calculation

- Solving engineering surveying tasks
- Regression lines, plan, circle, sphere, 3D line, parallel lines

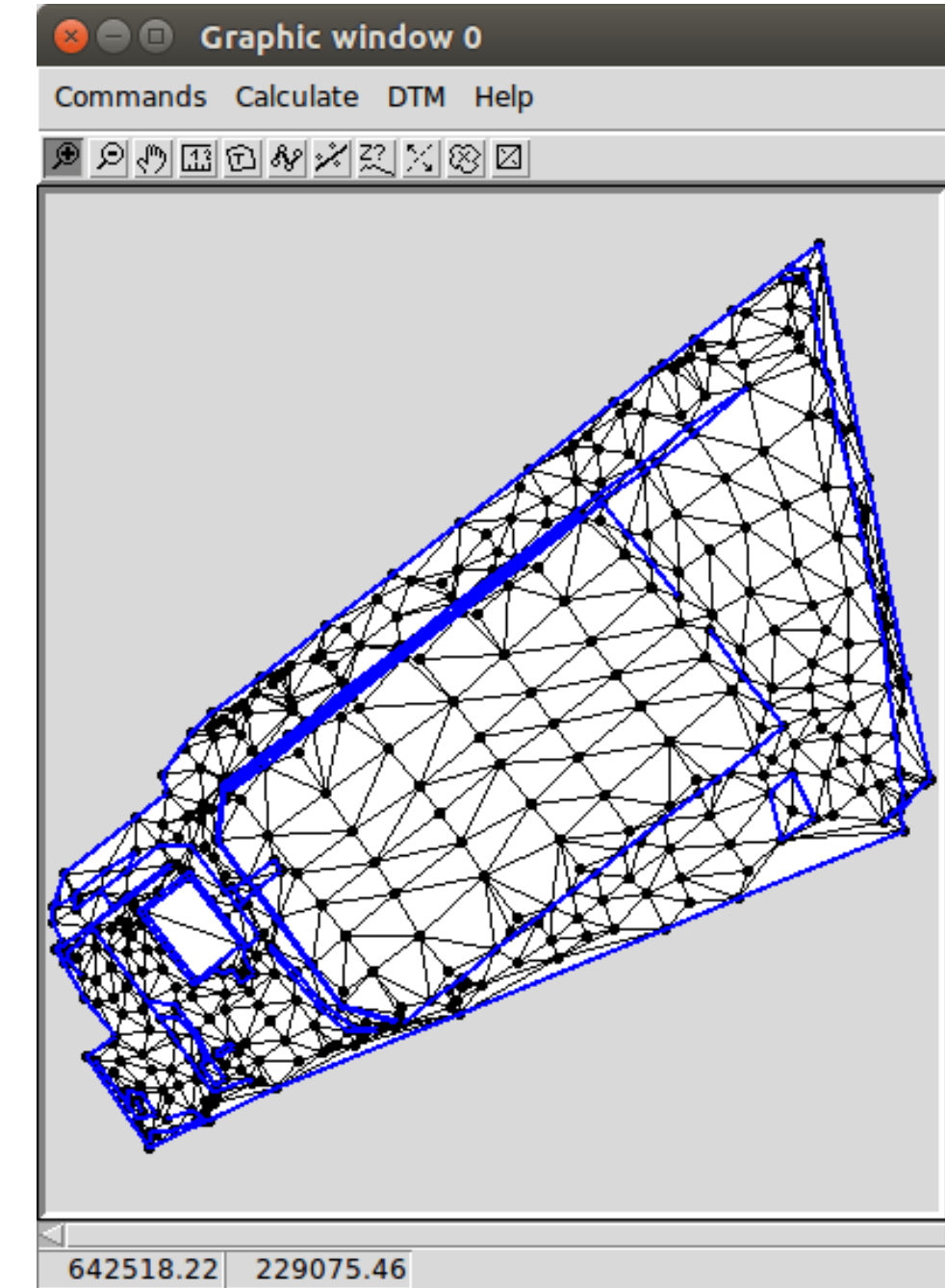
## Digital Terrain Models

- DXF import
- TIN models
- Break lines
- Contour lines
- Volume calculation
- Cross sections
- VRML, KML, DXF, ASCII GRID export
- Update, regenerate

## Network adjustment (GNU Gama)

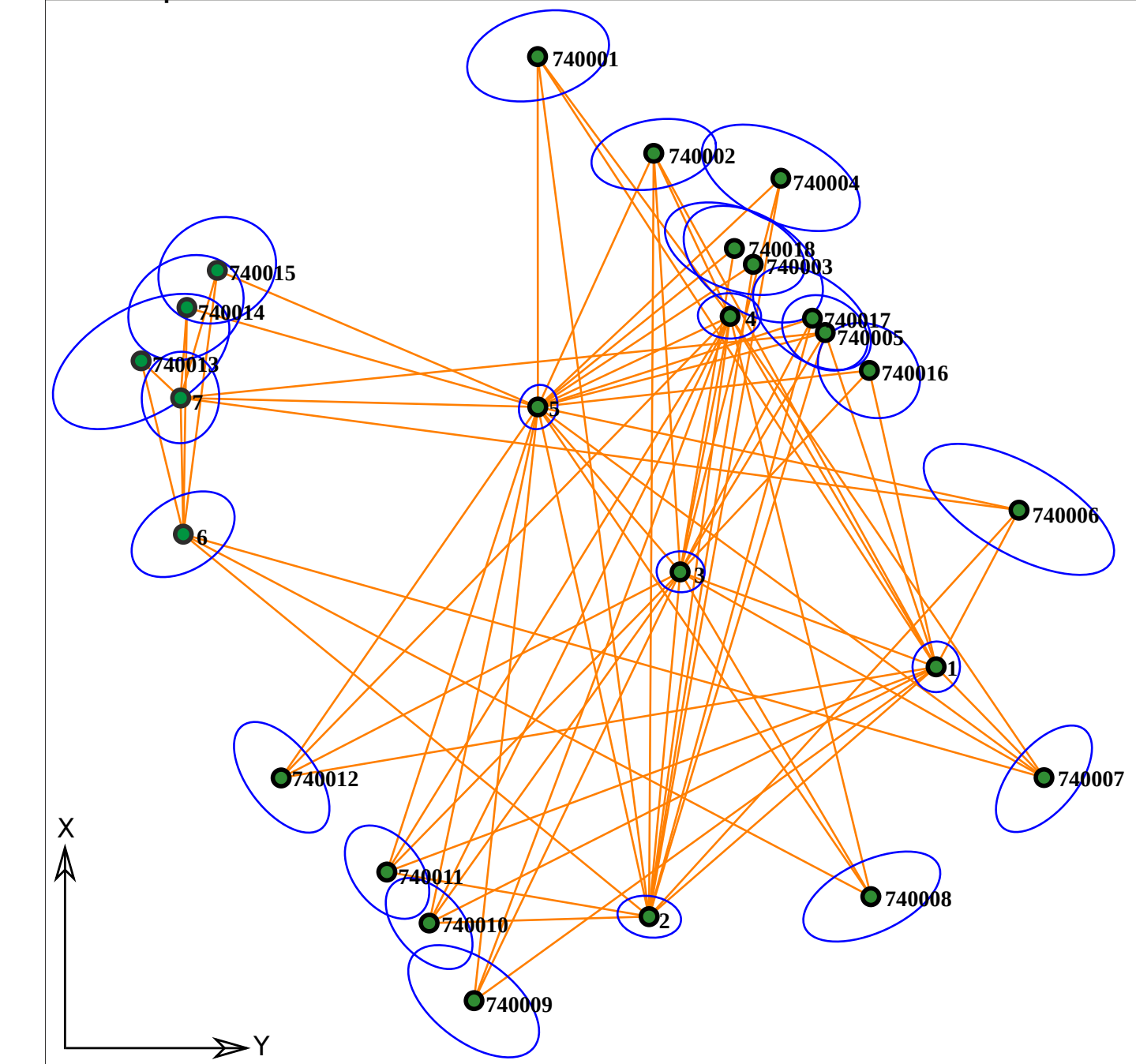
- 1D/2D/3D geodetic network
- Normality check
- Data snooping
- Network sketch with error ellipses

TIN model (Triangle)



Exported GRID model in QGIS 3

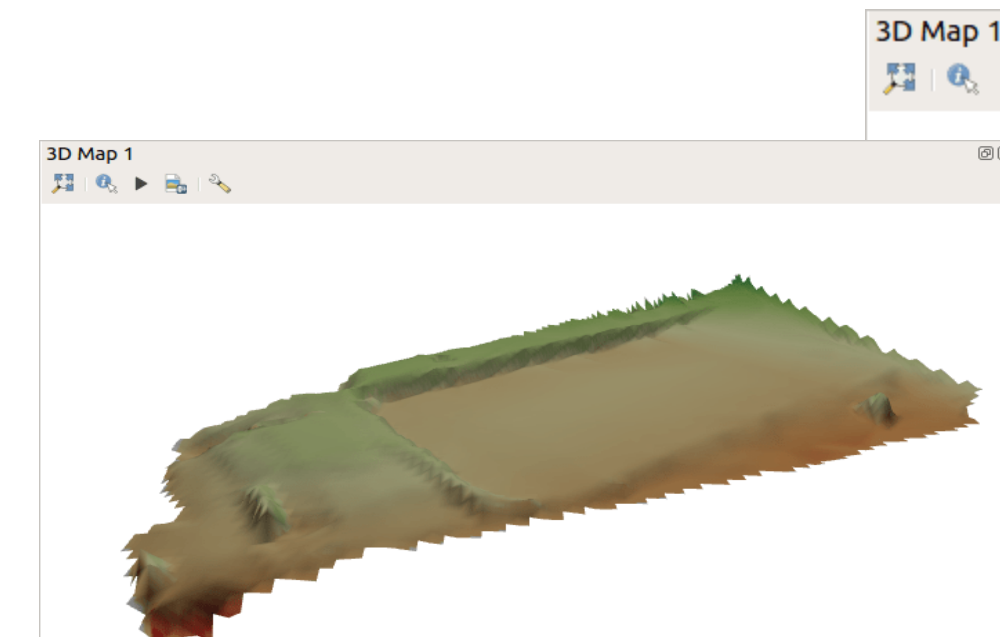
Error ellipses in horizontal network



Adjustment results (GNU Gama)

Adjusted coordinates

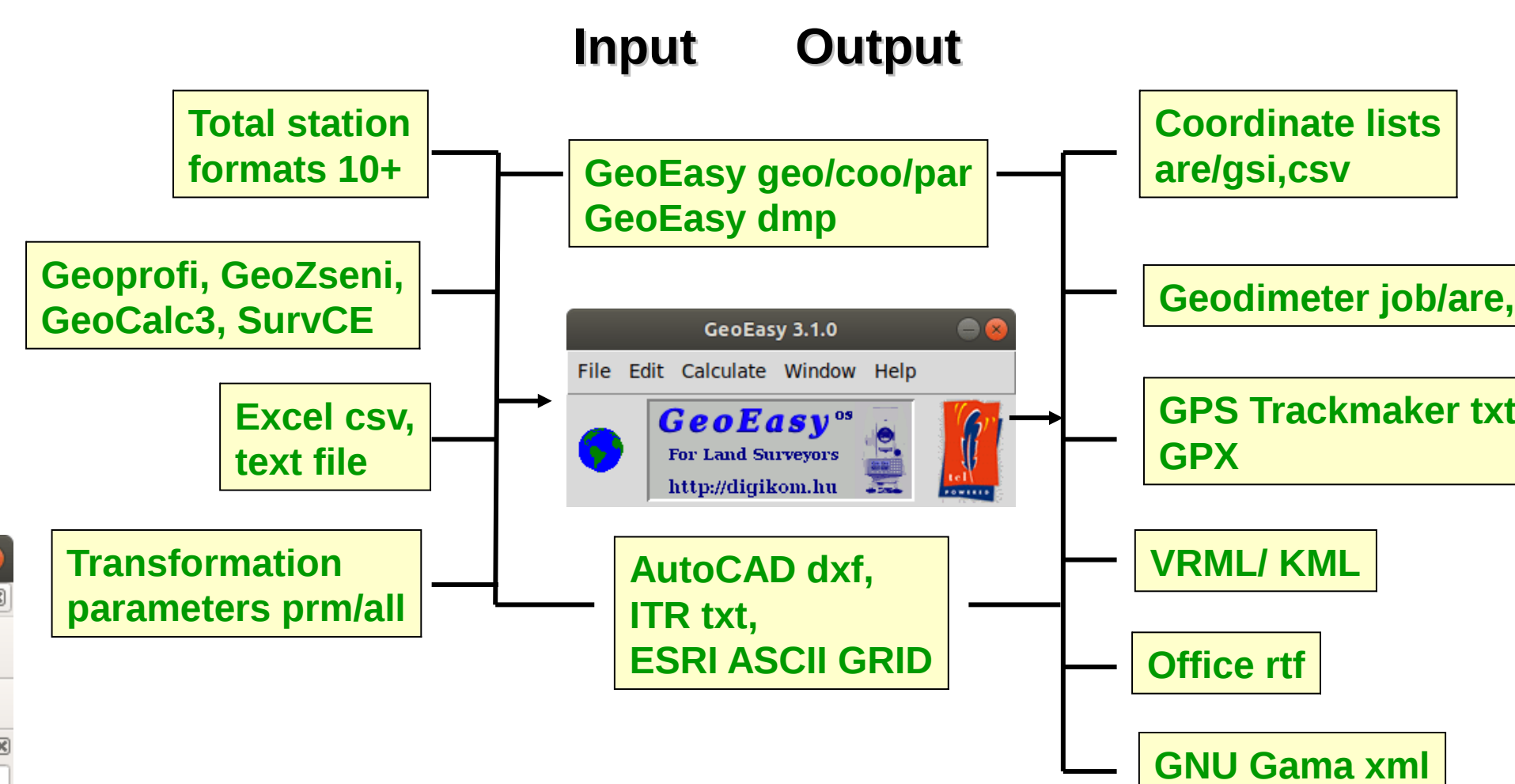
i	point	approximate value	correction [m]	adjusted value	std.dev [mm]	conf.i.
17	X *	735.53500	-0.00002	735.53498	0.4	0.7
18	Y *	598.88300	0.00013	598.88313	0.3	0.7
2						
23	X *	673.49900	-0.00001	673.49899	0.3	0.6
24	Y *	527.57600	-0.00087	527.57513	0.4	0.8
3						
1	X *	759.06300	-0.00002	759.06298	0.3	0.6
2	Y *	535.25100	-0.00007	535.25093	0.3	0.6
4						
36	X *	822.31000	0.00005	822.31005	0.3	0.7
37	Y *	547.62300	-0.00015	547.62285	0.4	0.9



OPEN SOURCE SOFTWARE



## Connections to other programs through data sets



## OS software used

- Tcl/Tk (<https://www.tcl.tk/>)
- GNU Gama (<https://www.gnu.org/software/gama/>)
- Triangle (<https://github.com/MrPhil/Triangle>)
- Proj cs2cs (<http://proj.org>)
- NSIS ([http://nsis.sourceforge.net/Main\\_Page](http://nsis.sourceforge.net/Main_Page))
- Freewrap (<http://freewrap.sourceforge.net/>)
- Bash-deb-build (<https://github.com/BASH-Auto-Tools/bash-deb-build>)
- Rst2pdf (<https://rst2pdf.org>)

## Let us develop GeoEasy together!

- Source code available on GitHub (<https://github.com/zsiki/GeoEasy>)
- Report the errors you found in issue tracker (<https://github.com/zsiki/GeoEasy/issues>)
- Extend and correct the documentation (<https://github.com/zsiki/GeoEasy/doc>)
- Help other users (<https://github.com/zsiki/GeoEasy/wiki>)

