

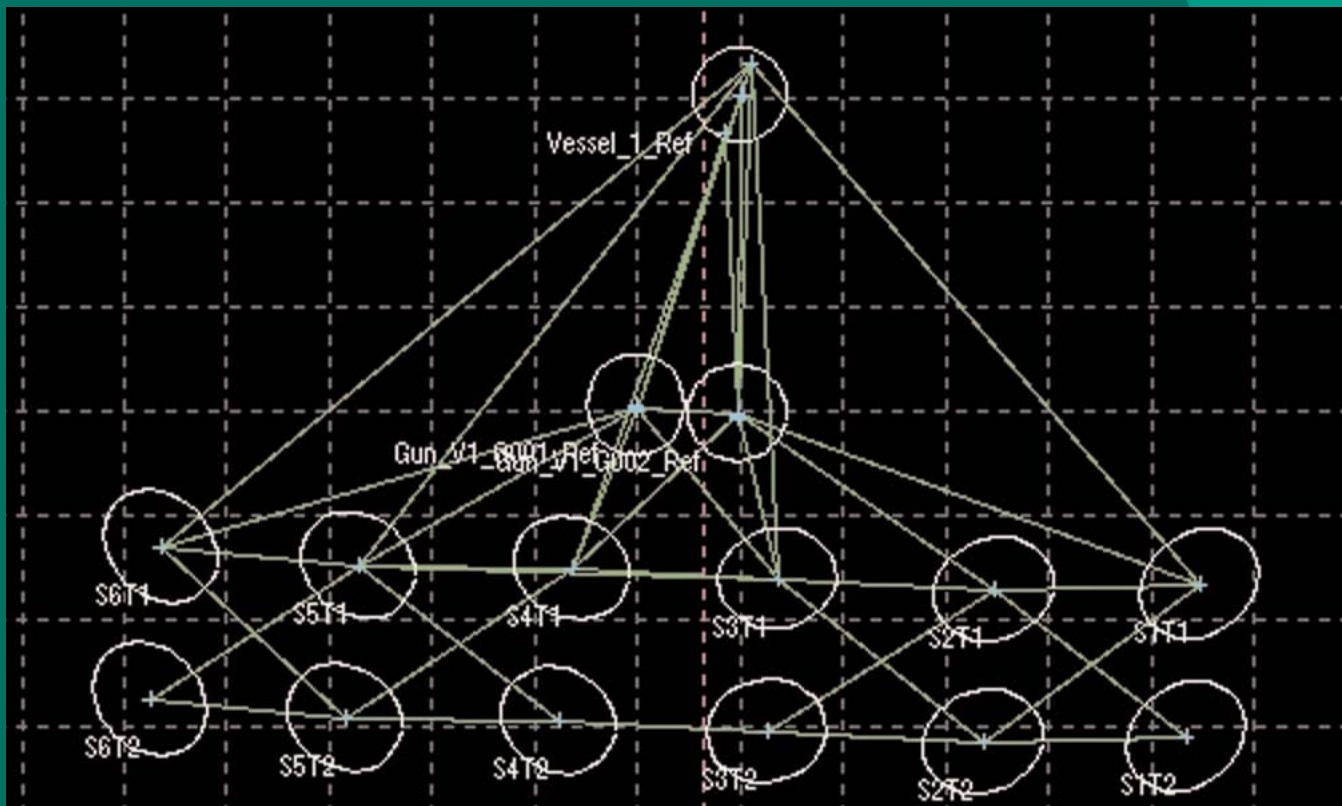


CONCEPT SYSTEMS
IT SOLUTIONS FOR THE WORLD E&P INDUSTRY



> Navigation Processing
& QC System for Marine
Geophysical Survey

>Sprint



> Navigation Processing & QC System
for Marine Geophysical Survey

> Sprint

>Sprint

Sprint has established itself as the most effective navigation data processing system in the marine seismic industry. It has been adopted by the leading seismic contractors for full production navigation processing and oil companies have chosen it as the most reliable and sophisticated QC system for offshore navigation data processing.

Sprint provides customers with a high level of confidence in the complete navigation data set, which is available within a few hours of acquisition. Sprint can quickly make the best use of the available data, preventing unnecessary reshoots and infill, thus reducing overall costs and ensuring the survey is completed in the minimum time.

The development of Sprint reflects Concept's unique relationship with its market. Technical input and financial support from major oil companies were significant contributors to the initial development process. This mutually beneficial collaboration continues with feedback from the extensive list of users incorporated in Concept's ongoing Sprint enhancement programmes.

Backed by Concept's worldwide support and training facilities, Sprint provides customers with the means for ensuring the navigation data is both properly acquired and processed. Combined with Concept's Spectra and Reflex, they offer the ultimate integrated navigation system to meet diverse and ever changing industry needs.

>Sprint Design

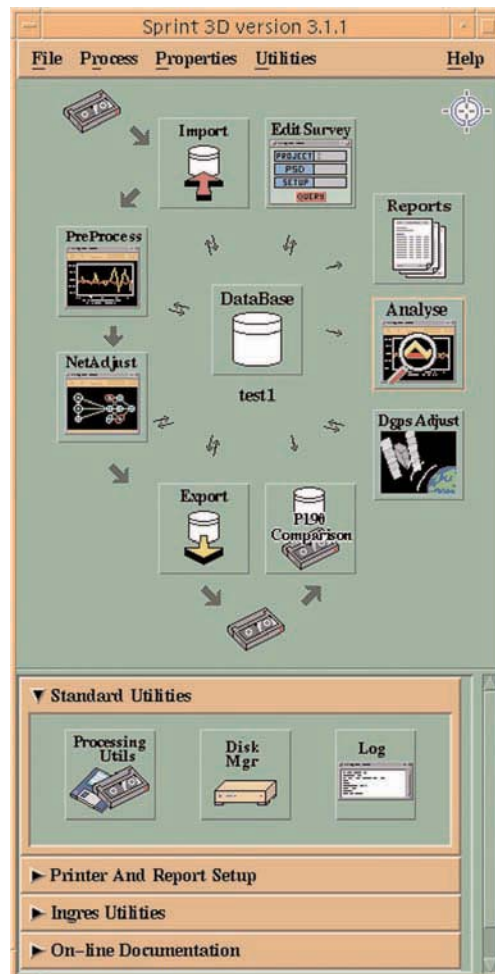
Sprint is a flexible and expandable product which has been designed around a relational database management system (RDBMS) with a Structured Query Language (SQL) interface. This RDBMS environment enables users to interact in a controlled and audited manner with all data in the database.

The generic database design facilitates the addition of the interfaces to contractor specific formats. In this way the system can apply state of the art processing techniques to older surveys which can result in dramatic data quality improvement.

Automatic aids are used whenever possible within Sprint, to highlight potential problem areas, either data quality issues, or related to the processing of data. This ensures the problem identification and correction cycle time is minimised, and results in faster throughput of data.

Sprint's design will transparently accommodate future changes in the positioning technology helping to minimise the requirement for new software investment. The latest graphical user interface (GUI) technology has been employed throughout the software ensuring that operator training is minimised.

Sprint currently runs on a range of powerful workstations and a variety of UNIX operating systems. Written in industry standard programming languages it can be easily ported to a wide variety of platforms.



> Sprint main menu

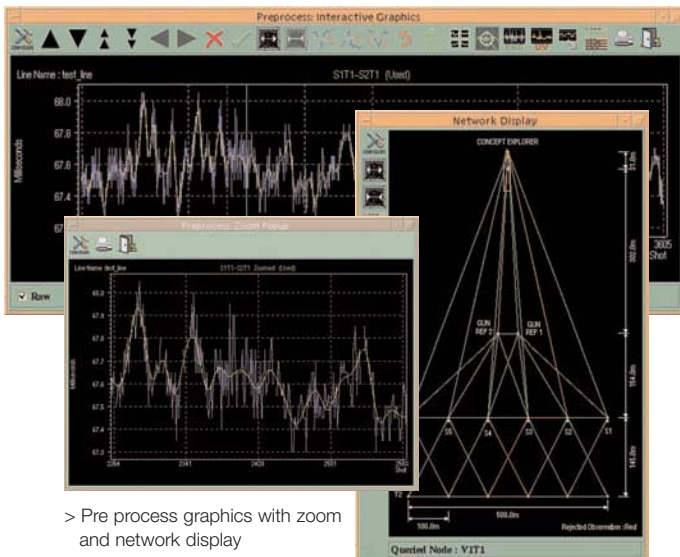
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>Flexible Processing

Sprint provides a choice of processing algorithms specially adapted to cater for a variety of navigation problems. These algorithms may be used in two distinct modes of operation to ensure optimum results.

The batch processing method is used during normal operation, and allows multiple lines to be processed in a way that guarantees fast turnaround. When data quality is variable, the interactive mode allows the user to perform fast 'what-if' enquiries and make quick decisions on optimum processing parameters specific to the requirements. Combined with powerful data editing facilities, this ensures that the acquired dataset is used whenever possible and reshoots and infill are kept to a minimum.

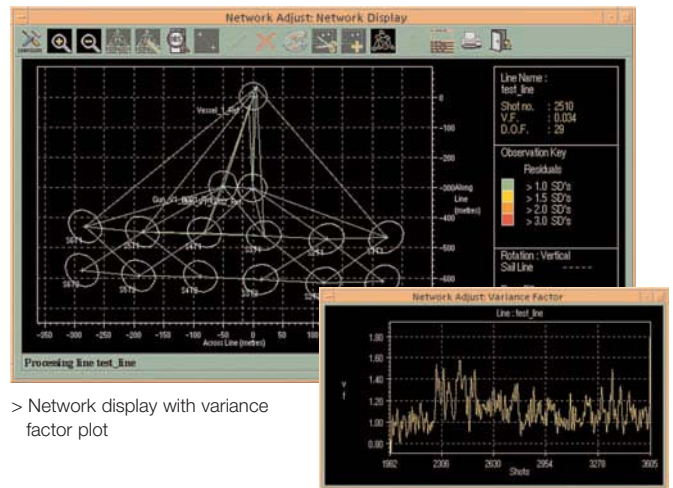


>Geodetic Computations

The system uses a standard library of geodetic computation algorithms for co-ordinate transformations, datum transformations and least squares adjustment. The library was developed by Concept Systems in conjunction with a major oil company. It is designed to allow transformations using all commonly used Projection, Spheroid, Datum definitions, as well as performing the network adjustment of seismic spreads regardless of size. The system has been used successfully to perform integrated processing of four vessel, 12 streamer spreads using gyro, DGPS, acoustics, RGPS, laser and compass data.

>Streamer Shaping

Streamer acoustics, RGPS, laser, and compass data are integrated to give the optimum streamer node and receiver positions. Sprint can use either a circle fit model, or a polynomial fit model, which provides effective QC and allows the ideal model to be chosen for particular operating conditions.



>UKOOA P1/90 Verification

A Sprint utility compares a UKOOA P1/90 file with the equivalent data stored in the Sprint database. This provides:

- Comparison of vessel, tailbuoy, source and receiver group records
- Presentation of results in statistical, time series, or spatial summary format
- Comparisons of water depth and cable depth
- Header verification

Sprint can display a colour graphical plot representing all the position differences for the entire line. This allows all receivers in the spread to be analysed and displayed in a sensible fashion. The analyst thus has total confidence in the complete navigation data set.

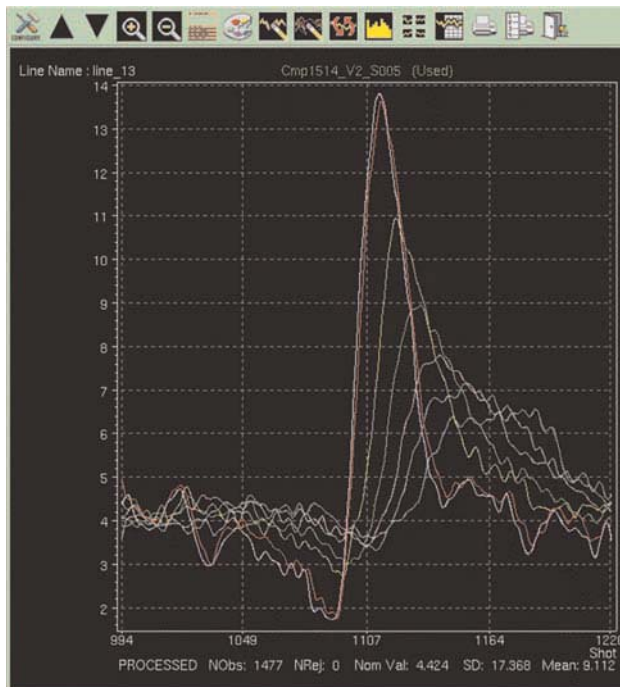
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>Advanced QC

Sprint incorporates sophisticated quality control throughout the processing cycle, from initial data input to final data output, providing full quality assurance of all archived data.

- Error checking on input data, including flagging of configuration changes.
- Automatic QC and exception reporting
- Variety of graphical analysis techniques
- Plots output to Postscript printer (full resolution)
- Reports output in spreadsheet compatible format
- Spatial attribute analysis



> Compass data overlay plot

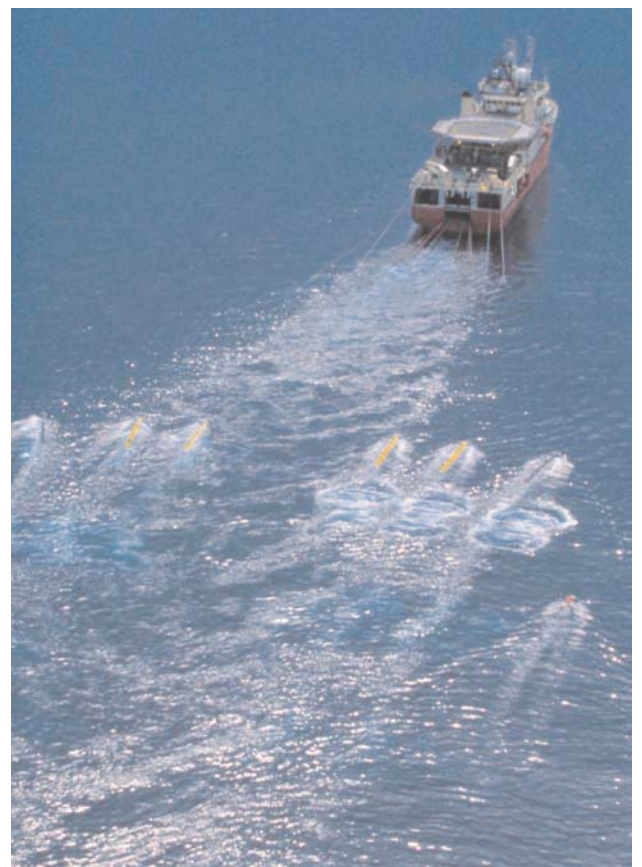
>Exporting Module

Sprint's flexible export utility features:

- UKOOA P1/90 output, with datum transformation, trace renumbering and trace/shot range selection options
- Reflex compatible ASC11 attribute file

>Features

- Fast data processing from raw data (P2/91, P2/94) through to UKOOA P1/90.
- Powerful interactive editing and processing functions
- Fully integrated network computation – unlimited number of points
- Flexible 2D and 3D processing options
- Batch mode (multi-line) capability in all modules
- Full Delft method statistical network analysis (NR, MDE, Xrel)
- Comparison and verification of all data in contractor's P1/90 file
- Futureproof Open Systems implementation
- Standard Interface (SQL) to all data in Sprint database
- Support for multi-processor architecture
- Available on multiple platforms including:
 - PC (Red Hat Linux)
 - Sun (Solaris)
 - IBM (AIX)
 - HP (HP-UX)



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>The Sprint Advantage

Sprint was developed by Concept Systems for use offshore and onshore in response to an industry demand for faster turnaround of processed navigation data in the 2D and 3D marine seismic acquisition and processing cycle.

The processing power and QC facilities of Sprint have been used in a variety of navigation contexts. Seismic contractors have adopted Sprint as a full production navigation processing system, while oil companies have found the system to be the most reliable and sophisticated QC facility for offshore navigation data processing.

Sprint was designed and developed with technical and financial assistance from major oil companies BP Exploration, Mobil North Sea, Phillips Petroleum UK and Total Oil Marine as well as the UK Offshore Supplies Office. This collaboration has ensured that Sprint meets the industry's requirements and now the system's extensive user-base provides continuous feedback on which to base regular enhancements of the product. Recent advances include improved database technology and support for multi-processor technology, providing further significant reductions in processing time.

>Benefits

- Final processing keeps pace with acquisition
- Reduces operator training costs
- Minimises reshoots and infill operations
- Guaranteed product longevity
- Provides total confidence in complete navigation data set
- Support available worldwide from Concept's navigation data processing department