

OVERVIEW

iX1 is INOVA's enhanced software and computing platform for cable and nodal operations. iX1 provides a singular and intuitive user interface to support scaling from small standalone systems to large seismic acquisition projects. iX1 comprises a full featured Seismic Operational Management System that includes software and hardware elements for all aspects of vibroseis and impulsive source operations. This includes configuration, control, QC and monitoring.

A Download and Data Management System for nodal operations includes software and hardware elements for all aspects of data download, transcription, nodal configuration, vibroseis correlation, data QC, equipment management.

Also for nodal operations, iX1 includes field software that runs on rugged, handheld field tools for ground equipment hardware QC. Field QC tools can be carried by field crews, mounted on crew vehicles or a Unmanned Aerial Vehicle (UAV).

The iX1 software is typically executed on two primary computers in the system; the **Seismic Processing Module** (SPM) and the **Transcriber Processing Module** (TPM).

iX1 Acquisition software on the SPM is the command and control center of the system with unique QC and operational features designed to maximize productivity and conduct a quality seismic survey. The software executed on the TPM provides highly efficient data download from nodal stations, and with a vast array of features.

Flexibility of the iX1 system architecture allows computer configurations based on user application determined by the type of system being deployed such as cable, nodal or hybrid.

OPERATIONAL MANAGEMENT SYSTEM

iX1 Acquisition software running on the SPM is used for the command and control of deployed nodal, cable stations or hybrid spreads.

In addition, software includes integrated source control software for all types of source production including dynamite, standard vibroseis and High Productivity Vibroseis (HPVS), including Slip-Sweep, DS3 and DS4 methods, defined by licensing options.

All functions for project setup, acquisition and quality control of seismic survey data are supported in iX1 Acquisition software. For specifications on the Operational Management system hardware, refer to the iX1 Hardware Datasheet.

ACQUISITION SOFTWARE FEATURES

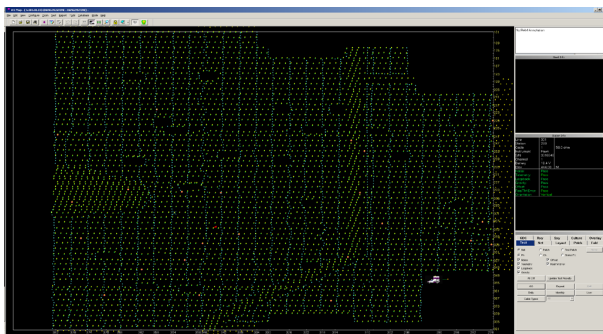
- Project configuration and database management
- Mapping / tracking
- Spread and template management
- Source control and QC
- Observer / shot / drill log management
- Tape and disk media archive
- System and sensor tests
- Real-time QC
- Nodal status and data sync

IX1 MAP

iX1 Map is used to define parameters for the 2D or 3D seismic survey including source/receiver coordinates and shooting template. Stations are assigned on the map as the equipment is laid out. These can include any combination of cable station and nodal stations.

All stations types are displayed and managed from a single iX1 Map display allowing the complete project to be viewed and managed from a single user display.

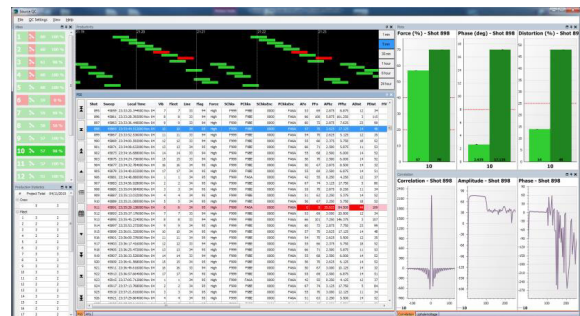
In addition, background images can be loaded to provide project aware context relative to the field operation.



SOURCE QC

Source QC uses information contained in the PSS and PFS data to provide production statistics and user-friendly production QC visualization. The program automatically switches modes to display PSS data for vibroseis operation and PFS data for dynamite production.

This feature greatly simplifies mixed vibroseis/dynamite operations allowing both types of production to be managed from a single screen.



IX1 SYNC

This application provides an interface between the iX1 Acquisition software and the field devices for nodal operations. Data imported to iX1 Sync is available in iX1 Map display, where user(s) can view nodal status and test results.

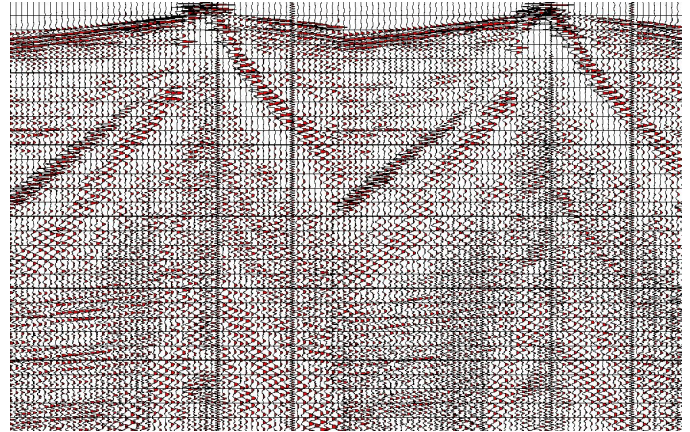
IX1 MEDIA

This application provides an interface to export data for final delivery.

DATA QC

iX1's powerful software platform provides advanced Data QC features. Live seismic traces can be analyzed for:

- RMS Signal
- Noise
- Signal to Noise Ratio.
- Scaling
- Filtering



IN-FIELD OPERATIONAL SOFTWARE

iX1 field software runs on purpose-built, portable computers designed for rugged field operations.

These include handheld QC Tools for collecting node status information and computer modules designed to mount on an Unmanned Aerial Vehicle (UAV) or vehicle(s) for long range wireless node status collection with HyperQ.

For example, as QC Tools are traversed through the spread specified information is collected from the field stations automatically over a wireless connection and stored in QC Tool memory.

HyperQ is INOVA's newest feature for Quantum, providing in-field long range QC of using low power wireless technology. This feature provides the ability to capture QC data from a UAV or vehicle autonomously. The HyperQ status collection computer allows the user to analyze nodal status information in-field, using an intuitive touchscreen interface.

Information collected by the QC Tool and/or HyperQ is available on the iX1 system for use in map displays and station QC purposes.



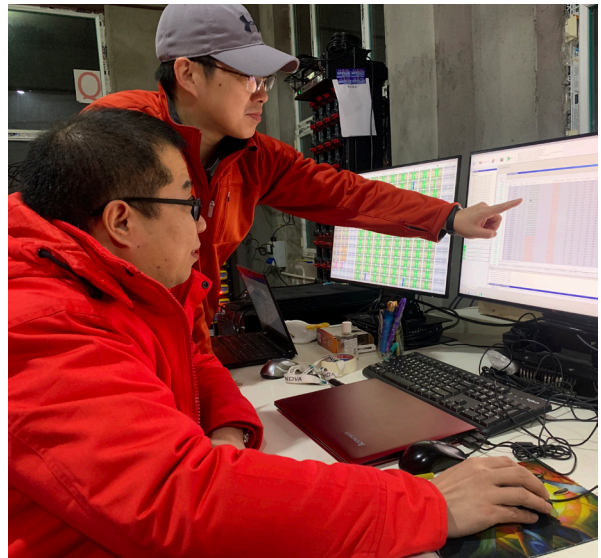
DOWNLOAD AND DATA MANAGEMENT

iX1 Transcription software is a complete data archive and QC computer used with the iX1 system for hybrid cable and nodal or standalone nodal operations.

Transcription software provides detailed reporting capabilities including trace recovery statistics, inventory management, correlation and geophysical data QC functions.

Transcription Processing Module (TPM) hardware includes a configurable RAID array constructed of Solid State Drives (SSDs) and Hard Drives (HDDs) for data storage and eSATA interface for writing data to delivery media.

The TPM computer connects to nodal stations loaded into customized download racks over high speed wired connection for fast data download.



FEATURES

- Seismic data download, sort and merge
- Shot and receiver gather creation
- Combined traces for hybrid cable/nodal operations
- Vibroseis correlation and stacking
- Node diagnostic hardware test
- SEG-Y or SEG-D output to external USB, eSATA hard drives or tape drive
- Geophysical data QC using iX1 Data QC
- Graphical and tabular reports
- Seismic trace yield
- Equipment and data management
- Vibrator Sweep Signature merge
- Final Deliverable SPS file export
- Seismic trace live/kill and geometry editing
- Automated workflows

