X-PAD Ultimate Survey

X-PAD Ultimate Build

X-PAD Ultimate

Service Pack #2 2024

Autumn 2024

GEOMAX

MISCELLANEOUS

General improvements

X-PAD Ultimate is continuously being improved and updated. Minor improvements and bug fixes are not listed in this presentation but can be found in the release notes.

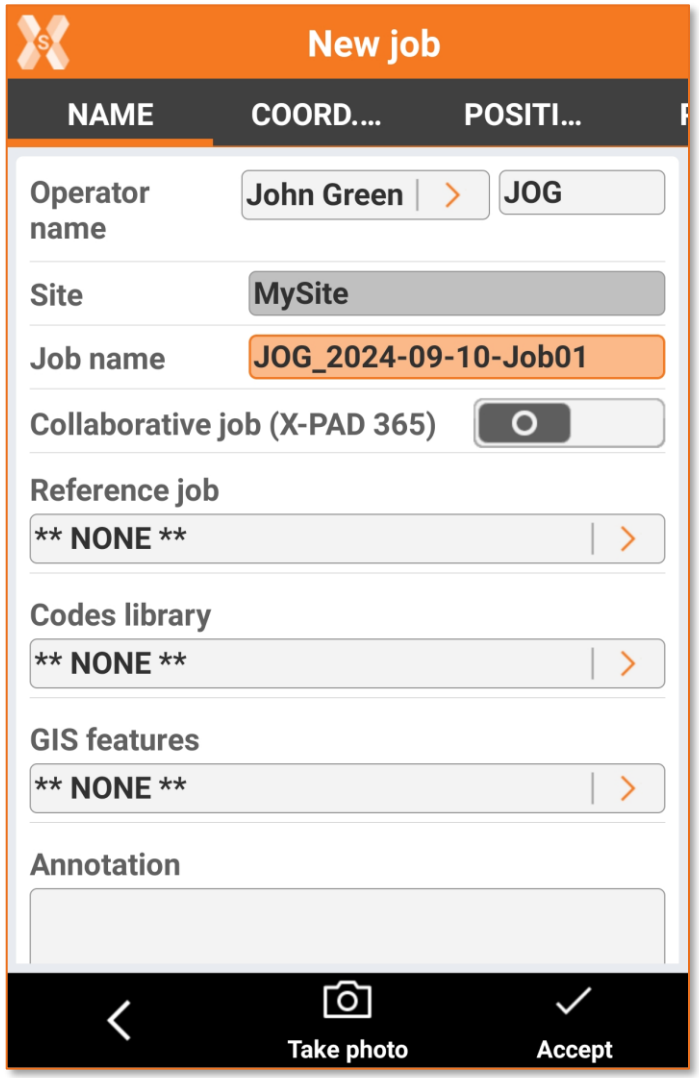
Job’s operator

During the creation of a new job, it is now possible to specify the operator who is creating the job.

The operator can be extracted automatically from the current X-PAD 365 account or from a list of operators maintained by the software.

The operator can also be identified by a short name that can be automatically included in the job name.

The job’s operator name is reported in the Job Manager and in all reports

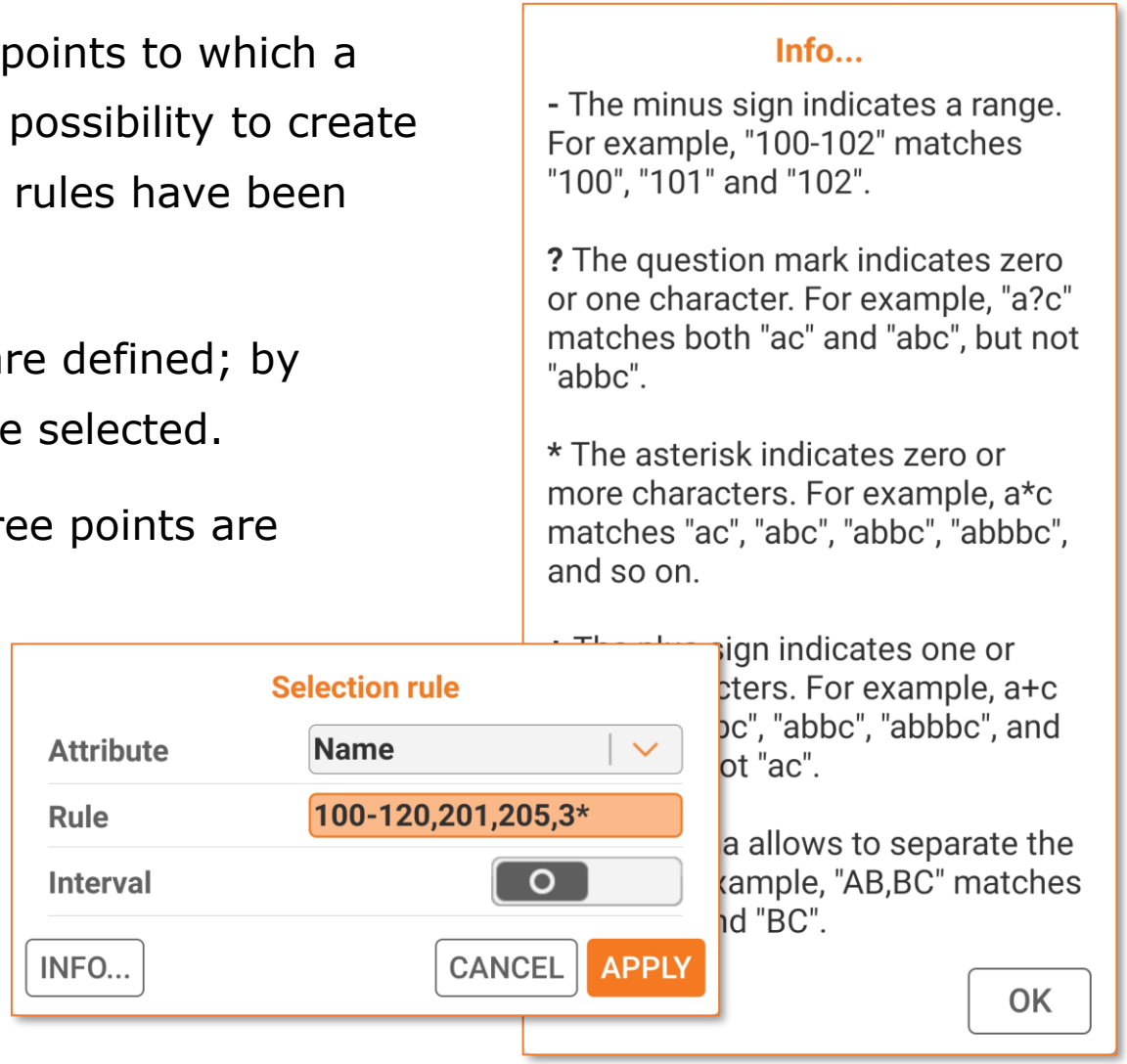


Select points for operations

In several operations, it is possible to specify a list of points to which a specific action will be applied. Recently, we added the possibility to create selection rules based on point names. These selection rules have been extended with the following new options:

- **From – To**: The first and the last name of the list are defined; by writing 100-120, all points between 100 and 120 are selected.
- **Single names**: By writing 100, 102, 105, those three points are selected.

The above rules can be defined in a single instance; by writing **100-120,201,205,3*** points from 100 to 120 are selected, points 201 and 205 are selected, and all points starting with 3 are selected.



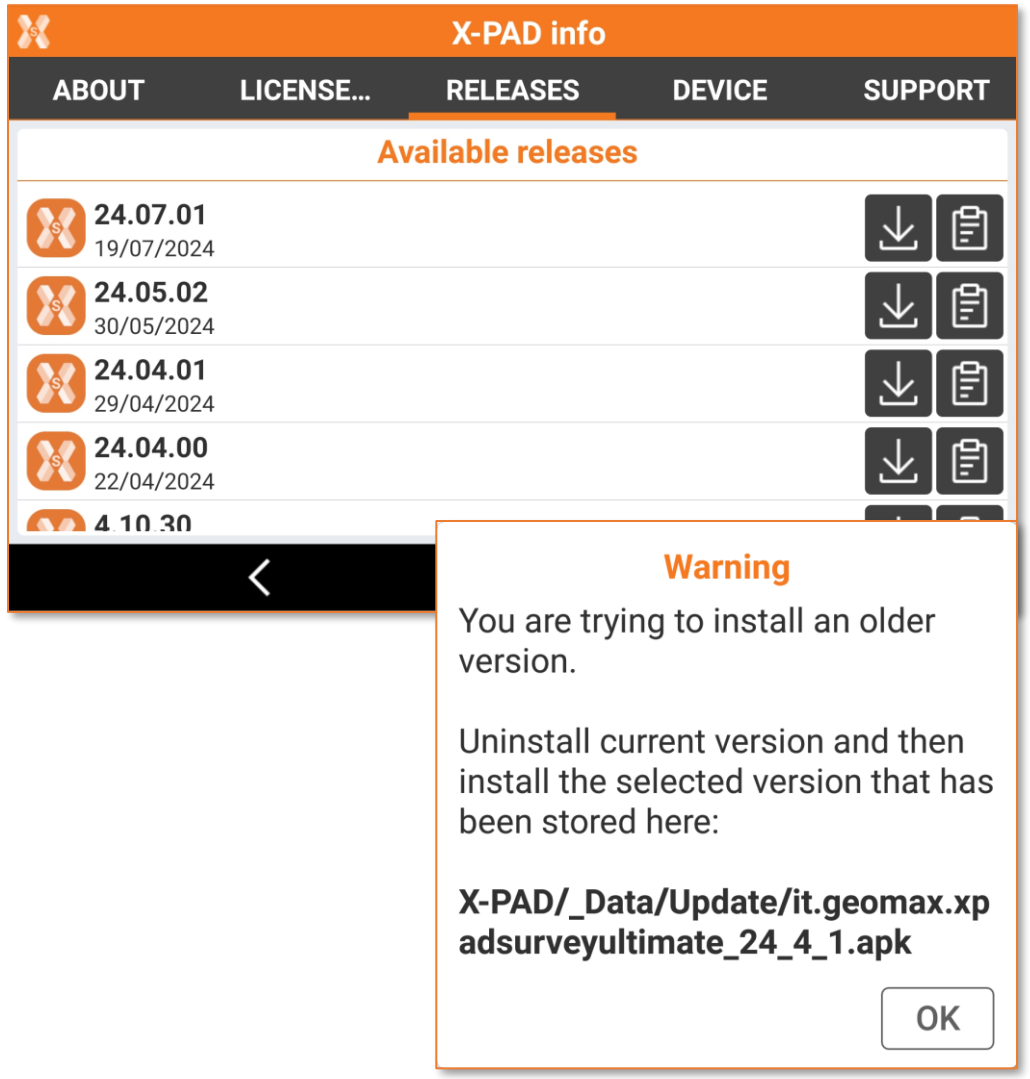
Previous version to install

The way previous releases are managed in X-PAD Ultimate has been completely changed. When a user accesses the 'RELEASES' page, **all available releases** are listed along with the corresponding **release notes**.

From this list, it is possible to download and install a specific release.

If a previous release is downloaded, the installation cannot happen automatically due to Android limitations. The user has to manually uninstall the current version and proceed with the installation of the newly downloaded release.

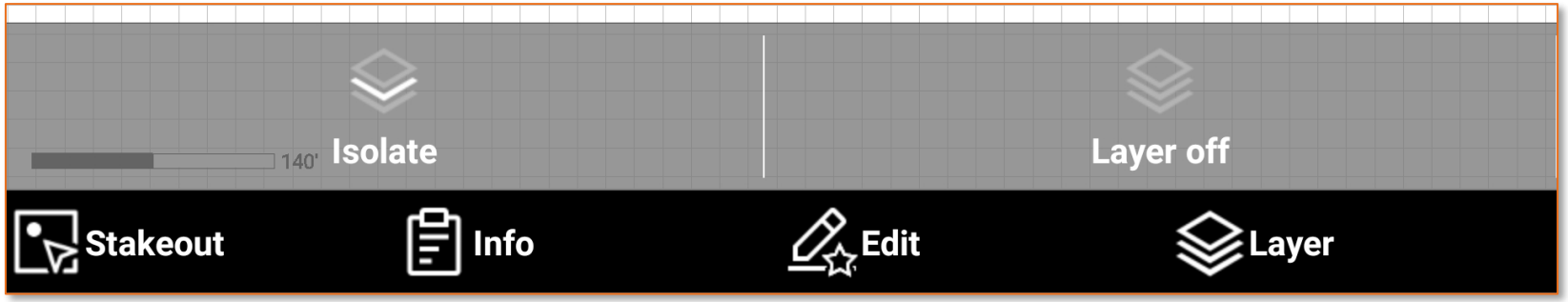
Downloaded releases are stored in the **X-PAD_Data\Update folder**. To save space, only the last three releases are maintained in that folder.



CAD

Layer OFF

By selecting an entity is now possible to switch off the corresponding layer; this means that all drawing entities on the same layer will be hidden.



GNSS

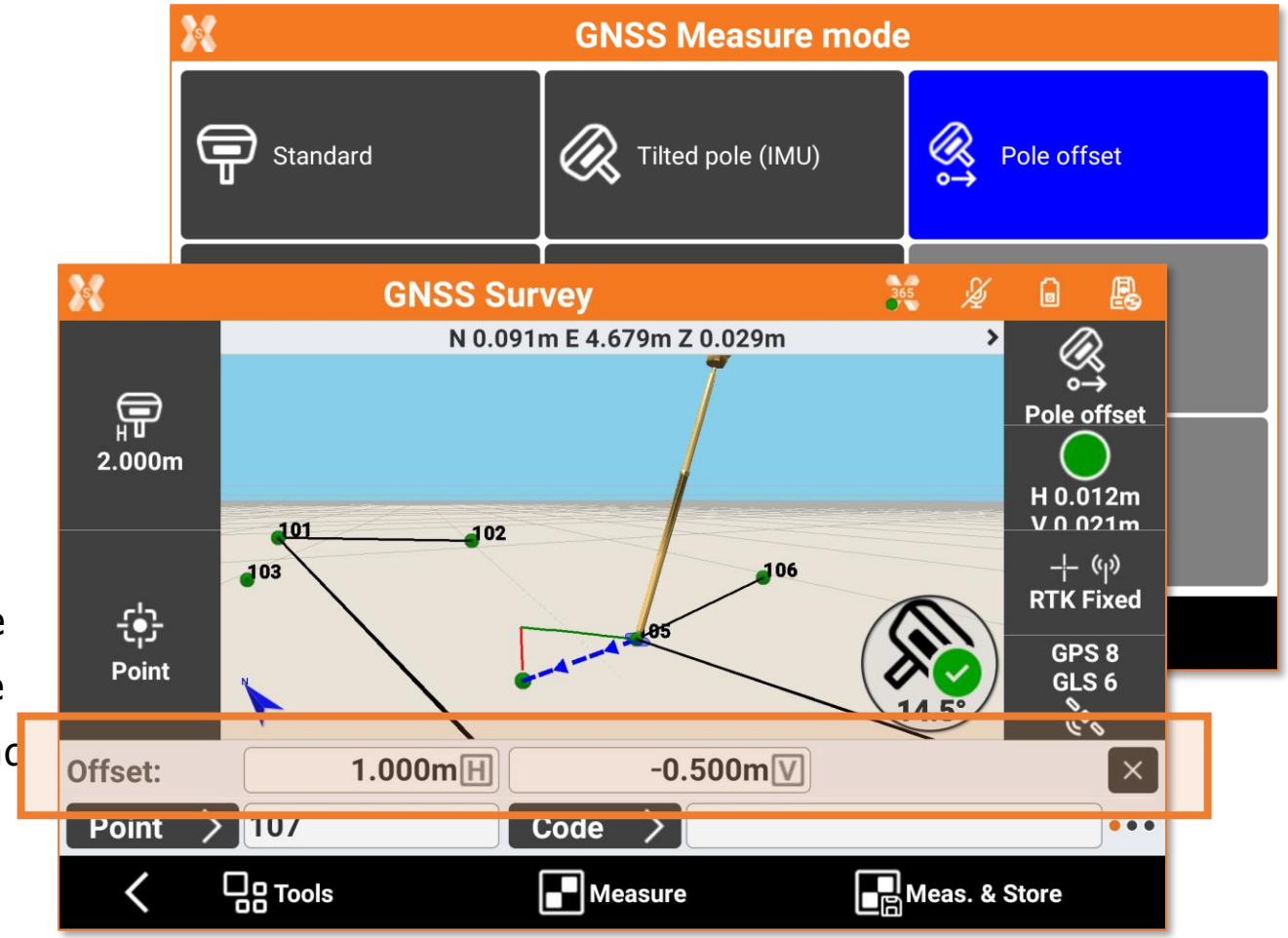
Measure points by offset with GNSS & IMU

GNSS receivers equipped with IMU are always able to provide the correct azimuth direction.

By using this feature, a new way to measure inaccessible points has been added to X-PAD Ultimate: **Pole offset**. When this measurement option is active, the user can specify an offset (horizontal and vertical) that is applied to the current direction of the pole.

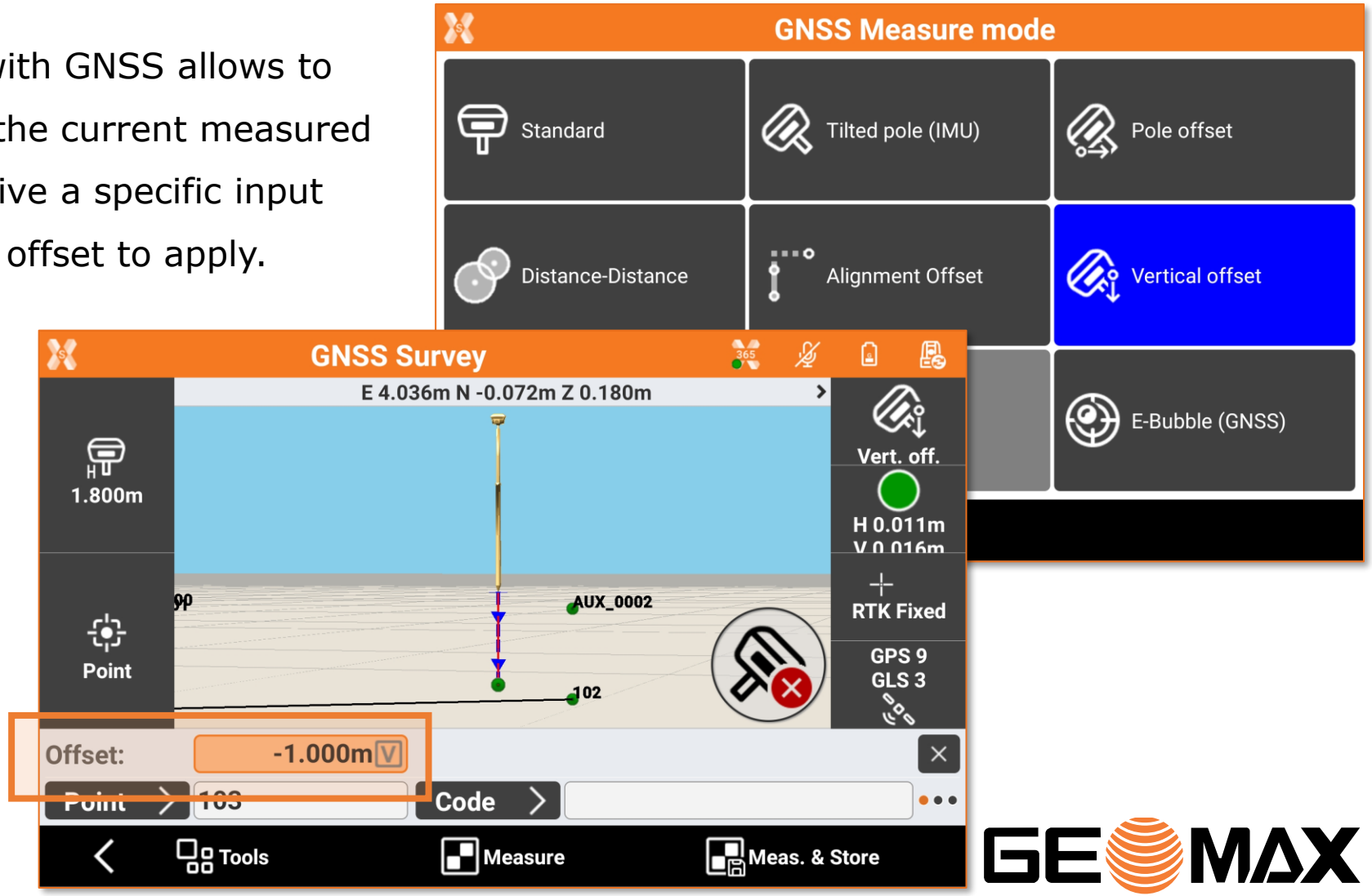
To measure a point at 1m distance from the pole tip, in a specific direction, simply incline the pole towards that direction, enter the offset value, and store the point.

The offset distance, the current direction, and therefore the estimated position of the new point are clearly displayed on the graphic view.



Measure points by vertical offset with GNSS

A new measurement mode with GNSS allows to specify a **vertical offset** to the current measured point. When this mode is active a specific input field is available to enter the offset to apply.



GNSS Measurements mode dialog

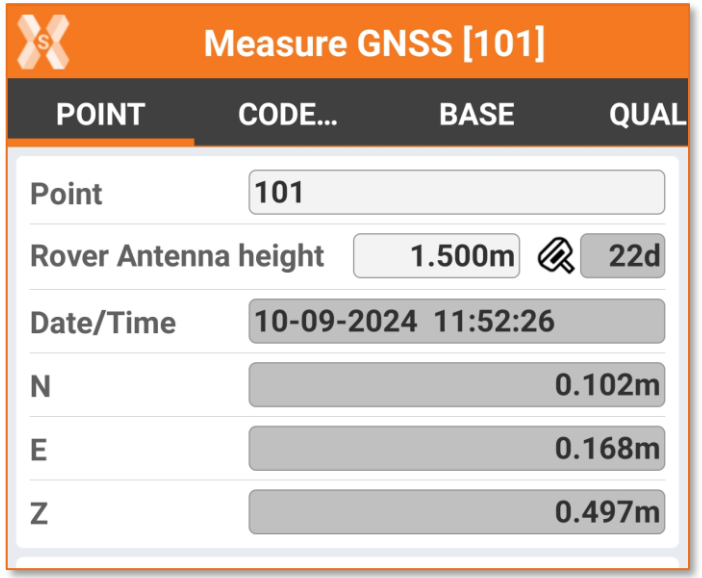
To ensure consistency in the user interface between TPS and GNSS, all commands that allow the use of GNSS to perform specific types of measurements have been grouped into a dialog accessible from the top button of the GNSS sidebar. A similar button is already available in the TPS sidebar.

From this dialog, it is possible to run all commands to measure inaccessible points, as well as to activate and deactivate the use of the tilted pole or the E-Bubble.

Edit pole height for tilted measurements

The antenna height of tilted measurements can now be modified, and the coordinates of the point are recalculated considering the original inclination and direction of the pole in the field.

This way, it is always possible to adjust incorrect pole heights used in the field.

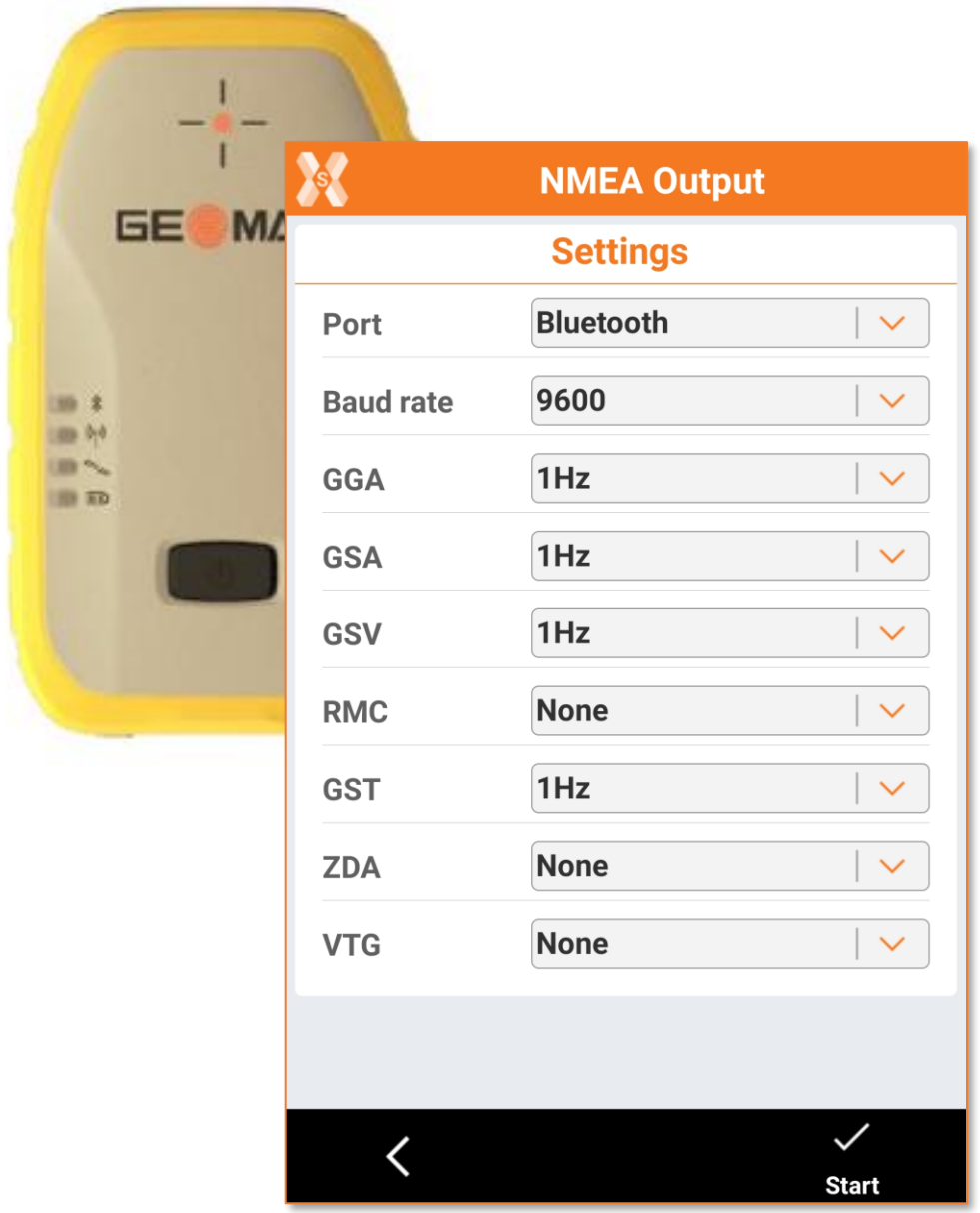


Zenith06 – NMEA Output

The NMEA Output option allows other applications to connect to GeoMax receivers and obtain the topographic position by handling NMEA standard sentences.

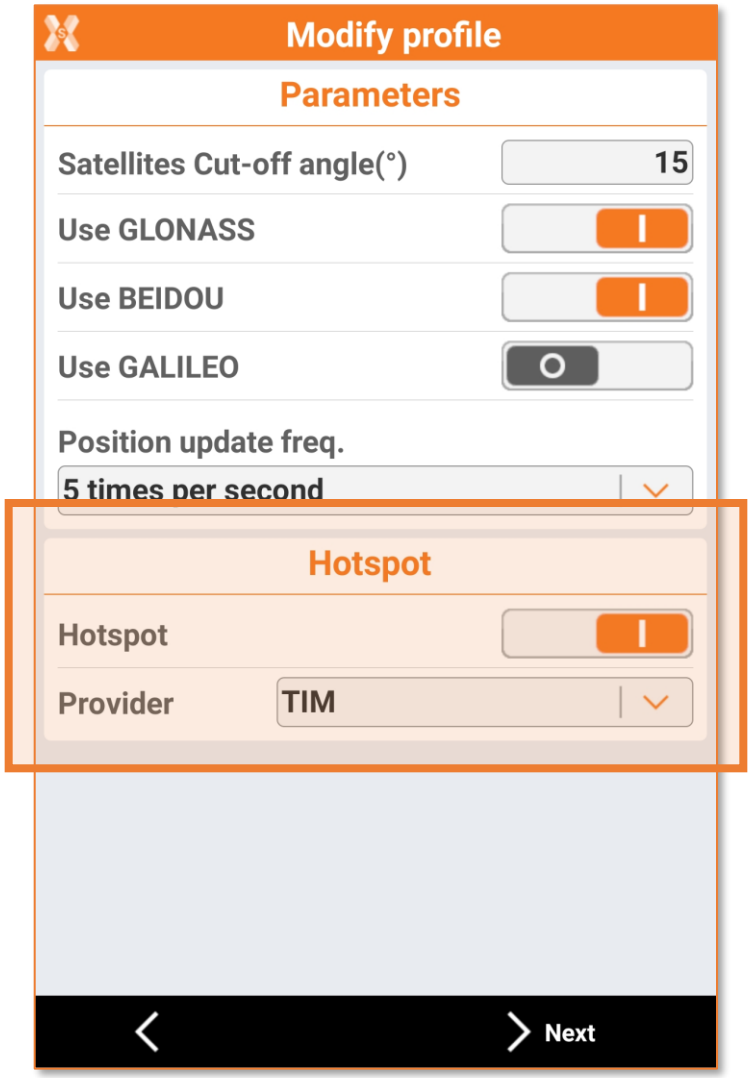
This option is now available for the Zenith06 GNSS receiver, extending the power and flexibility of this device.

Since this receiver is not equipped with an internal modem, X-PAD must continue to run to receive corrections from the reference base and transfer them to the receiver.



Zenith60 – WiFi hotspot

The Zenith60 series is equipped with an interesting feature that is now available to all users. If a SIM card is plugged into the receiver, it can work as a **free Wi-Fi hotspot** for any other device that requires internet access.



RTCM3.1 and RTCM1024 message

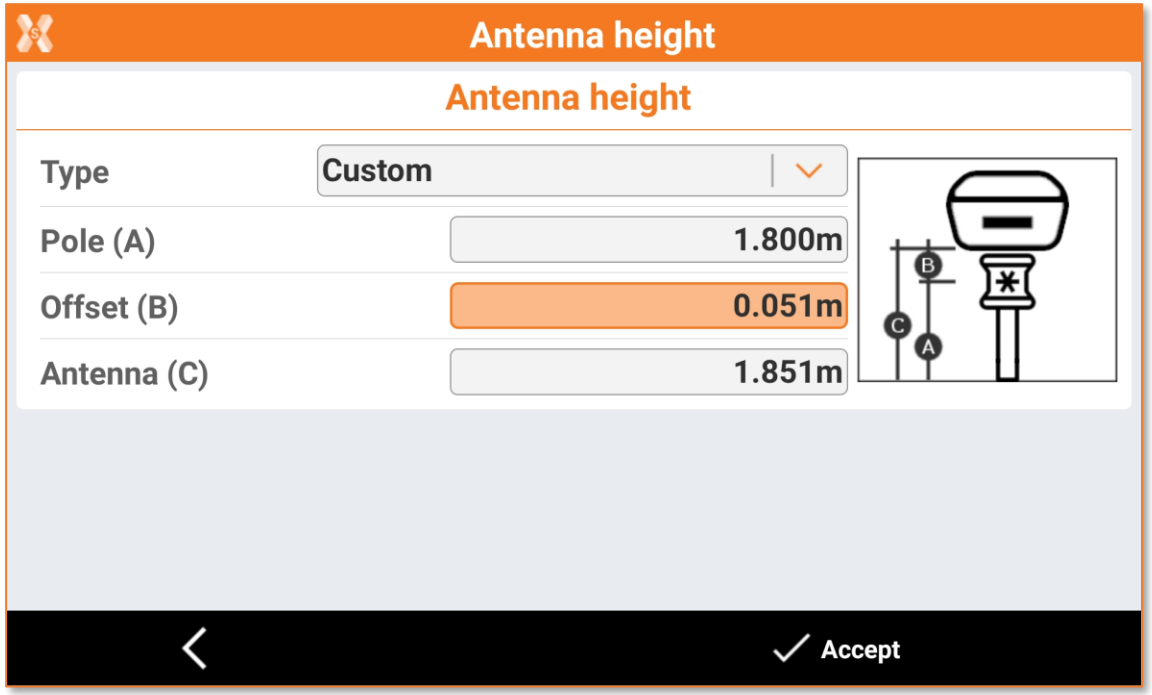
X-PAD Ultimate has supported RTCM3.1 from the beginning. The RTCM3.1 format is used in some countries and by some reference stations to transmit information about the coordinate system and geodetic corrections to the rover, allowing it to calculate the grid coordinates for that country.

RTCM1024 is a special message in which the corrections are sent as grid values (meters). This message, used in Romania for example, is successfully supported in the new version of X-PAD Ultimate.

X-Pole offset custom

With X-Pole, it is possible to switch in real time between GNSS and TPS measurements because a prism and a GNSS receiver are placed on the pole.

Since there are different models of prisms, the offset from the center of the prism to the antenna reference point (ARP) is now customizable by the user if it is not in the list of predefined prisms.



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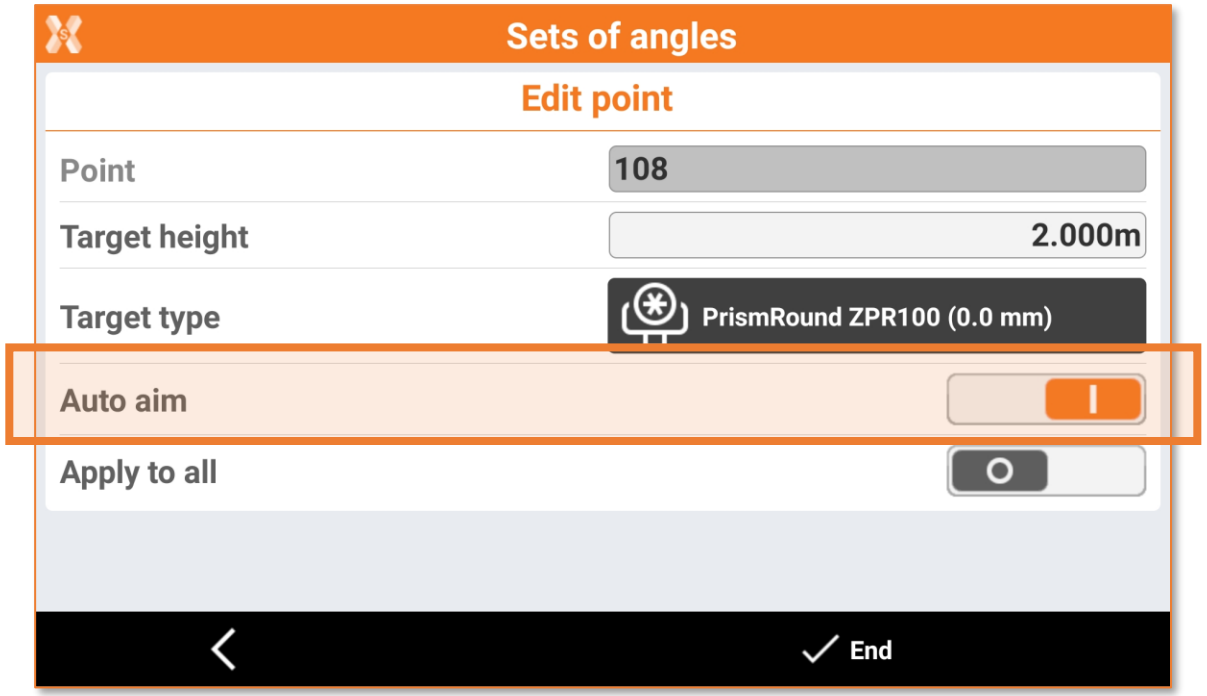
TPS

Sets of angle – AIM for single point option

The Sets of Angle command has been improved to handle targets with more flexibility.

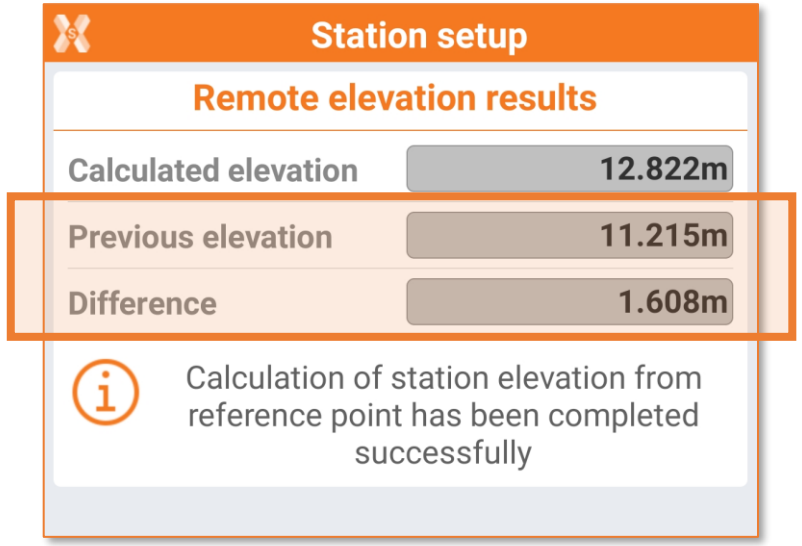
For each target, it is now possible to specify not just the height and type (prism, tape, etc.), but also whether to execute auto-aiming to the target.

This allows the automatic process to be configured even in difficult environments where automatic aiming may or may not be possible for some of the targets.



Station height from points (remote elevation)

Station elevation can be calculated by measuring known points or positions with known elevations. The command has been improved to show not just the new elevation but also the previous elevation and the difference.



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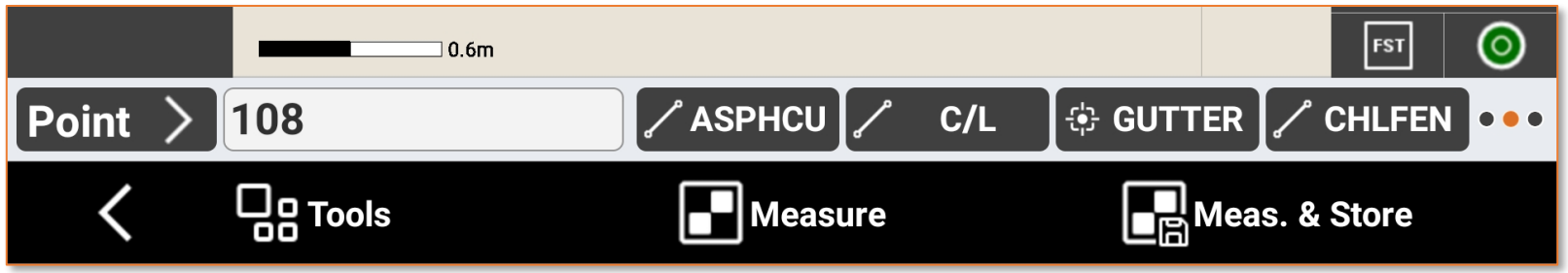
SURVEY

Survey codes – Quick bar

Specifying the survey code for each measured point is important to assign the corresponding meaning to each point and to create a real-time drawing. At the same time, field operations must be fast, and selecting or entering a survey code before storing a new point must be quick. For this reason, X-PAD offers different options to quickly select a survey code, such as the Quick Codes mode.

A new option is now available in the Survey Points main screen. The input field where the survey code can be entered or selected can be switched into a **customizable toolbar with 8 buttons**. For each button, it is possible to specify the corresponding survey code. With one click from the main screen, the survey code is selected, and the point is measured.



GNSS RTK position stored on photos

Points can be stored together with a corresponding photo; additional information such as the location where the photo was taken is stored in the photo files.

The location is extracted from the controller’s location with navigation accuracy. If the point is stored with a GNSS receiver, **the location stored in the photo is now overridden by the GNSS position of the corresponding point**.

This ensures more consistency among all the data, and other applications can read the accurate position of the point from the image metadata.

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STAKEOUT

Stakeout by Current direction

In Stakeout, the user is guided by the software to locate the target position. X-PAD features a large compass that helps find the right direction to the target. As the user approaches the target, the view changes, providing final guidance (back-forth, left-right) to locate it accurately. This information is referenced to a direction, which could be North, the Sun (for GNSS only), or a reference point. This means the user must orient themselves towards the reference direction, which can sometimes be unintuitive and requires some experience to be quick in stakeout.

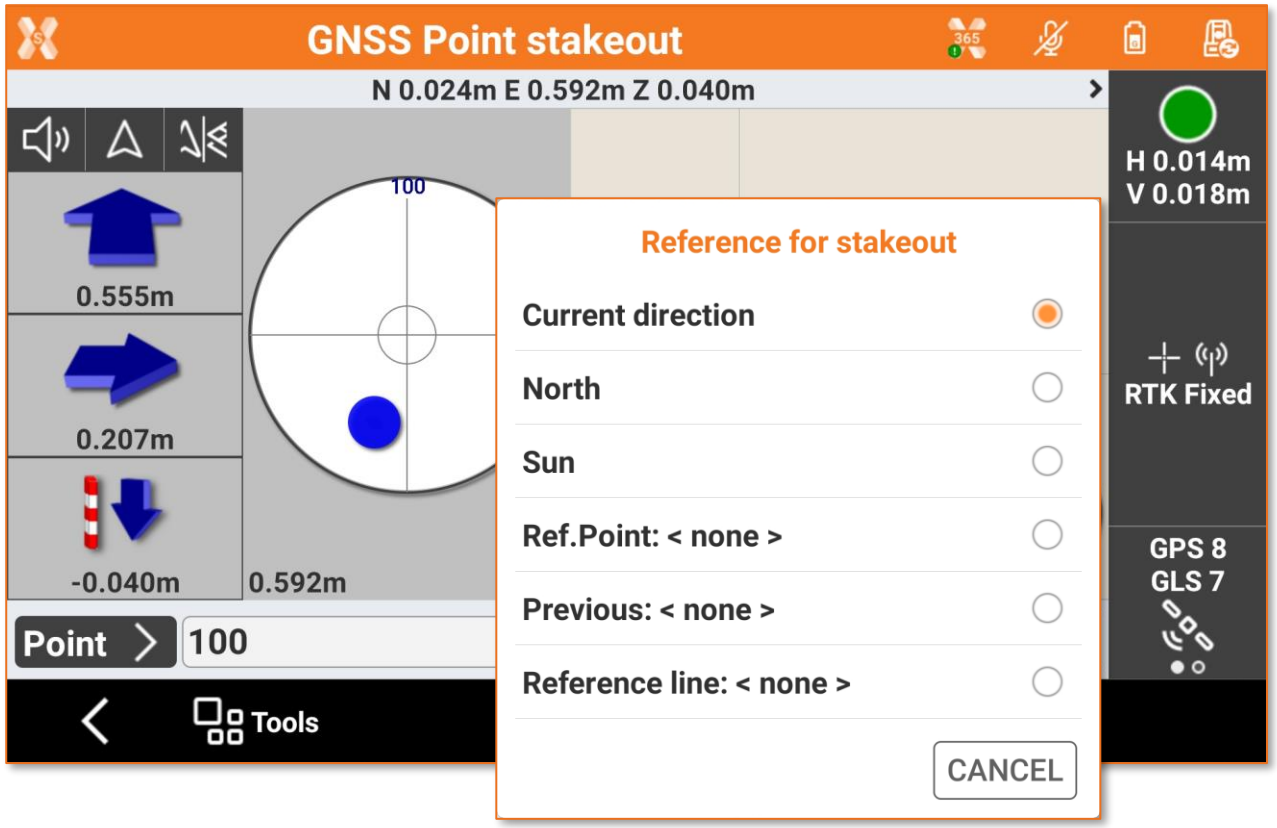
To improve the user experience, a new navigation mode has been implemented: **Current Direction**. With this mode, the user only needs to follow the compass to take the right direction to the target and then **maintain that direction as they approach the target**. All information is related to the current direction without needing to orient towards any other reference direction.

Stakeout by Current direction

Our tests have shown that this approach is much more user-friendly and intuitive for all users, from beginners to experts.

If a Zenith60 is used (equipped with IMU), the process is even easier because the current direction is provided by the receiver itself and not from the last movement.

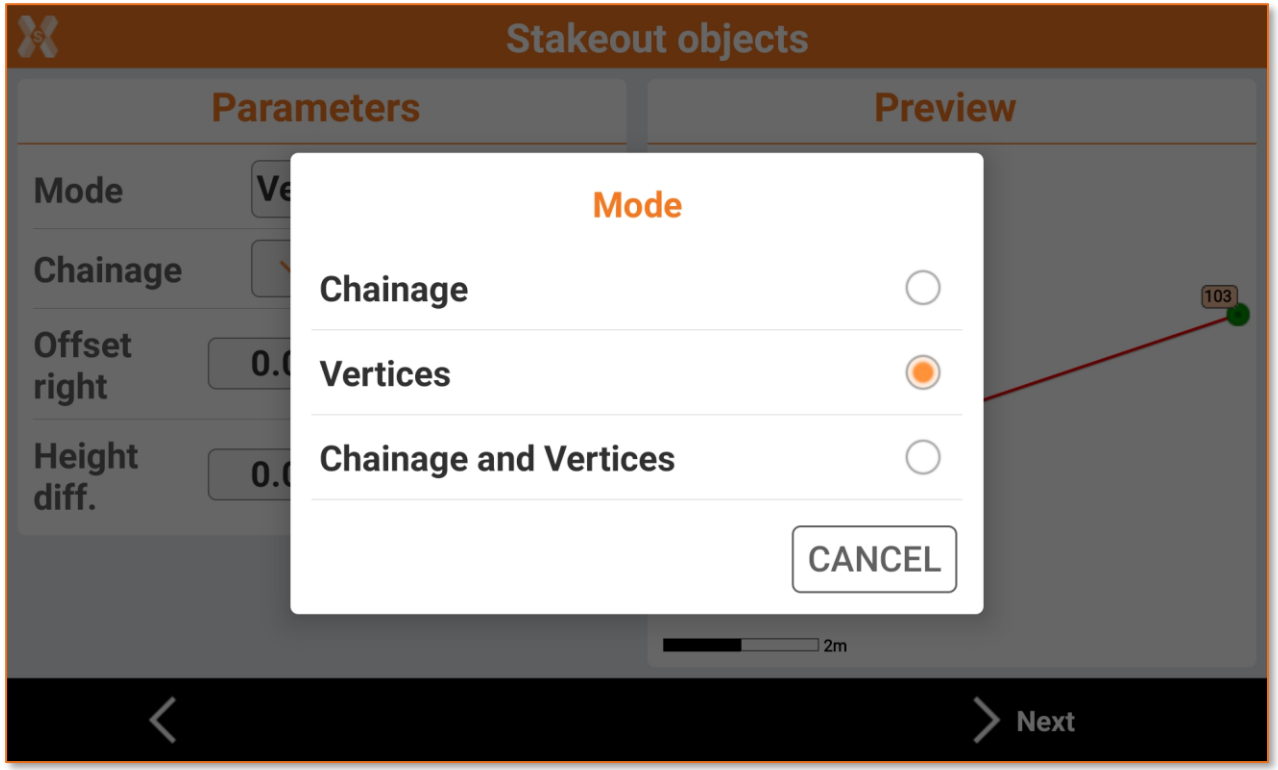
The new navigation mode is available for both GNSS and TPS stakeout.



Stakeout vertices of objects

Stakeout of objects can be executed now with three different settings:

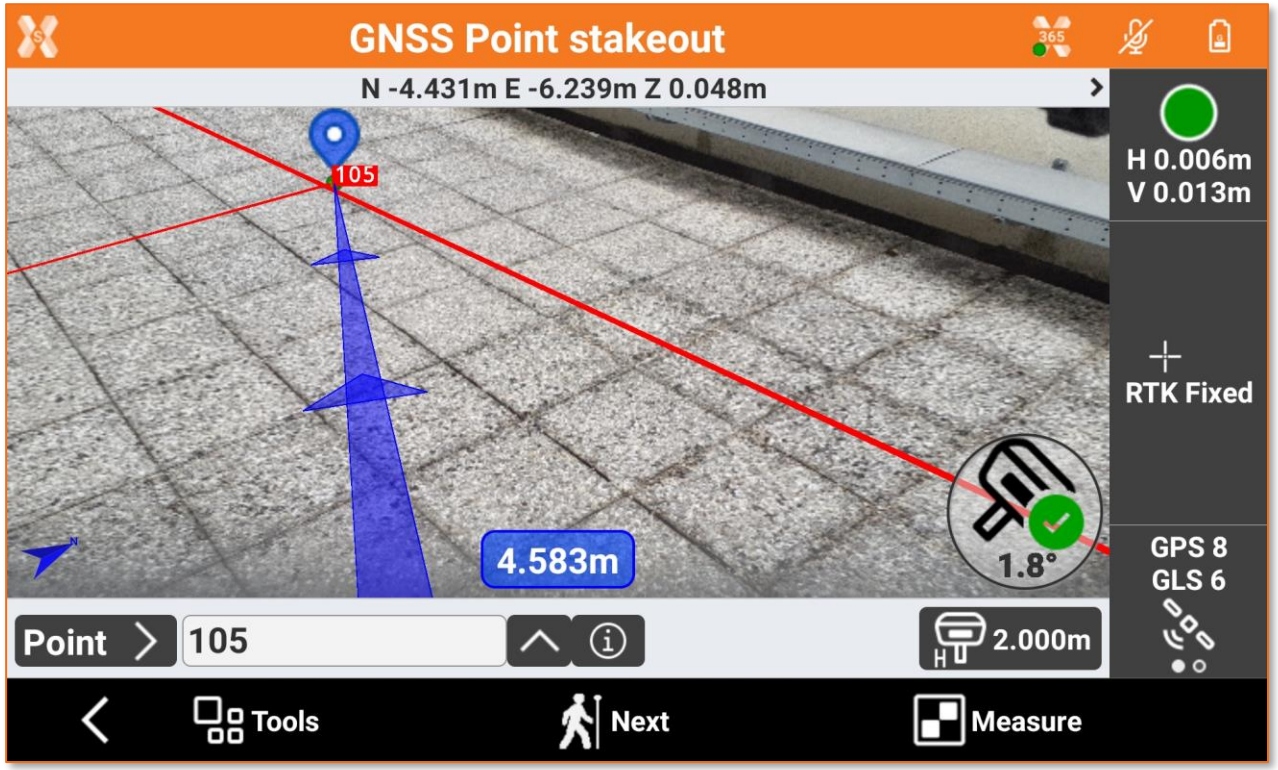
- **By Chainage**: fixed distances along the object
- **By Vertices**: only vertices of the objects are used
- **By Chainage and Vertices**: combination of fixed distances and vertices



Stakeout with Augmented Reality improved

Augmented Reality has been significantly improved for stakeout operations. When used, there are clear indications on the direction to follow to reach the target.

Considering that the tablet is mounted on the pole, in proximity to the target, the view automatically changes to a bull-eye view, allowing for accurate positioning.

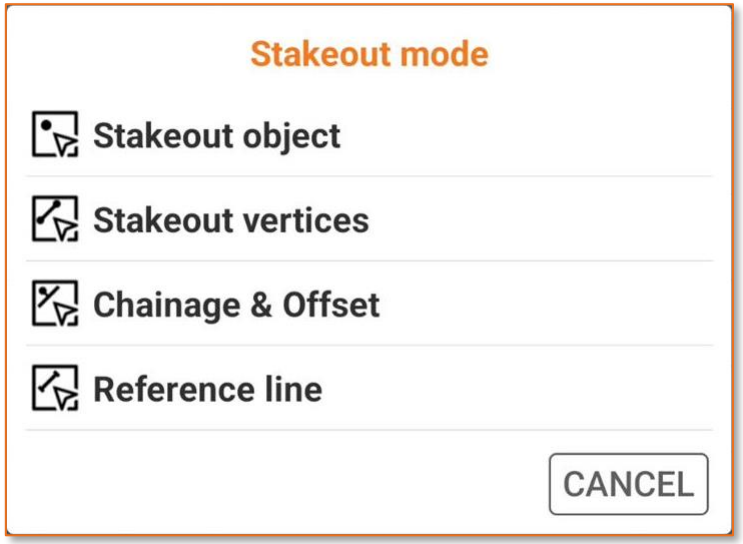


Stakeout and Reference line from CAD

Many customers use the CAD view as a starting point for their operations in the field. For this reason we have improved the actions available when an object is selected on the CAD view. When a drawing object is selected the following operations can be executed:

- Stakeout drawing object
- Stakeout vertices of the object
- Stakeout object by distance & offset
- Reference line

The selected option is automatically reused when another object is selected.



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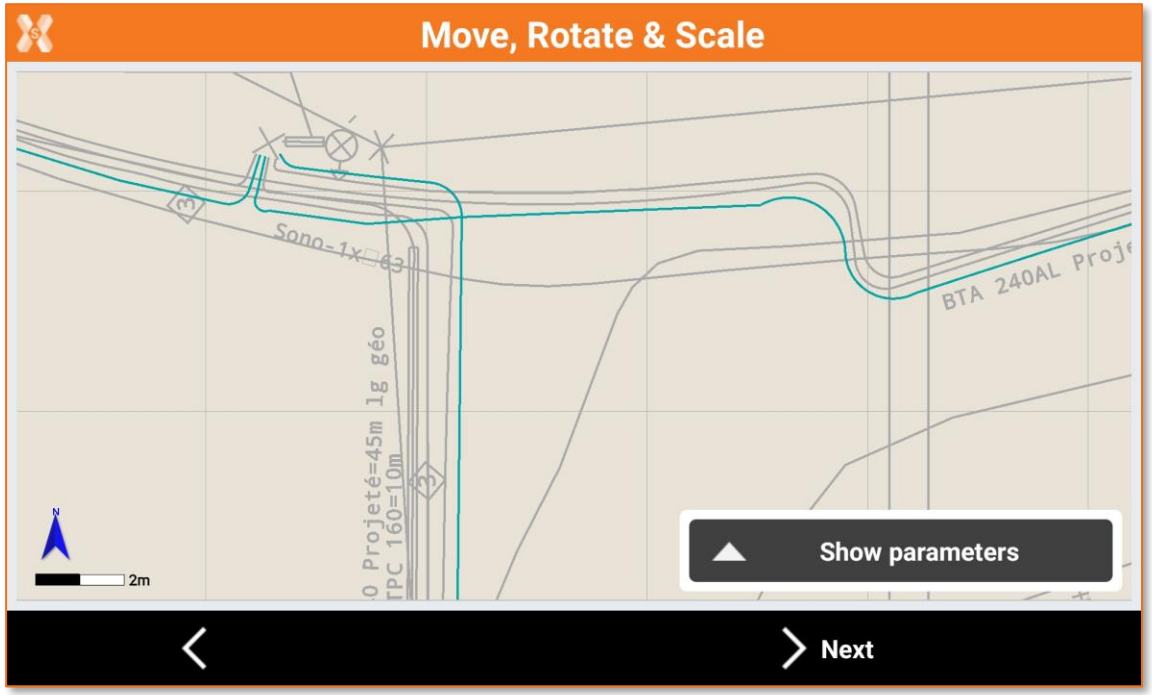
STAKEOUT

Move, Rotate & Scale – Preview of the result

With Move, Rotate & Scale command is possible to apply a transformation to the whole job or only to the selected elements.

This command has been improved by offering a **preview of the final result** before permanently applying the transformation. If the result satisfies expectations, it is then possible to proceed and save the transformation.

Drawing elements not affected by the transformation are displayed in light gray to distinguish them from the transformed elements.

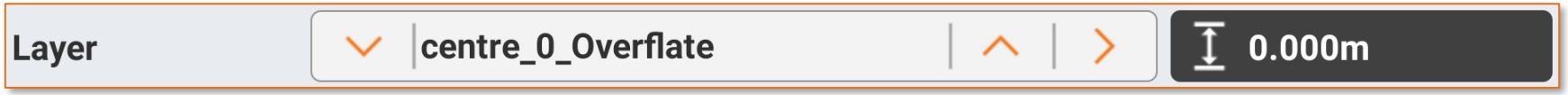


ROADS

Import LandXML – Alignments as road layers

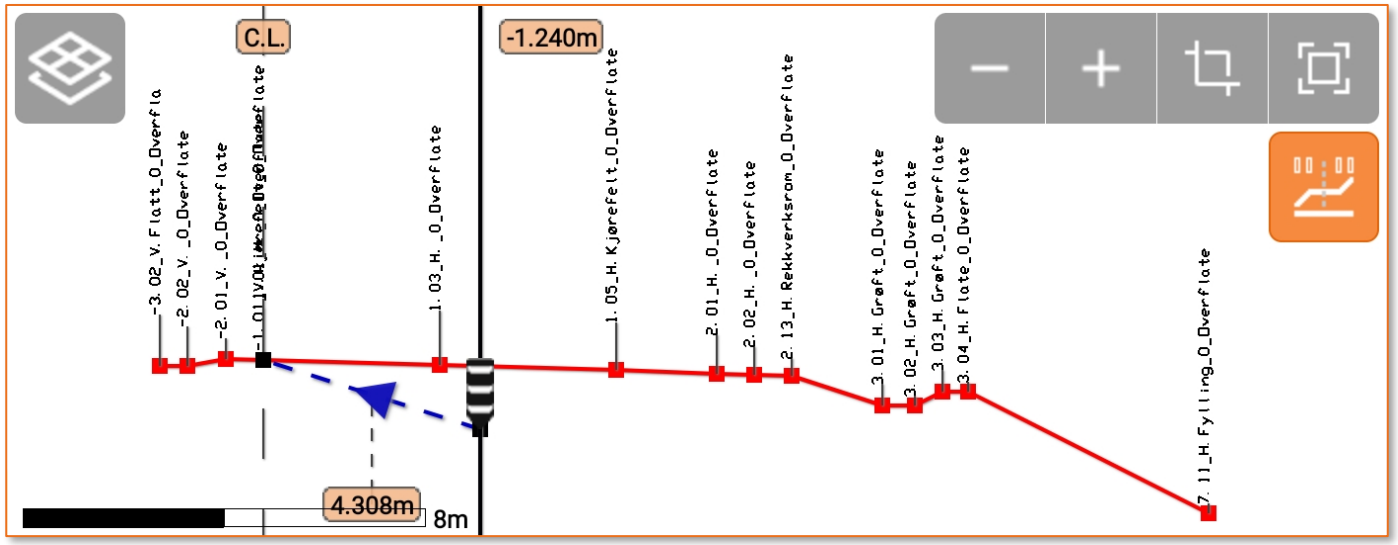
LandXML import has been improved with the option to manage Alignments as layers of the same road design project. This allows switching to a different layer of the same project without changing the alignment.

Consequently, in the ‘Where am I’ command, a new selection field is available to change the current layer.



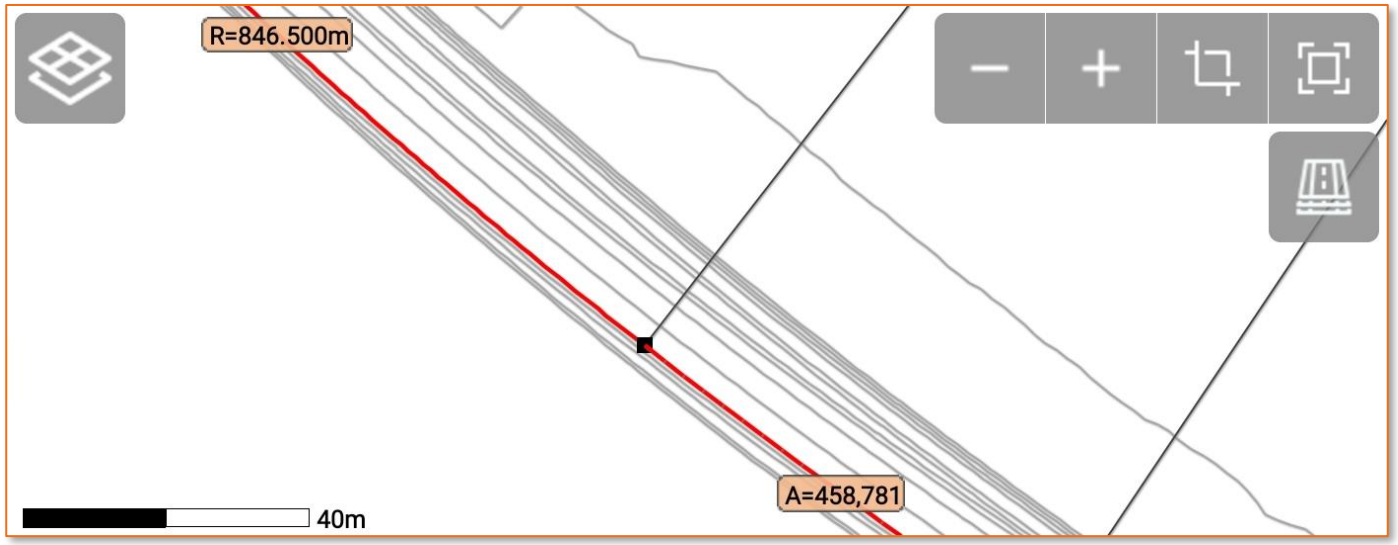
Cross-sections view

In complex road projects, there are several strings along the axis with specific names that help the user recognize them. To improve the readability of the cross-sections, these names are now displayed **vertically** on top of the vertices. Additionally, there is a new button that allows the descriptions to be hidden or shown.



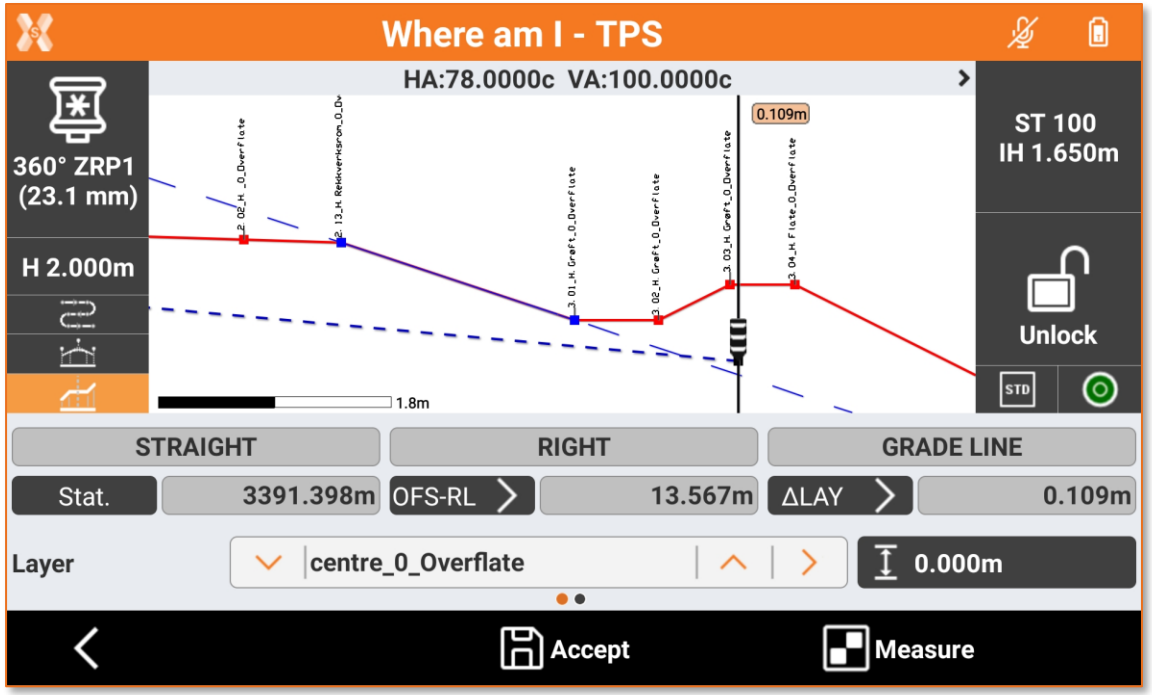
Planimetric view

The drawing of the road design axis in the planimetric view (from the top) has been improved, making all elements clearer and the entire design more readable. A new button allows hiding or showing other elements of the project, enabling the user to choose whether to make only the current axis or the entire project visible.



Where am I – selected segment

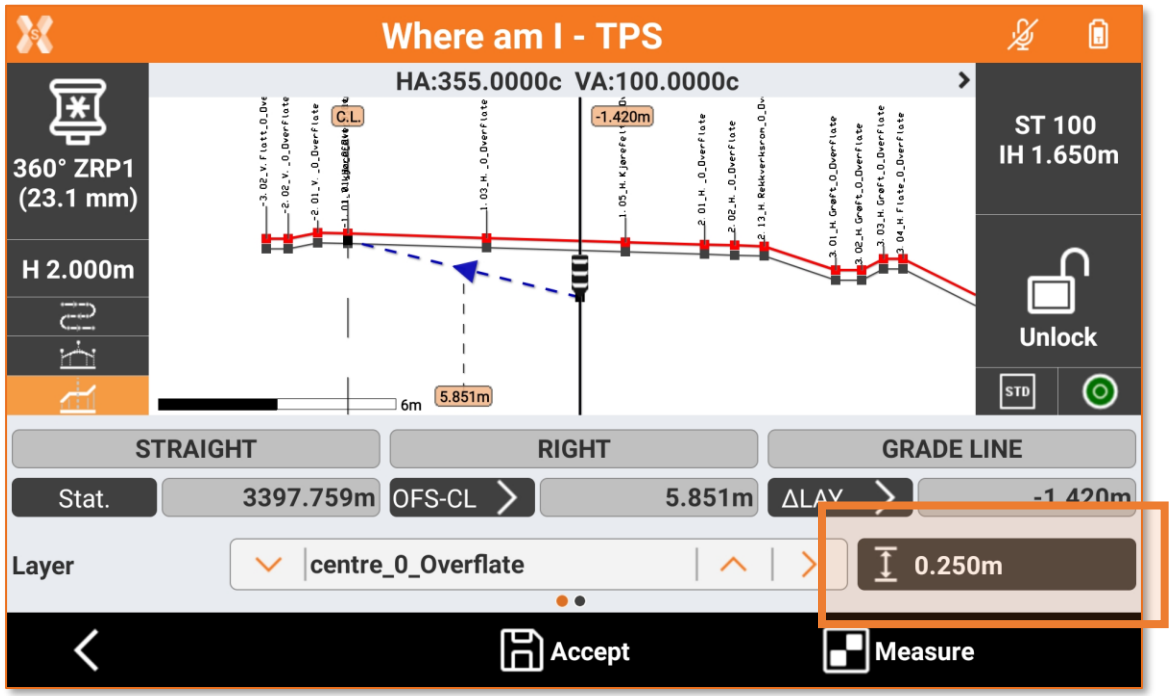
In the ‘Where am I’ cross-section view, it is possible to select a **segment** and use it **as a reference for the elevation**. The elevation difference is displayed in real time, even outside of the segment, by considering its extension.



Where am I – Vertical offset

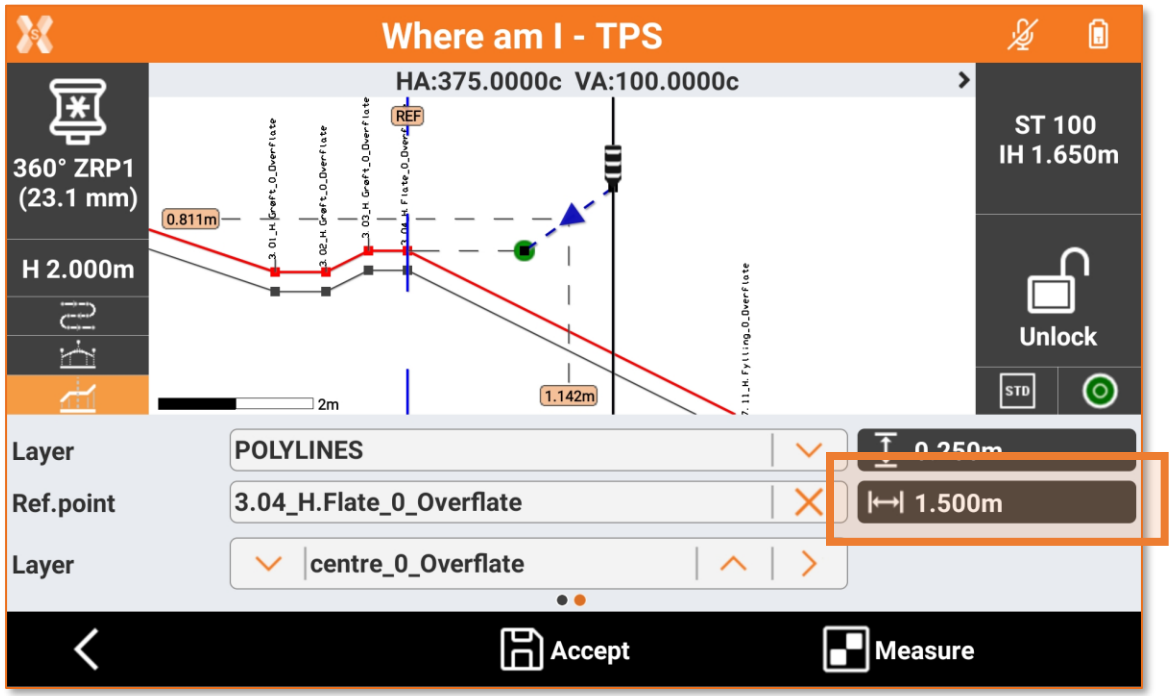
In the ‘Where am I’ view, it is possible to apply a vertical offset to the current layer or surface.

All displayed information is then referenced to the surface with that offset applied.



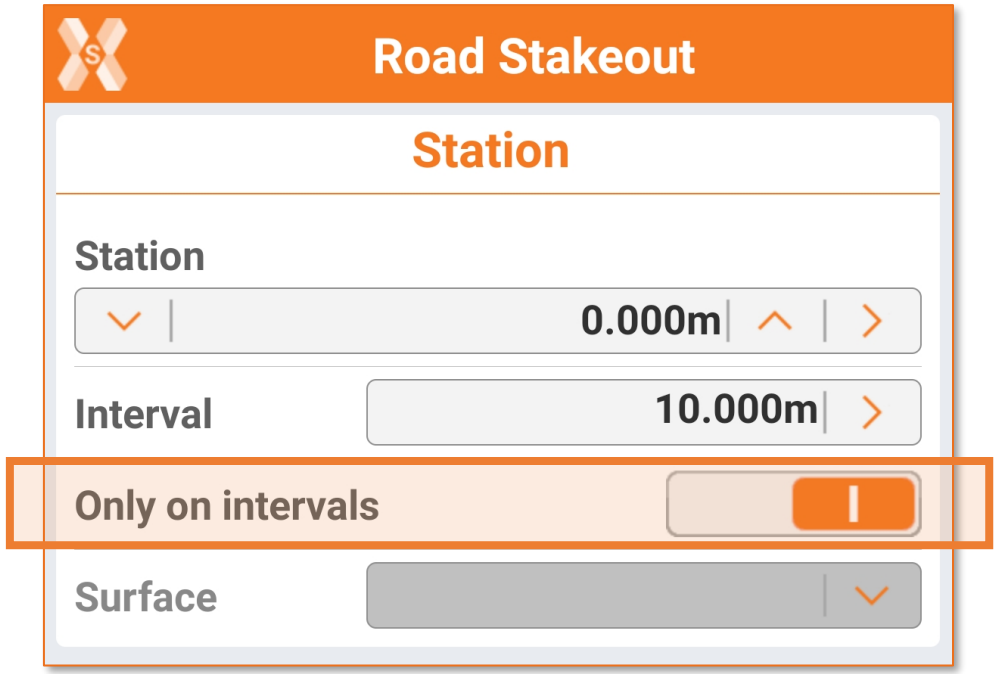
Where am I – Horizontal offset

In the ‘Where am I’ view, it is possible to select a point to use as a reference. A horizontal offset can be applied to that point, and all displayed information is then referenced to the point with that offset applied.



Road Stakeout – only fixed intervals

The new option ‘Only on intervals’ allows staking out the alignment only at fixed distance intervals, ignoring all other stations such as horizontal and vertical tangent points.



IMPORT & EXPORT

Hexagon GeoCloud Drive

X-PAD Ultimate now supports Hexagon GeoCloud Drive, the cloud-based data transfer and storage service for geospatial solutions at any scale.

From X-PAD Ultimate, it is possible to have access to projects and share data between field and office, as well as between different applications.

Coordinate system in LOK format from iCON Build

When different teams work on the same construction site, it is essential to use and share the same coordinate system. For this reason, in X-PAD Ultimate, we are able to import coordinate systems created by other software.

We can now import coordinate systems in LOK format generated by iCON build software.

Once the coordinate system has been imported into a job, the coordinates calculated from the GNSS position match exactly with the coordinates calculated by iCON build, ensuring consistency on the job site.

SBG Geo data as external reference

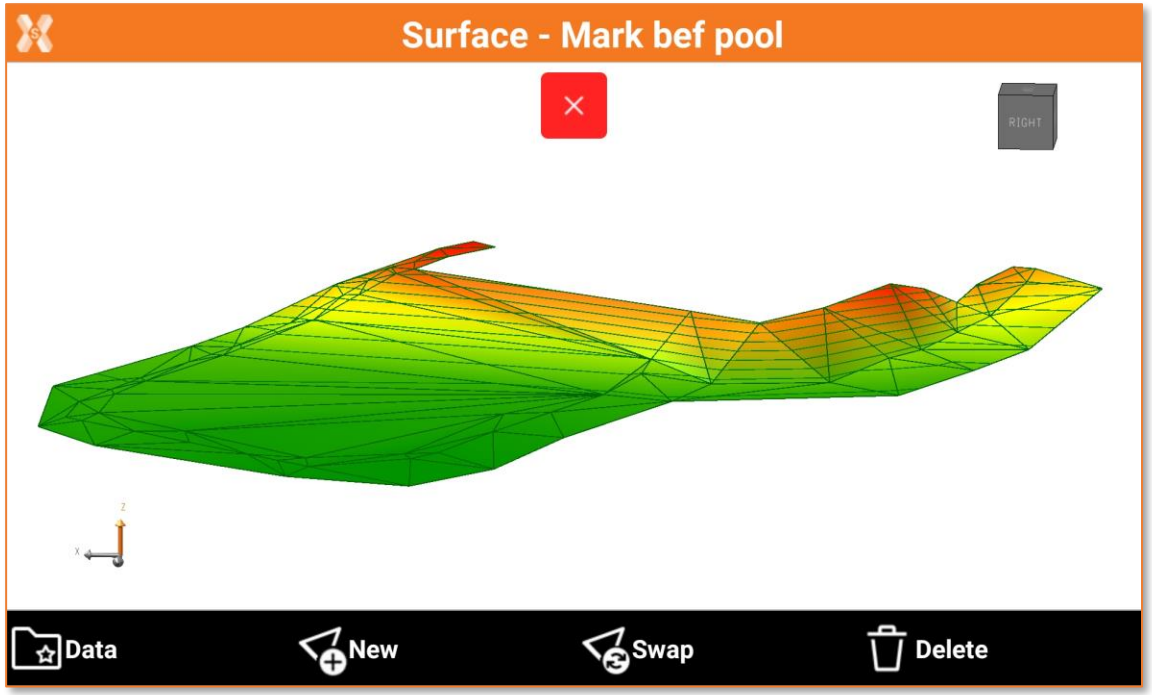
SB Geo is a surveying and construction software very popular in the Nordics countries. We already support SB Geo data by importing and exporting points data.

We have **added SBG Geo formats to the list of the data formats that can be used as external reference**. The files in these formats can be linked to the job instead of being imported. The same file can be used by multiple jobs, and if it is updated, all jobs are automatically updated.

SBG Geo TRM – Import & Export

From SBG Geo, we not only support points but are now we able to **import and export 3D surfaces stored in the TRM format**.

With this improvement, X-PAD Ultimate can exchange more data with other software and be more collaborative with other users.

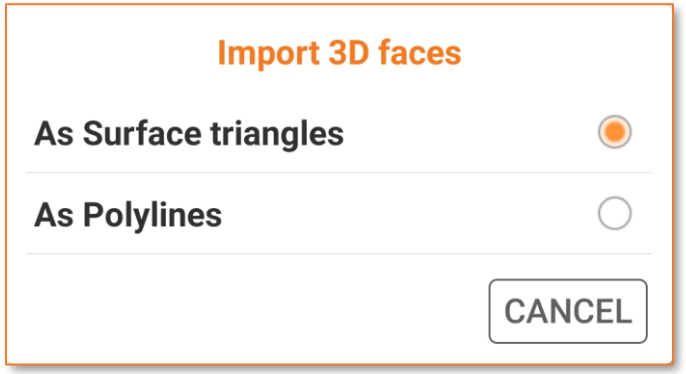


Import DXF/DWG - 3DFace as polylines

To support all types of drawings stored in DXF/DWG format, we have a new import option that allows to specify how 3D faces should be imported in X-PAD Ultimate.

Previously, 3D faces were imported as surfaces, but we discovered that some CAD software uses 3D faces as part of the drawing.

For this reason, now is possible to decide how 3D faces have to be imported: as surface (as before) or as polylines.



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CATASTO

Export DAT Pregeo - Matrici covarianza (solo Italia)

In caso di ricalcolo delle misure da una nuova base e in caso di esportazione dei punti inaccessibili come misura diretta, è ora possibile attivare l'opzione **Ricalcola matrici covarianza**.

Questa opzione consente, per tutte le misure ricalcolate, di determinare autonomamente i valori delle matrici di covarianza che altrimenti sarebbero zero; libretti Pregeo con matrici di covarianza a zero non sono più accettati da alcuni uffici.