

# urban Visualisation & management gmbh

# UVM SYSTEMS

# MANUAL Orientation

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City**GRID** 2025

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Aufnahme: Brasov, Romania, Dan Novac, Pixabay

# 1. Introduction

With the orientation tool of City**GRID**, orientation parameters from known protocols (INPHO PRJ and ContextCapture Blocks Exchange) can be converted into a City**GRID** xml and thus prepared for further use in the City**GRID** system. (Automatic texturing, shaper)

User-defined orientation files can also be converted into a City**GRID** xml with appropriate preparation and an existing calibration protocol.

Depending on the protocol used, the orientation tool consists of three sections.





# 2. Camera definition:

In the Camera definition section, you can select a camera system from a drop-down list and navigate to a corresponding orientation file in order to read it in. On the other hand, the orientation parameters can be entered manually using the Add new Camera button and then edited accordingly (with the help of a calibration protocol).

Image Orient	tation Tool											
					Can	nera defini	tion					
				Protoc		lser defined						
				FIOLOC	u.							
Add new Ca	mera			Source		Read from file		Distortion	parameters	are normaliz	ed	
Delete Can	nera				Numbe	r of Cameras:		🔲 Multiply d	listortion val	ue by -1		
Delete All Ca	meras							Average to	arrain heidht	(m):		
								Arciuge a	circum neight			
				C	amera calibr	ation param	eters:					
Camera name	Calibration date	Focal length [mm]	PPX [mm]	PPY [mm]	Dim X [Px]	Dim Y [Px]	Pixel size [mm]	Image rotation [°]				
RED-DOL-Phas	11.05.2020	69.798	-0.002	0.002	736	306	0.009200000014	0	calculated	calculated	calculated	calculated
lewCamera	27.11.2023	0	0	0	0	0	0	0	0	0	0	0
VewCamera	27.11.2023	0	0	0	0	0	0	0	0	0	0	0
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Userdefined protocols:

New cameras can either be imported via a CityGRID xml file or added manually. All columns can be edited.

🙏 Image Orier	ntation Tool											×
					Can	nera definit	tion					
				Protoco	ol:	Inpho						
Add new C				Source		Read from file		Distortion	parameters	are normaliz	zed	
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						r or cameras.						
Delete All Ca	ameras							Average te	errain height	: (m):		
				Ca	amera calibr	ation param	eters:					
Camera name	Calibration date	Focal length [mm]	PPX [mm]	PPY [mm]	Dim X [Px]	Dim Y [Px]	Pixel size [mm]	Image rotation [°]				К4
Nadir	17/03/2017	89.0992			28412	11474	0.00460000000	90	0	0	0	0
110_left	31/03/2017	88.9885	0.095099940			8708	0.004600000000		calculated	calculated	calculated	calculated
111_right	31/03/2017	89.0856	-0.04700004	-0.00649979	11608	8708	0.004600000000		calculated	calculated	calculated	calculated
116_back	31/03/2017	89.1024	0.093899800	-0.10539980	11608	8708	0.00460000000		calculated	calculated	calculated	calculated
119_front	07/04/2017	89.056	0.142000160	-0.04000022	11608	8708	0.004600000000	90	calculated	calculated	calculated	calculated
UrbanMapper_	31/03/2017	89.0992	0	0	28412	11474	0.004600000000	90	0	0	0	0
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Camera definition of an Inpho PRJ file:

No new cameras can be added to Inpho PRJ or ContextCapture Blocks Exchange protocols. Exclude individual cameras with Delete camera or delete all cameras to load a new file.





# 3. Internal orientation

When reading Inpho PRJ or ContextCapture Blocks Exchange protocols, the following values are filled in automatically. If they are entered manually, they must be specified (e.g. using a camera calibration protocol).

Focal Length: focal length in mm.

*PPX/PPY*: Coordinates of the principal point in mm.

*Dim X/Dim Y*: Width/height of the camera images in pixels.

Pixel size: Size of a pixel in mm.

*Image rotation:* In practice, it can happen that all images from a particular camera have been rotated again after the image orientation has been calculated (using aerotriangulation). For example, if the sky is at the bottom of an orientated oblique image and the image is then rotated by 180° so that the viewer can see the sky at the top. This image rotation after the calculated image orientation can be considered here using the values +90°, -90° and 180°.



<u>Note</u>: In the case of such a subsequent image rotation, the dimensions of the rotated image must be specified in Dim X / Dim Y!

#### Lens distortion

With Inpho PRJ or ContextCapture Blocks Exchange protocols, the lens distortion of the respective camera is also converted to City**GRID**. In City**GRID**, however, only the radial distortion parameters are taken into account, as this is sufficiently accurate for texturing.

#### Distortion parameters are normalised:

If the camera parameters are entered manually, the radial distortion parameters K1, K2, K3 and K4 can also be entered. It should be noted that in some calibration protocols, these parameters refer to normalised image coordinates (i.e. image coordinates divided by the focal length). In this case, the values K1, K2, K3 and K4 are approximately of the same dimension and the checkbox "**Distortion parameters are normalised**" must be activated.

Non-normalised distortion parameters can be recognised, for example, by the fact that K3 and K4 are much smaller than K1.



Example: radial distortion parameters.

Non normalised	Normalised
-0,0035038536389707	-0,281789608467331
-0,000022388130811	0,122598296943032
0,0000001156937507	-0,0335000573225105

#### Multiply the distortion values by -1:

With INPHO PRJ protocols, it can sometimes happen that the sign of the distortion has to be swapped.

Average terrain height (m):

An *approximate* average terrain height of the processing area must be specified for each type of image orientation in order to calculate the image footprint correctly.





# 4. External orientation:

## 4.1. Inpho/ContextCapture

In the Case of a **Inpho** oder **ContextCapture** orientation protocol this page is only used for an overview, as both the internal and external orientation are part of the protocol. A preview of the first 20 entries in the input file is displayed here.



<u>Note</u>: If irregularities are detected, the dialogue must be aborted, and the orientation file processed with external systems!

Ser defined settings           Ser defined settings           Service first 20 lines of input file         Provise first 20 lines of input file         Provise first 20 lines of input file           Nadir         001_001_NAD00001         52802.24790         567429.59470         2107.63630         -0.04196646494084         0.0167096608734931         -0.13564924           Nadir         001_001_NAD000015         528061.30273         5674283.40525         2110.2145         0.0997903305007         0.06026841187867         -0.0833359           Nadir         001_005_NAD000015         529489.13454         5674283.40525         2110.2145         0.0097203350907         0.0502757730507         -0.0428496           Nadir         001_005_NAD000015         529489.13454         567428.405438         2107.01311         -0.14959142651178         0.00774114569626         -0.0799110           Nadir         001_005_NAD000025         53124.74850         567428.62642         2107.91373         0.051220131491         0.036277648244983         -0.0989197           Nadir         001_00_NAD000025         53124.74875         567428.62498         2102.51201         -0.0163048137424         0.0051315105720         -0.0989197           Nadir         01_00_NAD000025         53124.74875         567428.62498         2102.51201         -0.01630481	External Orientation							
Preview first 20 lines of input fil:           Camera name         Image name         Esting (m)         Northing (m)         Altivade (m)         Omega (deg)         Phi (deg)         Kappa           Nadir         001.001_NAD000815         52802.24790         5674292.59470         2107.63630         -0.01496646490844         0.016709660873493         -0.13564924           Nadir         001.002_NAD00081         52960.9164         5674282.597841         2106.63076         -0.12594457047282         0.003892757373090         -0.0383265           Nadir         001.005_NAD00081         52948.51454         5674278.05484         2107.6372         -0.00476531676479         0.003771143698269         -0.0291114           Nadir         001.005_NAD00081         52948.51454         5674275.96950         2109.11854         0.036989757935213         0.0384279309271         -0.0383997           Nadir         001.007_NAD00082         53120.47745         5674296.53304         2105.16080         -0.15163081372140         -0.005170204         -0.00917178           Nadir         01.009_NAD00082         53120.47865         5674296.53941         2105.3601         -0.0168091372164         -0.05120917         -0.021411204           Nadir         01.010_NAD00082         53206.259567         5674288.2828         2102.45554								
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adir         001_006_NAD000819         530347.04560         5674275.96950         2109.11854         0.0369897577935213         0.0384229505405498         0.00829531           adir         001_007_NAD000820         530775.95998         5674288.69642         2107.91573         0.055122001354973         0.0362477309927175         -0.09461456           adir         001_009_NAD000820         531204.74875         5674296.53304         2103.16089         -0.01634038137420         -0.05072648244981         -0.094312708           adir         001_010_NAD000823         532062.59567         5674296.22498         2102.3354         -0.0121868066967973         0.01667091238903         -0.09441204           adir         001_011_NAD000825         532920.55708         5674269.82937         2106.56792         0.008861137217064         -0.003522203158428         0.0228320           adir         001_012_NAD000825         53349.35409         5674269.82778         2107.47250         0.008861137217064         -0.003522203158428         0.02280320           adir         001_014_NAD000825         53349.35409         5674269.62778         2107.47250         0.008861137217064         -0.003522203158428         0.002203158428           adir         001_015_NAD000825         53349.35409         5674269.62778         2107.47250         0.00381968554025	adir	001_005_NAD000818	529918.06080	5674274.20861	2107.01311	-0.149595142651178	0.0077411436986269	-0.072981101910
adir         001_007_NAD000820         53775.95998         5674288.69642         2107.91573         0.0551220013549731         0.0362477309927715         -0.09461456           adir         001_008_NAD000821         531204.74875         5674286.53304         2103.16089         -0.016340381374240         -0.005136150157205         -0.09839970           adir         001_009_NAD000822         51533.72865         5674288.2828         2102.53201         -0.013013290914100         0.05727648244981         -0.09212788           adir         001_01_NAD000825         532062.59567         5674288.2828         2102.43554         -0.01860909372130         0.022442154657522         -0.01503200           adir         001_011_NAD000825         532920.55708         5674268.28278         2104.28312         -0.01680909372130         0.022442154657522         -0.01580303           adir         001_012_NAD000825         53378.19526         5674269.2778         2107.47250         0.003819855540259         -0.014916559247666         0.04065745           adir         001_014_NAD000827         533778.19526         5674274.36607         2106.1798         0.032854992551629         0.014916559247686         0.04065745           adir         001_015_NAD000826         543636.14152         5674274.36607         2106.2174         -0.003734263561748 <td< td=""><td>adir</td><td>001_006_NAD000819</td><td>530347.04560</td><td>5674275.96950</td><td>2109.11854</td><td>0.0369897577935213</td><td>0.0384229505405498</td><td>0.0082953137292</td></td<>	adir	001_006_NAD000819	530347.04560	5674275.96950	2109.11854	0.0369897577935213	0.0384229505405498	0.0082953137292
adir001_008_NAD000821331204.748755674296.533042103.16089-0.016340381374240-0.005136150157205-0.09839970adir001_009_NAD00082251633.728655674296.224982102.53201-0.0130132909141000.0507276482449831-0.09212789adir001_010_NAD000823532062.595675674288.828282102.43554-0.0121868069679730.018670091238903-0.09441204adir001_011_NAD000825532920.557085674268.828282104.28312-0.0168009937213030.022442154657522-0.10158063adir001_012_NAD000825532920.557085674269.899372106.567920.0088611372170646-0.003522203158480.022803203adir001_013_NAD000827533778.195265674274.366072106.17980.0328549925516290.0149165592476860.00465745adir001_015_NAD000828534207.196775674280.245062102.92317-0.0235810024281420.0095130291647330.092604367adir001_016_NAD000829534636.141525674279.317542100.211610.0111582485415750.0072731700448940.03047507adir001_017_NAD00083053593.682275674265.5512872100.23095-0.031122497129012-0.002734393054760.00321359830adir001_019_NAD00083253592.660515674269.982232100.23095-0.031122497129012-0.027643937054760.095112037adir001_019_NAD0008325351.590335674265.512872104.94518-0.0270175300832260.01549065759281890.095112037adir001_019_	adir	001_007_NAD000820	530775.95998	5674288.69642	2107.91573	0.0551220013549731	0.0362477309927715	-0.094614566855
adir         001_009_NAD000822         531633.72865         5674296.22498         2102.53201         -0.013013290914100         0.0507276482449831         -0.09212789           adir         001_010_NAD000823         532062.59567         5674288.82828         2102.43554         -0.012186806967973         0.018670091238903         -0.0944120           adir         001_011_NAD000824         532491.55647         5674277.21238         2104.28312         -0.018690993721303         0.0224421546575222         -0.0158609           adir         001_012_NAD000825         53290.55708         5674269.89937         2106.56792         0.008861137217064         -0.004552203158428         0.02280320           adir         001_014_NAD000825         53349.35409         5674269.62778         2107.47250         0.008811685540259         -0.01491655924768         0.005228466           adir         001_014_NAD000827         533778.19526         5674269.62778         2106.5179         0.0232581002428142         0.009513029164735         0.05522846           adir         001_015_NAD000829         53407.19677         5674280.24506         2102.92317         -0.023581002428142         0.0095130291647335         0.092694366           adir         001_016_NAD000829         53463.614152         5674275.39563         2099.77443         -0.007342635621748	adir	001_008_NAD000821	531204.74875	5674296.53304	2103.16089	-0.016340381374240	-0.0051361501572054	-0.098399709290
adir         001_010_NAD000823         332062.59567         5674288.82828         2102.43554         -0.012186806967973         0.018670091238903         -0.0944120-           adir         001_011_NAD000824         532491.55647         5674277.21238         2104.28312         -0.016809093721303         0.0224421546575222         -0.0153003           adir         001_012_NAD000826         53290.55708         5674269.89937         2106.56792         0.008861137217064         -0.00352203158428         0.022803200           adir         001_014_NAD000827         53349.35409         5674269.62778         2107.47250         0.00381968554029         -0.01491655924768         0.040657455           adir         001_015_NAD000828         534207.19677         5674260627         2106.11798         0.0328549025521692         0.0249408020779175         0.0528464           adir         001_015_NAD000828         534207.19677         567428.25606         2102.92317         -0.023581002428142         0.0095130291647335         0.092694361           adir         001_016_NAD000829         53463.614152         567427.931754         2100.21161         0.0111158248541575         0.007273170044894         0.033047507           adir         001_018_NAD000831         53549.36827         5674267.59563         2099.60731         0.01212800286102 <t< td=""><td>ladir</td><td>001_009_NAD000822</td><td>531633.72865</td><td>5674296.22498</td><td>2102.53201</td><td>-0.013013290914100(</td><td>0.0507276482449831</td><td>-0.092127895996</td></t<>	ladir	001_009_NAD000822	531633.72865	5674296.22498	2102.53201	-0.013013290914100(	0.0507276482449831	-0.092127895996
adir         001_011_NAD000824         532491.55647         5674277.21238         2104.28312         -0.01680909372130         0.0224421546575222         0.0103800           adir         001_012_NAD000825         552920.55708         5674269.89937         2106.56792         0.0088611372170646         -0.003822203158428         0.02280320           adir         001_013_NAD000825         553349.35409         5674269.89937         2107.47250         0.0088611372170646         -0.003822203158428         0.02280320           adir         001_013_NAD000825         53349.35409         5674269.62778         2107.47250         0.003819685554029         -0.01491559247686         0.0052854062           adir         001_015_NAD000825         53429.15677         5674280.24506         2102.9217         -0.023581002428142;         0.0095103291647335         0.092604363           adir         001_016_NAD000829         53463.614152         5674281.15589         2099.77443         -0.007342635621748;         0.0101804720073252         0.028948663           adir         001_017_NAD000830         535064.99194         5674275.59563         2099.60731         0.01212800286102         -0.0022131359830;         0.11092522           adir         001_019_NAD000825         53592.66051         5674269.8223         2100.23095         -0.031122497129012;	ladir	001_010_NAD000823	532062.59567	5674288.82828	2102.43554	-0.012186806967973;	0.018670091238903	-0.094412043589
adir         001_012_NAD000825         532920.55708         5674269.89937         2106.56792         0.008861137217064         -0.003522203158428         0.0280300           adir         001_013_NAD000826         533349.35409         5674269.62778         2107.47250         0.0038196855540259         -0.01416559247686         0.040657451           adir         001_014_NAD000827         53378.19526         5674274.36607         2106.17798         0.032854992552162         0.0249408207792175         0.05252846           adir         001_015_NAD000829         53407.19577         5674220.4506         2102.92317         -0.023581002428142;         0.0095130291647335         0.02604363           adir         001_016_NAD000829         53463.614152         5674271.5589         2099.77443         -0.007342635621748;         0.011084720073252         0.02804364           adir         001_017_NAD000830         535064.99194         5674275.59563         2099.60731         0.01212800286102         -0.00221313598303         0.110892522           adir         001_019_NAD000821         53592.66051         5674269.98223         2100.23095         -0.031122497129012         -0.002763493705476         0.095112082           adir         001_020_NAD000832         5351.59033         5674265.51287         2104.94518         -0.027017530083226	adir	001_011_NAD000824	532491.55647	5674277.21238	2104.28312	-0.016809093721303	0.0224421546575222	-0.101536052837
adir         001_013_NAD000826         533349.35409         5674269.62778         2107.47250         0.0038196855540259         -0.014916559247686         0.04065745           adir         001_014_NAD000827         533778.19526         5674274.36607         2106.11798         0.0328549925521692         0.0249408207792175         0.055228466           adir         001_015_NAD000828         534207.19677         5674280.24506         2102.92317         -0.023581002428142         0.0095130291647335         0.092604365           adir         001_016_NAD000829         534636.14152         5674281.15589         2099.77443         -0.007342635621748         0.011804720073252         0.02894856           adir         001_017_NAD000803         535064.99194         5674279.31754         2100.21161         0.0111158248541575         0.00722173170448994         0.03047502           adir         001_018_NAD000813         53549.368227         5674275.59563         2099.60731         0.012128002868102         -0.002221313598303         0.110892522           adir         001_019_NAD000823         53592.66051         5674265.51287         2100.23095         -0.031122497129012         -0.002763493705476         0.09512082           adir         001_020_NAD000833         5351.59033         5674265.51287         2104.94518         -0.027017530083226	adir	001_012_NAD000825	532920.55708	5674269.89937	2106.56792	0.0088611372170646	-0.0035222031584284	0.0228032038541
adir         001_014_NAD000827         533778.19526         5674274.36607         2106.11798         0.032854992552169         0.0249408207792175         0.05522846           adir         001_015_NAD000828         534207.19677         5674280.24506         2102.92317         -0.023581002428142         0.0095130291647335         0.09260436           adir         001_016_NAD000829         534636.14152         5674281.15589         2099.7743         -0.007342635621748         0.0101804720073252         0.02804856           adir         001_017_NAD000809         535064.99194         5674279.31754         2100.21161         0.0111158248541573         0.007273170044894         0.03047500           adir         001_018_NAD000821         535493.68227         5674275.59563         2099.60731         0.012128002868102         -0.00221313598303         0.110892522           adir         001_019_NAD00082         535922.66051         5674265.51287         2100.23095         -0.031122497129012         -0.002763493705476         0.09512082           adir         001_020_NAD000832         5351.59033         5674265.51287         2104.94518         -0.027017530083226         0.0154906575928189         0.091915192	adir	001_013_NAD000826	533349.35409	5674269.62778	2107.47250	0.0038196855540259	-0.014916559247686	0.0406574510677
adir         001_015_NAD000828         534207.19677         5674280.24506         2102.92317         -0.023581002428142         0.0095130291647335         0.09260436           adir         001_016_NAD000829         534636.14152         5674281.15589         2099.77443         -0.007342635621748         0.01101804720073252         0.028948564           adir         001_017_NAD000809         535064.99194         5674279.31754         2100.21161         0.0111158248541575         0.0072731700448994         0.0304750           adir         001_018_NAD000831         535493.68227         5674275.59563         2099.60731         0.012128002868102         -0.002221313598303         0.110892522           adir         001_019_NAD000823         535922.66051         5674269.98223         2100.23095         -0.0311224971290124         -0.002763493705476         0.095131082           adir         001_020_NAD000832         53551.59033         5674265.51287         2104.94518         -0.0270175300832264         0.0154906575928189         0.091915124	adir	001_014_NAD000827	533778.19526	5674274.36607	2106.11798	0.0328549925521692	0.0249408207792175	0.0552284602742
adir         001_016_NAD000829         534636.14152         5674281.15589         2099.77443         -0.007342635621748         0.0101804720073252         0.02894856           adir         001_017_NAD000830         535064.99194         5674279.31754         2100.21161         0.0111158248541575         0.0072731700448994         0.03304750           adir         001_018_NAD000831         535493.68227         5674275.59563         2099.60731         0.012128002868102         -0.00221313598303         0.110892522           adir         001_019_NAD000832         53592.66051         5674269.98223         2100.23095         -0.0311224971290122         -0.002763493705476         0.095312082           adir         001_020_NAD000832         5351.59033         5674265.51287         2104.94518         -0.0270175300832264         0.0154906575928189         0.091951924	adir	001_015_NAD000828	534207.19677	5674280.24506	2102.92317	-0.023581002428142;	0.0095130291647335	0.0926043675776
adir         001_017_NAD000830         535064.99194         5674279.31754         2100.21161         0.0111158248541575         0.0072731700448994         0.0304750           adir         001_018_NAD000831         535493.68227         5674275.59563         2099.60731         0.012128002868102         -0.002221313598303         0.110892523           adir         001_019_NAD000832         53592.66051         5674269.98223         2100.23095         -0.0311224971290122         -0.002763493705476         0.095312083           adir         001_020_NAD000833         5351.59033         5674265.51287         2104.94518         -0.027017530083226         0.0154906575928189         0.091951924	adir	001_016_NAD000829	534636.14152	5674281.15589	2099.77443	-0.007342635621748;	0.0101804720073252	0.0289485693827
adir         001_018_NAD000831         535493.68227         5674275.59563         2099.60731         0.012128002868102         -0.002221313598303         0.11089252           adir         001_019_NAD000832         535922.66051         5674269.98223         2100.23095         -0.031122497129012-         -0.002763493705476:         0.09531208           adir         001_020_NAD000833         536351.59033         5674265.51287         2104.94518         -0.027017530083226         0.0154906575928189         0.091951924-	adir	001_017_NAD000830	535064.99194	5674279.31754	2100.21161	0.0111158248541575	0.0072731700448994	0.0330475073381
adir 001_019_NAD000832 535922.66051 5674269.98223 2100.23095 -0.0311224971290120.002763493705476: 0.09531208 adir 001_020_NAD000833 536351.59033 5674265.51287 2104.94518 -0.027017530083226 0.0154906575928189 0.091951924	adir	001_018_NAD000831	535493.68227	5674275.59563	2099.60731	0.012128002868102	-0.002221313598303	0.1108925222320
adir 001_020_NAD000833 536351.59033 5674265.51287 2104.94518 -0.027017530083226 0.0154906575928189 0.09195192	adir	001_019_NAD000832	535922.66051	5674269.98223	2100.23095	-0.0311224971290124	-0.002763493705476	0.0953120822482
	ladir	001_020_NAD000833	536351.59033	5674265.51287	2104.94518	-0.0270175300832264	0.0154906575928189	0.0919519249294

### 4.2. Userdefined cameras

If cameras have been defined manually, the external orientation must be read in via a text file. The formatting of this file can be edited using additional parameters.





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mera assignment:	Individual EO file p	per camera	Y RED-D	OL-Phase_One_YC030	073_201902 ¥ C	olumns Image nan	ne 2
						Easting [m	n] 3
out file containing EC	) parameters:	Search file	Rotatio	n Angles: Omega, F	Phi, Kappa 🛛 🖌	Northing [	[m] 4
						Altitude [n	n] 5
Orienttool-Testdater	n\TestData\EO2 - Ko	pie.txt	Rotatio	n Unit: Gon		Omega [g	on] 6
						Phi [gon]	7
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<ul> <li>Spa</li> <li>Tab</li> <li>Other</li> <li>art import at row:</li> </ul>	er:						
● Spa ● Tab ● Oth art import at row:	er:		Preview first	2Ω lines of input file:			
● Spa ● Tab ● Oth art import at row:	er:		Preview first a	20 lines of input file:			
O Spa Tab Oth art import at row: Camera name	ce er: <u>3</u> Image name	Easting [m]	Preview first ; Northing [m]	20 lines of input file: Altitude [m]	Omega [gon]	Phi [gon]	Kappa [gon]
• Spa • Tab • Oth urt import at row: Camera name ED-DOL-Phase_One	ce	Easting [m] 548317.8720	Preview first : Northing [m] 5936693.0720	20 lines of input file: Altitude [m] 708.5560	Omega [gon] 0.3088	Phi [gon] -1.7248	Kappa [gon] 2.3675
O Spa Tab O the int import at row: Camera name ED-DOL-Phase_One ED-DOL-Phase_One	ce er: 3 Image name 142_23678 142_23679	Easting [m] 548317.8720 548406.7010	Preview first & Northing [m] 5936693.0720 5936694.1080	20 lines of input file: Altitude [m] 708.5560 708.5090	Omega [gon] 0.3088 0.2014	Phi [gon] -1.7248 -1.5792	Kappa [gon] 2.3675 2.3782
O Spa Tab O the art import at row: Camera name ED-DOL-Phase_One ED-DOL-Phase_One ED-DOL-Phase_One	ce er: 3 Image name 142_23678 142_23679 142_23680	Easting [m] 548317.8720 548406.7010 548495.5480	Preview first ( Northing [m] 5936693.0720 5936694.1080 5936695.0850	20 lines of input file: Altitude [m] 708.5560 708.5090 708.1660	Omega [gon] 0.3088 0.2014 0.1084	Phi [gon] -1.7248 -1.5792 -1.4683	Kappa [gon] 2.3675 2.3782 2.5234
O Spa Tab Oth art import at row: Camera name ED-DOL-Phase_One ED-DOL-Phase_One ED-DOL-Phase_One	ce er: 3 Image name 142,23678 142,23679 142,23680 142,23680 142,23681	Easting [m] 548317.8720 548406.7010 548495.5480 548590.6590	Preview first 2 Northing [m] 5936693.0720 5936694.1080 5936695.0850 5936696.0010	20 lines of input file: Altitude [m] 708.5560 708.5090 708.1660 707.9400	Omega [gon] 0.3088 0.2014 0.1084 0.0664	Phi [gon] -1.7248 -1.5792 -1.4683 -1.3316	Kappa [gon] 2.3675 2.3782 2.5234 2.7082
O Spa Tab Oth art import at row: Camera name ED-DOL-Phase_One ED-DOL-Phase_One ED-DOL-Phase_One ED-DOL-Phase_One	ce er: 3 Image name 142_23678 142_23679 142_23680 142_23681 142_23681 142_23682	Easting [m]           548317.8720           548406.7010           548455.5480           548590.6590           548678.9950	Preview first 2 Northing [m] 5936693.0720 5936694.1080 5936695.0850 5936696.0010 5936696.5900	20 lines of input file: Altitude [m] 708.5560 708.5090 708.1660 707.9400 708.0490	Omega [gon] 0.3088 0.2014 0.1084 0.0664 0.1508	Phi [gon] -1.7248 -1.5792 -1.4683 -1.3316 -1.2206	Kappa [gon] 2.3675 2.3782 2.5234 2.7082 2.8428
O Spa Tab Oth art import at row: Camera name ED-DOL-Phase_One ED-DOL-Phase_One ED-DOL-Phase_One ED-DOL-Phase_One ED-DOL-Phase_One	ce er: <u>3</u> Image name 142,23678 142,23679 142,23680 142,23681 142,23681 142,23682 142,23683	Easting [m] 548317.8720 548406.7010 548495.5480 548590.6590 548590.6590 548570.27090	Preview first 2 Northing [m] 5936693.0720 5936695.0850 5936695.0850 5936696.0010 5936696.5900 5936696.5900 5936696.6870	20 lines of input file: Altitude [m] 708.5560 708.5090 708.1660 707.9400 708.0490 708.3480	Omega [gon] 0.3088 0.2014 0.1084 0.0664 0.1508 0.1469	Phi [gon] -1.7248 -1.5792 -1.4683 -1.3316 -1.2206 -1.2579	Kappa [gon] 2.3675 2.3782 2.5234 2.7082 2.8428 5.0506

EO- Configuration of a user defined camera.

*Camera assignment*: defines whether (with more than one camera) one EO file per camera should be used or one file with several cameras. In the latter case, the camera name is extracted from the label in the EO file.

*Input file*: A .txt file with EO parameters must be selected using the Search file button. The first 20 lines of the file are displayed below in a preview.

*Rotation angle*: defines the angle system in the EO file. It must be known which angle type and which rotation sequence the rotation angles refer to.

Rotation unit: Deg, Gon, Rad

Delimiter: defines the delimiter used in the EO file.

Start import at row: defines the line from which the values are imported.

With + - below the *column table*, you can define which column is assigned to which values. The changes to these column definitions are immediately displayed in the preview of the EO file.

* Bild	Dateiname	Rechts	Hoch	Höhe	Omega[gon]	Phi[gon]	Kappa[gon Kappa[gon
142 23 678	142 23678.tif	548317.8720	5936693.0720	708.5560	0.3088	-1.7248	2.3675 223
142 23 679	142 23679.tif	548406.7010	5936694.1080	708.5090	0.2014	-1.5792	2.3782 2323
142 23680	142 23680.tif	548495.5480	5936695.0850	708.1660	0.1084	-1.4683	2.5234 2323
142 23681	142 23681.tif	548590.6590	5936696.0010	707.9400	0.0664	-1.3316	2.7082 2323
142 23682	142 23682.tif	548678.9950	5936696.5900	708.0490	0.1508	-1.2206	2.8428 2332
142 23683	142 23683.tif	548772.7090	5936696.6870	708.3480	0.1469	-1.2579	5.0506 2323
142 23684	142 23684.tif	548860.8700	5936696.1210	708.4890	0.2449	-1.3636	4.5602
142 23685	142 23685.tif	548949.4020	5936694.9480	708.7480	0.3108	-1.3741	4.1292
142 23686	142 23686.tif	549046.3780	5936693.0080	708.1180	0.3304	-1.2947	3.5557
142 23687	142 23687.tif	549133.3790	5936690.8720	708.1460	0.2878	-1.2424	3.0085
142 23688	142 23688.tif	549227.4320	5936688.8880	708.2970	0.0708	-1.4339	2.9410
142 23689	142 23689.tif	549315.7790	5936686.8640	708.3130	0.0048	-1.3877	3.0160
142 23690	142 23690.tif	549404.0310	5936684.5530	708.1820	0.0943	-1.3058	3.1214
142 23691	142 23691.tif	549492.2450	5936682.4280	708.4580	-0.1311	-1.2019	2.7061
142 23692	142 23692.tif	549586.9230	5936680.5390	707.6060	-0.3293	-1.1093	2.1959
142 23693	142 23693.tif	549674.9560	5936679.6910	706.4470	-0.4983	-1.1700	1.9041
142 23694	142 23694.tif	549768.1850	5936679.7050	706.4670	-0.7296	-1.1883	2.0044
142 23695	142_23695.tif	549855.3970	5936680.1850	706.6140	-0.9600	-1.2373	2.0062

Input file for the above configuration.





# 5. Image selection

In the last step, the images are selected via a folder or file selection.

🙏 Image Orientation Tool				×
		Image selection		
				_
Camera Name	RED-DOL-Phase_One_YC030073_2019	90221-HAMBURG		<b>~</b>
	Folder		O Image file	
	Select Images		Reset Selection	
		Use original path		
		Information		
	Images in EO input file	14929	6	
	Selected images			
	Selected images existing in	EO input file 3		
		Plausibility check		
	Image Count > 0	Yes		
	Image Format OK	Yes		
Back		Cancel		Start Conversion to CityGRID XML

Select images button is used to specify either a directory or one or more image files.

Include subdirectories: If this checkbox is set, all directories within the specified folder are searched for images.

Use original path: If this checkbox is set, the absolute path to the original images is written to the orientation xml file. Otherwise, a relative path is written to the City**GRID** images directory.

A summary of the image selection and a plausibility check are displayed in the information window.

The plausibility check queries whether there are images with a valid image format in the specified directory.

The Start conversion to CityGRID XML button opens a File Browser dialogue that allows you to enter a storage location and file name for the orientation XML file. Pressing the Save button starts the conversion process.





# 6. Error handling

The software City**GRID**<sup>®</sup> is developed, tested, and maintained by UVM Systems with the ambition to be error-free. Nevertheless, we cannot exclude the possibility that errors may occur during processing. If the error in the orientation tool is reproducible, please provide a detailed description of the error: Please send error reports to <u>support@uvmsystenms.com</u>





## 7. Contact



www.citygrid.at



