

SKI-Pro version 2.5

A new version of Leica's SKI-Pro software has been released. This newsletter summarises the most important enhancements of the **new version 2.5**.

From a GPS software towards a platform...

Since the introduction of System 500 SKI-Pro has been the office software supporting the processing of GPS data collected for post-processing or in real-time. It is based on modern Windows™ standards and therefore easy to learn and to use.

Now for the first time the software has become more than a pure GPS software package: It has been developed into a platform, which can host other applications. The new Leica **LevelPak-Pro** software, which will accompany the new digital levels follows the well known and liked look-and-feel of SKI-Pro.

Point	East	North	Distance	Height	Point Class	Point Height
1010	1.1798	2.3402	100.0000	Control	Point Height	
1011	0.0427	25.7093	100.0000	Measured	None	
1012	0.0504	25.7093	100.0000	Measured	None	
1013	0.7021	25.8100	100.0000	Measured	None	
1014	0.8111	25.8300	100.0000	Measured	None	
1015	0.7701	25.7700	100.0000	Measured	None	
1016	0.4702	25.9000	100.0000	Measured	None	
1017	0.7090	25.9000	100.0000	Measured	None	
1018	0.7700	25.9000	100.0000	Measured	None	
1019	0.7700	0.7410	25.9000	100.0000	Control	Point Height

LevelPak-Pro supports the import of data collected with the new DNA as well as with the existing NA3003/2002 instruments. Observations can be displayed and edited in a "Booking Sheet" and level lines can be processed using the **by Distance** and **by Station** method. By utilising the SKI-Pro platform LevelPak-Pro will inherit many useful features including flexible data exports from the SKI-Pro platform.

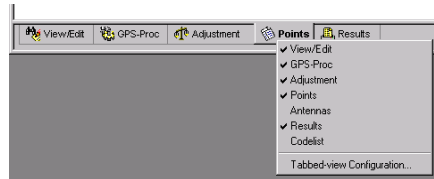
Let us now concentrate on the new features available in

the GPS configuration (SKI-Pro).

Software Configuration and User Interface

Various enhancements have been introduced to allow you to personalise the look and feel of SKI-Pro and to find the necessary functionality more easily.

The project **tabbed views** can now be configured to your personal preference. You can switch views off, if you are not using them or you can change the order of the tabbed views.



Also the **software protection strategy** has changed. If your dongle is not connected you can nevertheless access the project views containing protected options (GPS-Processing, Adjustment). This will allow you to

- export single intervals to RINEX
- edit the interval properties (e.g. antenna information) of complete tracks
- compute all independent loops (see below)

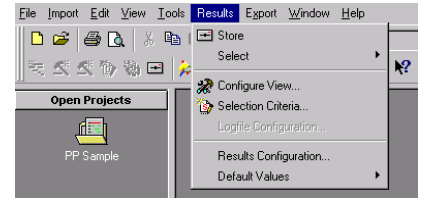
without your dongle being connected.

SKI-Pro version 2.5 also contains an **improved main menu** design. You will notice that now there is a dynamic entry in the main menu between the **Tools** and the **Export** menu, which corresponds to the currently selected project view.

Basic functionality such as creating, editing, activating, deactivating or deleting points is now accessible from the main menu in the different project views. The deletion of triplets is

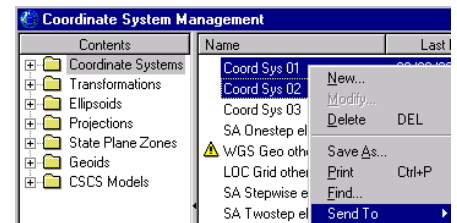
now possible from within the Points view. Also the configuration of the Co-ordinate System and Type to be displayed in the Points view can now be set from the main menu.

The screenshot below shows the new main menu when the Results tabbed view is selected:



Also new is the option to quickly **configure the columns** of any report view from the Columns dialog that is accessible with a right mouse-click on the column heading. Column configurations are now stored project specific so that you can keep different configurations for different projects.

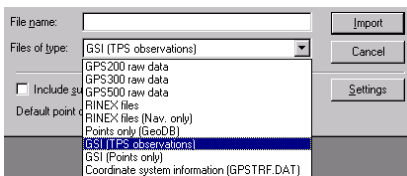
In the management components for projects, co-ordinate sets, co-ordinate systems and antennas the context menu contains an additional entry **Send To** to create a job or a GPSTRF.DAT or an ANT.LST file for usage on a System 500 sensor. This option allows creating the necessary files on the PC card drive or anywhere else on the hard disk without having to open the Sensor Transfer component.



All these features make the general operation of SKI-Pro even easier.

Import of terrestrial observations from GSI

There is one more improvement in SKI-Pro version 2.5, which shows that SKI-Pro is more than a package to purely process GPS raw data. In version 2.5 **TPS data** can be imported from Leica **GSI files**. Directions, distances and zenith angles will be stored in the project's database and can be used in the Adjustment component. When assigning them to a project the necessary reference triplets and the setups are automatically created.



If co-ordinates for the target points do not yet exist, provisional co-ordinates will be derived from the measurements (if possible). Measured triplets for the target points will be stored and if the co-ordinate system attached to the project allows a conversion, the points can be averaged with GPS measurements.

You can select the way your feature coding shall be interpreted, and you may apply defaults for the standard deviations of directions, distances and zenith angles. Also default values for centring and height errors can be applied to the set-up and the target points.

In version 2.5 the main purpose of importing GSI observation is the possibility to compute a **combined GPS and TPS network adjustment**. Therefore, GSI Import is only possible, if the Adjustment option is activated on the dongle.

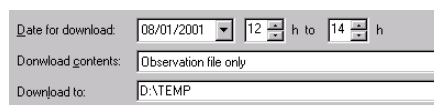
Note that a variety of interpretations of the GSI format are used in practise. SKI-Pro version 2.5 supports the standard GSI Word Indices for set-up, target points and observations.

Improved Internet Download

Downloading **RINEX data** from public reference stations or precise ephemeris data from the Internet is becoming more and more important. Thus there are a few important improvements in the **Internet Download** component of SKI-Pro version 2.5.

Most RINEX files are stored in a new **compacted format** (sometimes referred to as the "Hatanaka" format) on the Internet. This new format no longer lists the raw observations (phase and code) for each epoch, but rather the differences in code and phase from epoch to epoch. SKI-Pro version 2.5 will now automatically unzip and de-compress such files during Internet Download.

For Custom Internet Sites, which include the parameter %H in the URL Site Name string (specifying the hour in RINEX format: a-x), the Download page allows to select the **hours to be downloaded**.



Certain Internet Sites require a **User ID and a password** in order to download files. With version 2.5 it is possible to store a User ID and Password individually for each site, if required.

The list of pre-defined sites has also been updated. Customers still using version 2.1 can update their site list via the Leica FTP server.

More Improvements...

SKI-Pro version 2.5 contains a lot more improvements. Please read the Release Notes for more information. This section of the Newsletter just summarises some of the most important ones.

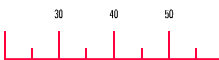
Format Manager

Additional variables are now supported in the **Format Manager** and can be used during **Custom ASCII Export**. Among those are variables like number of satellites, job names, occupation duration or sensor type, which may be useful for reporting. Additionally a new export string called **Hidden Point Elements** has been introduced. This export string includes new variables for the point ID and the co-ordinates of Hidden Points, Auxiliary Points and Bearing Points as well as variables for the Hidden Point elements such as direction, distance, chainage and offset for the various methods.

CSCS Models

CSCS Models have already been introduced with SKI-Pro version 2.1. CSCS models are tables of conversion factors to directly convert between GPS measured co-ordinates (WGS84) and the corresponding local mapping co-ordinates, taking the distortions of the local mapping system into account. CSCS models are based on grid files, which can be considered as a look-up table for the corrections.

In addition to the Cartesian and the Grid method, which have been available since version 2.1, SKI-Pro version 2.5 now also fully supports the **Geodetic conversion method**. A description on how CSCS models work and when they



can be used will be the subject of a future newsletter.

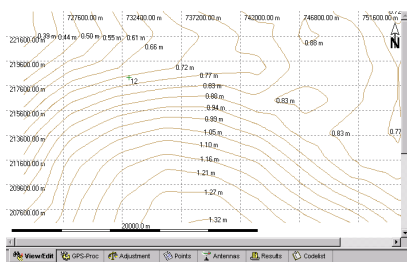
Computation of loops

In the Adjustment component a new feature to automatically **compute all independent loops** of a network is now available. The loops computation finds the smallest set of independent loops and computes for all these loops their misclosure. GPS and TPS loops will be determined separately. An outlier test is performed on the components of the error vector. The computation results are stored in the Loops logfile.

Note that this functionality is available also without your dongle being connected and that the loops are always calculated from the original unadjusted vectors. The option in View/Edit to manually select loops and calculate their misclosures is also still available.

Geoid Contours

Contour lines for the geoid separations can now be displayed in View/Edit to get an overview about the variation of the geoid separation within the project area. Geoid separations will always be displayed with respect to the local ellipsoid.



GPS Processing

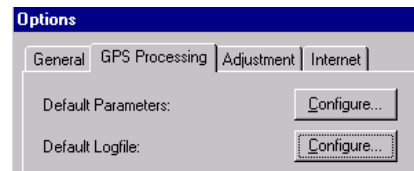
Two new processing parameters have been introduced.

In the **Strategy tab** of the GPS Processing Parameters a new parameter for **Solution Type** has been introduced. The new setting **“Automatic”** will automatically switch between

Standard and Iono-free Fixed depending on the baseline length. If the baseline is shorter than 15 km the processing will automatically use the setting **“Standard”**, whereas for longer lines **“Iono-free Fixed”** will be used.

Also for the parameter **Cycle slip detection** a new setting has been introduced. Option **“Use SNR model”** will apply an advanced weighting model that is based on the Signal to Noise Ratio. The Online Help contains further information on the model itself and when to apply it.

With version 2.5 it is now possible to globally define the contents of the **GPS Processing logfile** for all new projects. From the Tools – Options main menu you can set the default logfile contents. Note that in the Results Manager it is still possible to select project specific defaults for each individual project.



Projects

The **File** main menu of version 2.5 contains an additional entry to quickly change the properties of an open (and active) project without having to open the Project Management component. You may change the averaging limits or the attached coordinate system from there.

Also new is the option to **unregister projects** in the Project Management component. This will remove a project from your list of available projects without actually deleting it.

Datum/Map

In the **Datum/Map Match view** you can now de-activate com-

mon points from the computation without completely removing them from the selection.

System A Point Id	System B Point Id	Point Type
<input checked="" type="checkbox"/> B215	B215	Position + height
<input checked="" type="checkbox"/> B218	B218	Position + height
<input checked="" type="checkbox"/> B313	B313	Position + height
<input type="checkbox"/> TP214	TP214	Position + height
<input type="checkbox"/> TP306	TP306	Position + height

In the **Results view** you can now select the method for the distribution of residuals to be used when a new co-ordinate system is automatically create using the newly computed transformation.

Height-only points are now fully supported in the SKI-Pro database, and can also be used as common points in Datum/Map.

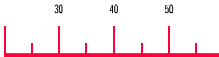
New HTML Help System

With SKI-Pro 2.5 a new, **HTML based help system** has been introduced. It offers you the modern look and feel you are used to from the Internet Explorer. Links to the Internet or FTP sites open the Internet browser for you in the topic pane.

Additionally the new Help System includes new features such as **Favourites**, **Browse Sequences**, **advanced search functionality** or a **GPS Online Tutorial**. The next newsletter will describe the new Help System in full detail.

Remember...

- SKI-Pro version 2.5 is a step towards an office software platform for different Survey products. It can host the Level Processing software LevelPak-Pro and it allows you to import TPS data from GSI files.
- Version 2.5 contains various improvements that allow you to personalise the look and feel of SKI-Pro, which in turn



makes the software easier to use.

- Version 2.5 also contains additional functionality in different components: Internet Download, Format Manager, Co-ordinate System Management, Project Management,

GPS-Processing, Adjustment, Datum/Map, Online Help and many more. It is certainly well worth taking a closer look at SKI-Pro version 2.5.

- Please also read the Release Notes and the documentation that comes together with ver-

sion 2.5 to fully explore all new features and enhancements.

Ideas for Future Newsletters...

If you have any ideas or wishes for topics that you would like to be discussed in a future newsletter, please contact your local selling unit or representative. These ideas can then be passed to Heerbrugg. Thank you.