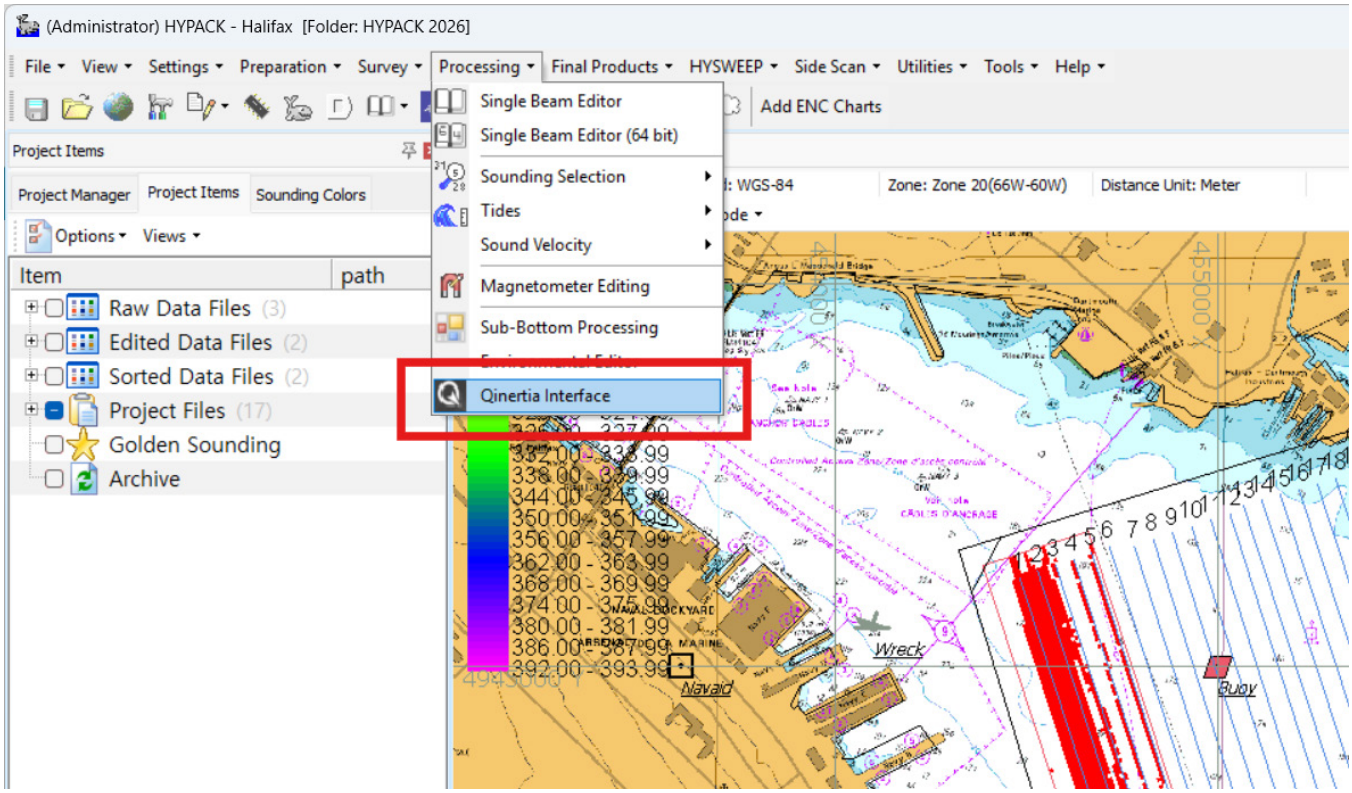
Streamlined Positioning Workflows: Collaboration Between HYPACK and SBG Systems

by Amanda Whaling

Hydrographic and topographic survey teams continue to seek faster, simpler, and more cost effective ways to manage positioning and post processing. Through an expanded collaboration between HYPACK and SBG Systems, the Qinertia post processing engine is now fully integrated within HYPACK® (Figure 1), creating a unified environment for generating high accuracy GNSS and GNSS+INS trajectories.

Figure 1. Launch the Qinertia Processor from the Processing drop down menu



One Platform, One Workflow

SBG Systems' Qinertia software is widely recognized as a trusted tool for post processing GNSS and INS observations. With the Qinertia engine embedded directly into HYPACK®, there is no need to switch platforms or maintain external workflows. Users simply open the Qinertia interface within HYPACK® (from the HYPACK Shell, click Processing -> Qinertia Interface), select raw mission data, configure processing options, and generate a Smoothed Best Estimate of Trajectory (SBET) used in SBMAX64 or MBMAX64 to improve the accuracy of your position and tide data in HYPACK®. Figure 2 shows how this integration enhances efficiency.

Figure 2. Benefits from the HYPACK® and Qinertia integration

Supporting scalable workflows

- The JSON configuration file maintains consistent project settings, making it easy to scale single-day surveys to large, multi-mission campaigns.

Reducing field setup time

- If RTK-level accuracy is required, achieve results comparable to using a local base station in the survey area by post-processing with the Qinertia Interface, eliminating the need for additional field setup time.

Lowering operational costs

- Keep costs low while simplifying coordination and billing through one provider.

Offering flexible licensing

- Monthly, annual, or perpetual licensing options provide freedom to scale usage to match project timelines, workload, and budget.

Safeguarding data accuracy

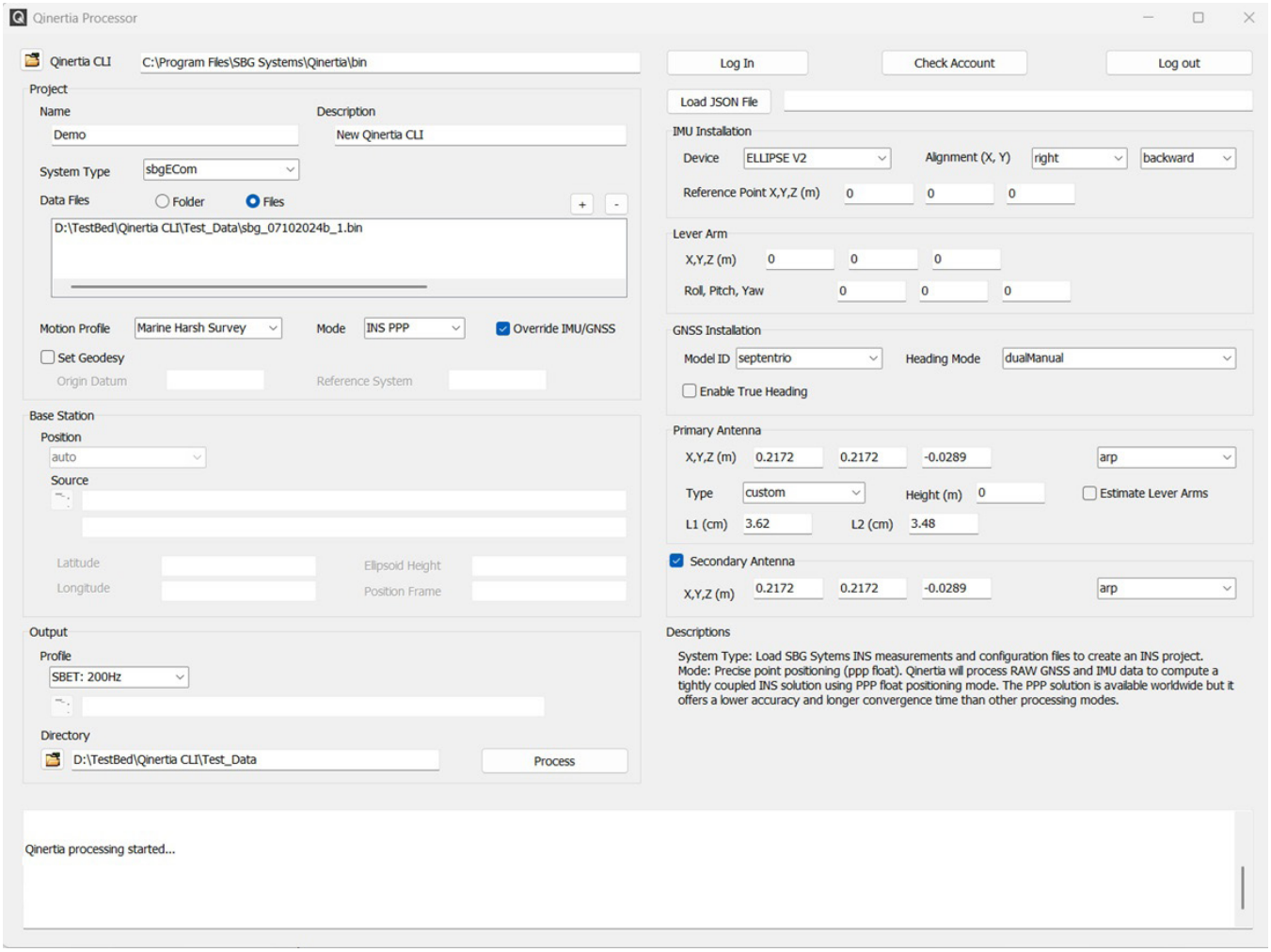
- If real-time corrections from cellular RTK or a local base station are lost unexpectedly in the field, the Qinertia Interface is an option to post-process raw mission data to recover high-accuracy position and elevation.

Managing license access

- The Qinertia Interface's simple login facilitates single-user access, clarifying team responsibilities while allowing multiple surveyors to share the license efficiently.

This efficiency is driven in part by the automatically generated JSON configuration file created for each project, which stores key offsets, geodesy parameters, and processing settings. This is especially valuable for users managing multiple missions or multi day survey campaigns, as it allows configurations to be reloaded instantly and ensures consistent processing with minimal manual input. Additionally, the streamlined, single window Qinertia Interface keeps processing simple and easy to repeat across missions (Figure 3). And while the workflow is designed for speed and simplicity, it also maintains accuracy—the Qinertia Interface generates a detailed processing report outlining the selected processing mode, reference stations used, and overall solution quality, delivering a reliable, accurate, and efficient field-to-finish workflow.

Figure 3. Qinertia Processor dialog window



Getting Started

Once the Qinertia Interface is activated and user credentials are entered, processing can begin immediately within HYPACK®. Users can work with GNSS only data or combine GNSS with INS measurements for greater robustness in degraded environments, such as multipath, outages, or reduced satellite visibility. Qinertia supports standard RINEX and RTCM formats and is compatible with leading GNSS and INS systems including Septentrio, NovAtel, u-blox, Trimble, SBG Systems INS, Septentrio INS, NovAtel SPAN, and Trimble Applanix POS (000 format). For highest accuracy solutions, the Qinertia Interface can incorporate precise GNSS orbit and clock products typically available 12–24 hours after data collection, though preliminary solutions can be generated sooner when needed.

Within the Qinertia Interface, users can choose between two processing strategies based on project conditions. Precise Point Positioning (PPP) provides high-accuracy results without requiring a local base station, making it ideal for remote areas or regions lacking dense CORS coverage, as it draws on global correction services. Post Processed Kinematic (PPK) delivers excellent accuracy over short to moderate baselines by applying corrections from a nearby reference source—whether a user-supplied base station, a CORS location, or a Virtual Reference Station (VRS) that blends data from multiple stations to produce an optimized correction solution.

This means that even if real-time corrections from cellular RTK or a local base station are lost in the field, the

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Qinertia Interface safeguards data accuracy by providing you the option to post-process your raw mission data. For example, Figure 4a shows the real-time Tide window in SBMAX64 recorded with HYPACK Survey for one line, where multipath and lost cellular corrections degrade the quality indicated by the spikes in elevation and inconsistent GPS code status indicators. Figure 4b shows the same line with the improved post-processed solution generated from the Qinertia Interface.

Figure 4a. Pre-processed tide values with irregularities

Figure 4b. Tide with corrections applied via post-processing from Qinertia

This article highlights only a portion of the advanced processing options available with the Qinertia add-on license. No matter which workflow you choose, the Qinertia Interface delivers the SBET ready for use in MBMAX64 or SBMAX64, supporting a cohesive field-to-finish process and improving the accuracy of your hydrographic and topographic surveys.

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