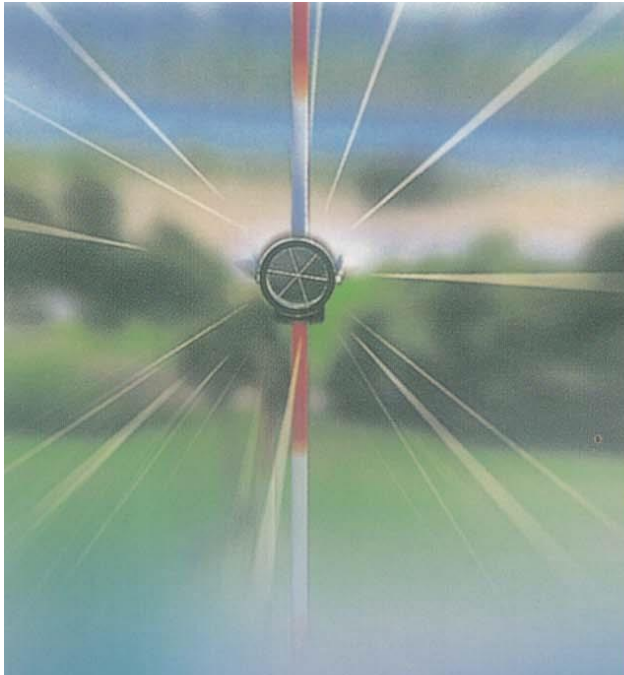


datEx

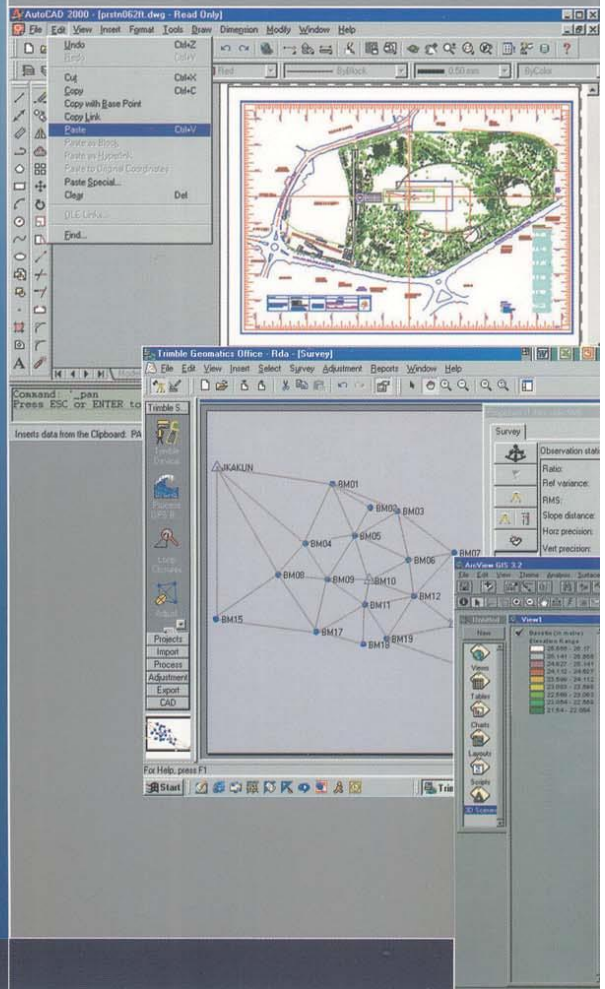


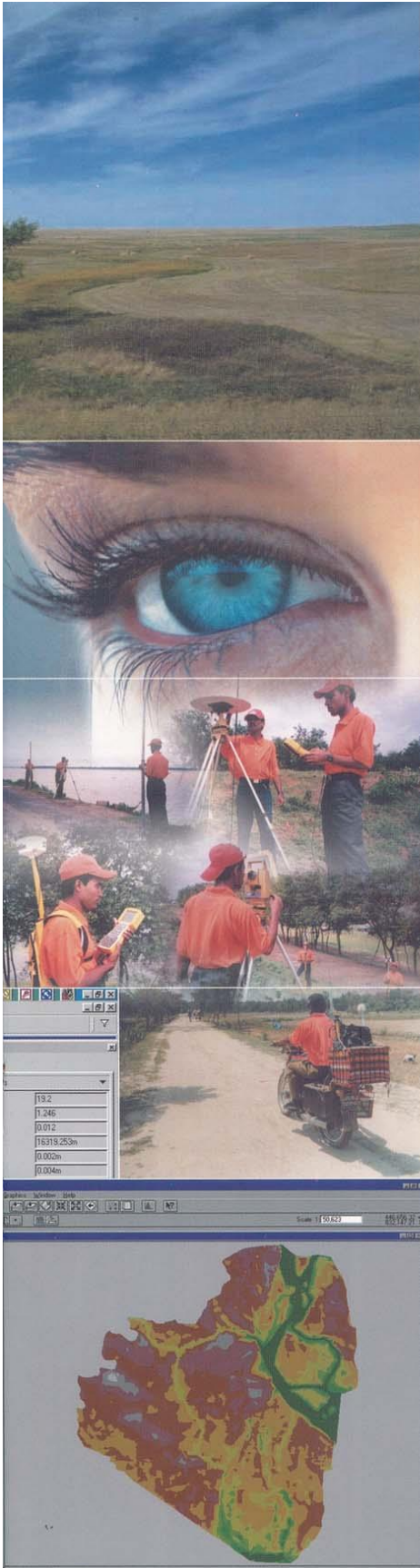
Your Requirements
Our Solutions
..in time...professional...efficient...dedicated...

datEx Data Experts, a consulting house has been established since November 2000 with a view to offer consultancy services in the field of advanced engineering survey and data acquisition, data management and presentation for land, water and environmental sector projects of local governments and government agencies, as well as individual enterprises. It started its journey to realize this long cherished desire of a group of highly experienced and dedicated engineers who have been ensuring quality services and products to obtain maximum cliental satisfaction through their specialized experience and untiring efforts since its inception. datEx always believes that the definition of quality lies with complete cliental satisfaction. datEx is committed to long-term meaningful relationship with its clients.

The datEx team has an extensive range of practical experience and equipped adequately with a wide variety of both conventional and electronic as well as satellite-based advanced equipment such as Real Time Kinematic Global Positioning System (RTK GPS), Differential Global Positioning System (DGPS), Pathfinder ProXR with Data Logger, Total Station, Digital Echosoundar, Auto Recording Current, Conductivity, Temperature and Pressure Meters etc.

A key component in today's advanced survey and data acquisition operations is the ability for devices to talk to each other, surveyors to visualize their position in relation to reference datum, and the ability to process the large volumes of data collected by modern instrumentation. This key component is the software to achieve the ultimate goal i.e accurate translation of physical information, features and terrain to a paper or electronic interpretation, suitable for viewing by technical or non-technical professionals. datEx engineers have long-term experience of using such digital capture, display and processing software. These are HYDRO, Trimble Geomatics Office, Trimble Pathfinder Office, Survey Controller, and Asset Surveyor etc.





The professionals of datEx are highly trained in home and abroad in their respective field of works. datEx technical support team includes land, river and offshore engineers who can be supplied for short or long term projects to install, maintain, troubleshoot and operate the equipment

Within a short span of time since its inception, datEx has been successful in accumulating a number of prestigious clients in its client list. Understanding clients' requirements and trying to be their trusted partner are the open secrets behind the advancement of datEx. The prime focus of the activities of datEx is the total solution of the client's requirements using state of the art tools and technologies such as Geographic Positioning System (GPS), Geographic Information System (GIS) and Remote Sensing (RS).

The ultimate goal of datEx is to be the reference center of the country in the field of advanced engineering survey, data management and presentation.

Board of Directors

Managing Director

- Director** —————
 - Business Development
 - HR and Business Development
 - Human Resources Development
 - Research and Development
 - Project Management

- Director** —————
 - Administration
 - Administration and Finance
 - Finance and Accounts
 - Internal Audits
 - Insurance
 - Transport

- Director** —————
 - Geographical Information System (GIS)
 - Information Technology
 - Remote Sensing (RS)
 - Management Information System (MIS)
 - Decision Support System (DSS)
 - Integrated Information System (IIS)
 - Database Management

- Director** —————
 - Topographic Survey
 - Technical
 - Hydrographic Survey
 - Environmental Data Acquisition
 - Equipment Procurement & Management
 - Field Data Processing and Management
 - Field Accounts



Services and Products

The services of datEx cover a wide range of advanced survey and data activities in the field of topographic, hydrographic and environmental data acquisition, processing, management and presentation. datEx utilizes Global Positioning System (GPS) based advanced survey technique for the survey and data acquisition campaign. Use of GPS technology coupled with other state-of-art survey equipment, software and technique supported by Geographical Information System (GIS) and Remote Sensing (RS) enable datEx to acquire highly accurate field data and information in a relatively short time compared to traditional method. The services and products of datEx are outlined below:

Geodetic Survey

- Development of Geoid Model
- Establishment of Reference and Control Points (x, y, z)

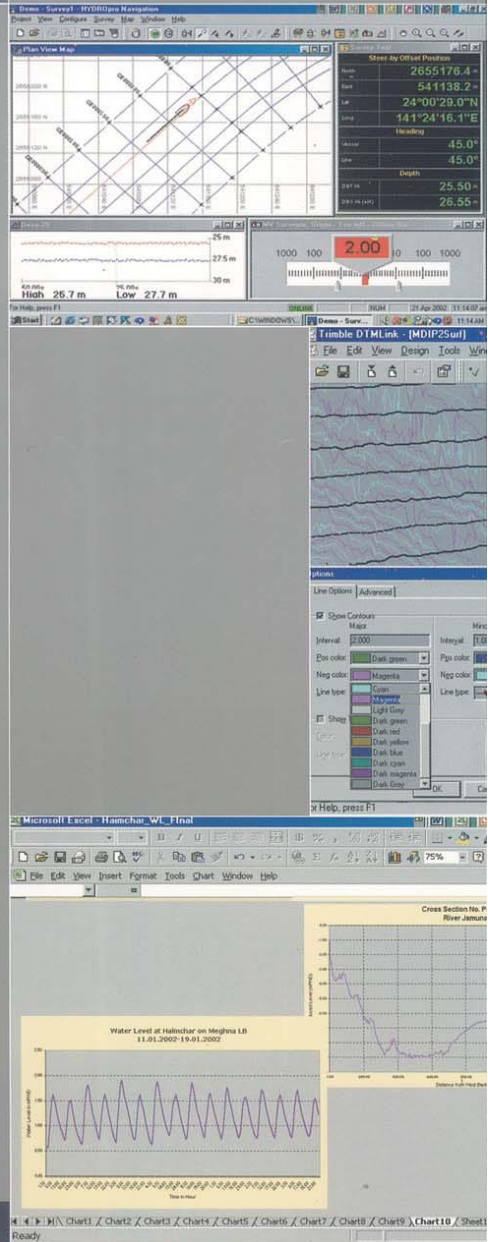
Topographic Survey

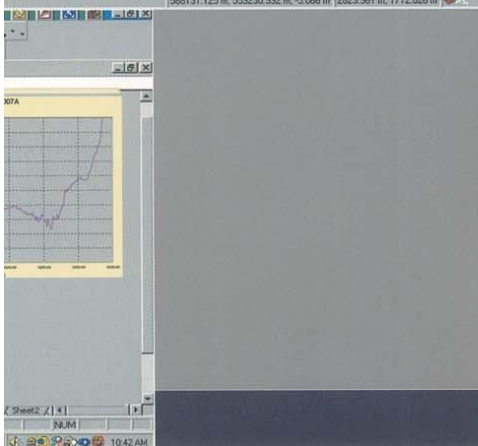
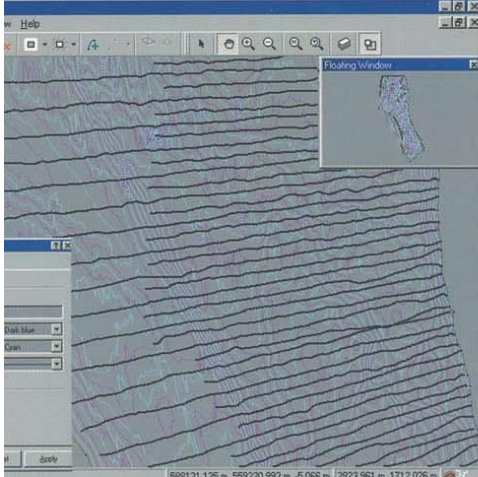
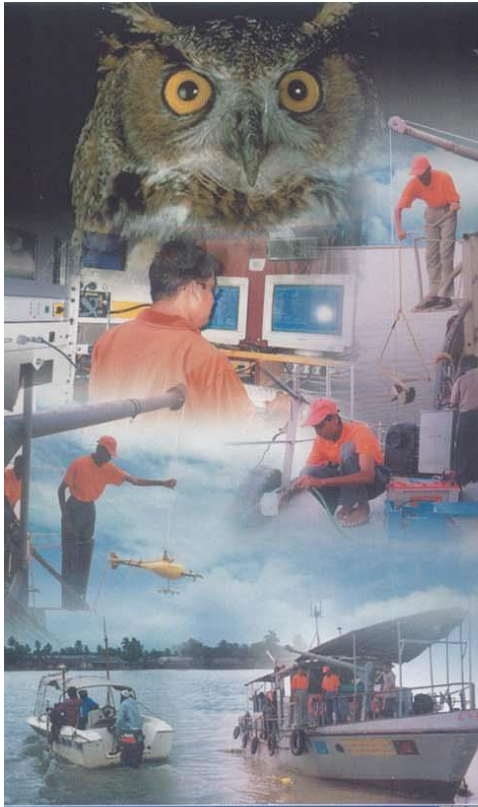
- 1st and 2nd order BM Carry, BM Check and Level Survey
- Land level/Spot level/Contour Survey
- Road & Embankment Survey (center line, longitudinal profile, x-section etc.)
- Physical Feature Survey (Point, Line and Area Feature)
- Land Use Survey
- Gas Pipeline and Electric Transmission Line Survey (setting out center line, longitudinal profile, topographical details etc.).
- Topographic Survey for 1-D and 2-D Seismic Survey

Bathymetric Survey

Detailed Bathymetric Survey of River/Channel/Water Bodies/Coastal Area to:

- delineate cross-section
- determine navigation routes
- support to river/coastal protection and training works
- support to design & monitoring of hydraulic structures construction works
- monitor of morphological changes (erosion and siltation)
- monitor and quantifying the dredging works.
- support to environmental research and monitoring studies
- support to oceanographic research





Data Acquisition and Processing

- Tidal and Non-tidal Flow/Discharge Measurement
- Float Tracking
- Water Level Gauging and Monitoring
- Rain Gauging and Monitoring
- Suspended and Bed Sampling and Laboratory Testing
- Water Quality Measurement (Salinity, Conductivity, Temperature, BOD, COD etc.)
- Installation, operation and maintenance of auto recording gauges such as auto recording rain gauge, conductivity-temperature-pressure recorder, pressure cell etc.
- Digital Image Processing

Training and Technology Transfer

- Global Positioning System (GPS)
- Geographic Information System (GIS)
- Advanced Topographic Survey and Data Processing Technique
- Advanced Hydrographic Survey and Data Processing Technique
- Hydro-meteorological Data Acquisition and Processing Technique
- Installation, operation & maintenance of Auto-recording Hydro-Meteorological Equipments
- Database Development and Management

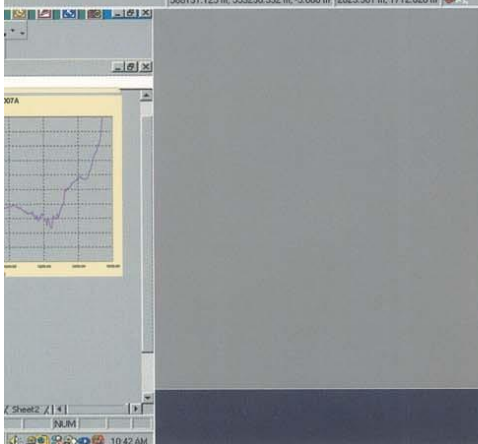
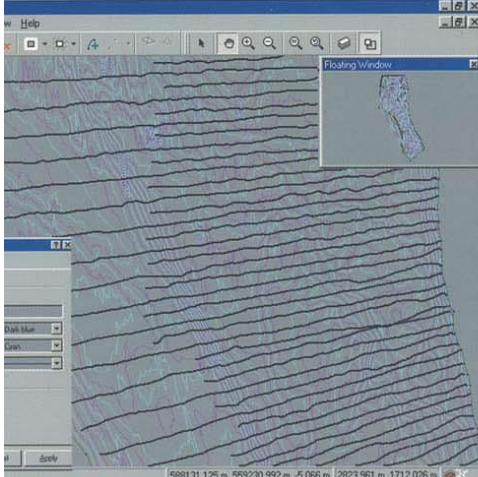
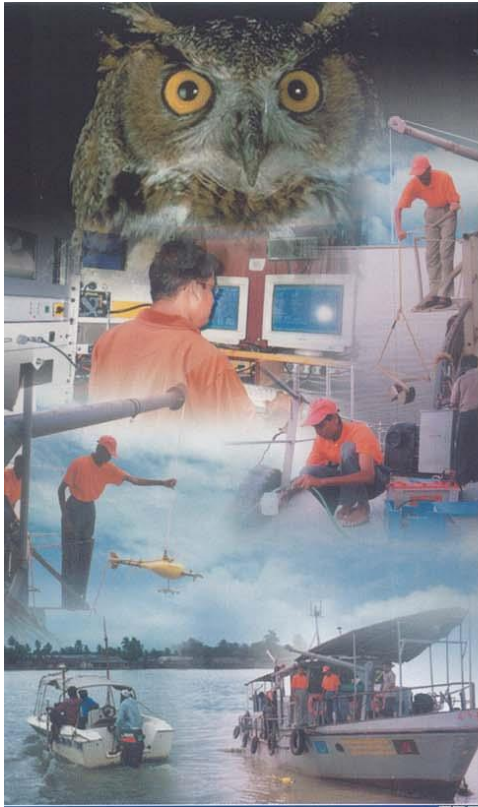
System Support

- Network Design and Installation
- Network Maintenance
- Database Management
- Customize Software Development (GIS, DSS, MIS, IIS)

Products

- Geographic Information System (GIS)
- Management Information System (MIS)
- Decision Support System (DSS)
- Interactive Information System (IIS)
- Geoid model
- Digital elevation model (DEM)
- Topographic Map (contours, topographic features)
- Hydrographic Map (alignment, x-section & longitudinal section, river-bed topography /contours etc.)
- Land Use Map
- Cut-fill Calculation Reports for Dredging and Other Related Engineering Works





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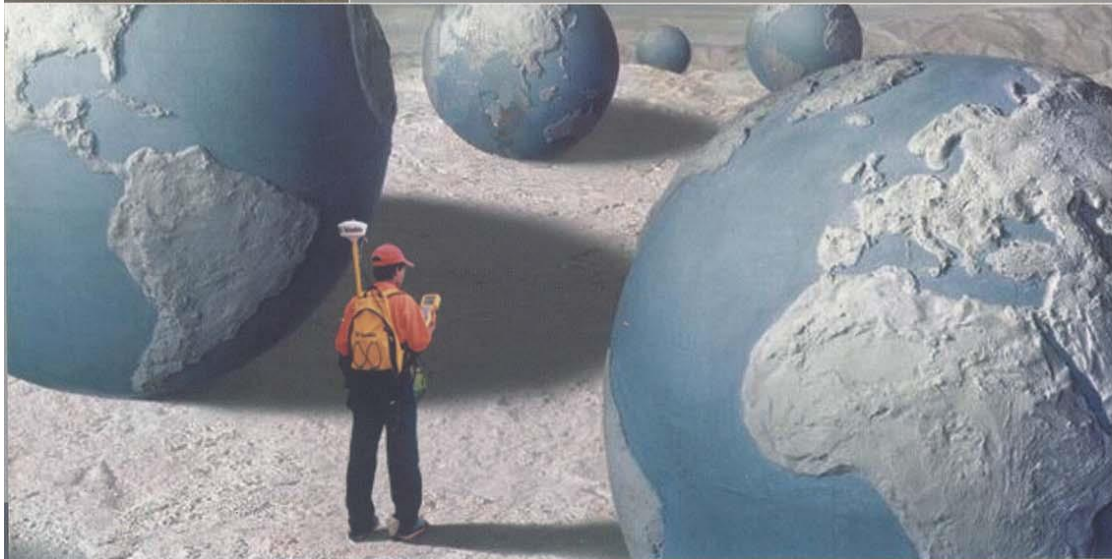
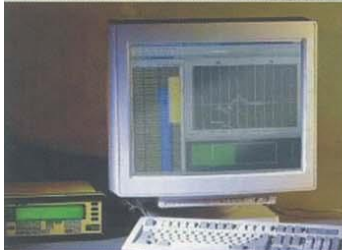
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Equipment & Software

datEx is equipped adequately with a wide variety of both conventional and satellite-based advanced equipment and software for digital capture, display and processing of spatial data of topographic, hydrographic and environmental surveys. Among them some of the data acquisition advanced equipment and data capture, display & processing software of datEx are described below:

GPS Total Station 4700 (RTK-GPS) system combines Trimble's 18-channel, integrated dual frequency 4700 GPS and radio receiver with micro-centered antenna and hand held data collector with Trimble's Survey Controller software. The system is ideal for high-ordered real-time or post processed topographic, bathymetric and photogrammetry surveys and mapping applications. The system can be configured as both RTK and DGPS base or rover unit supporting real-time GPS applications.

DSM12RS DGPS Reference Station system combines Trimble's 12-channel single frequency GPS and radio receiver with dome antenna and hand held data collector having Trimble's Survey Controller software. The system is ideal for DGPS reference or base station for high-ordered real-time topographic, hydrographic, seismic, dredging surveys and mapping applications as well as precision navigation.

Pathfinder ProXR Data Logger is the precision real-time geographic data collection system for mapping and Geographical Information System (GIS). The system consists of 12-channel GPS/Beacon integrated receiver with antenna, an ergonomic hip pack carrying system for the field, Pathfinder Office software, a data collector or logger TDC1 with Asset Surveyor software. The data recorded in the TSC1 hand held data collector and the integrated real-time or post processing differential corrections of the system provide submeter/decimeter accuracy for surveyed features. The system is ideal for detailed topographic feature survey (point, line or closed boundary).

GeoExplorer II mapping system is a pocket-sized, smallest and lightweight GPS receiver with user-friendly processing software designed for mapping and GIS data collection. It's a versatile, powerful and affordable solution for a variety of applications including resource mapping.



The GeoExplorer II is part of the GPS Pathfinder™ Series, so it has many of the benefits found only in a Trimble GPS mapping system, including reliable, accurate differential GPS and power full processing software.

Echo Sounder (DESO-14), a single beam dual frequency depth-measuring instrument. It measures water depth by transmitting sound beams and receiving the corresponding echoes reflected from the bed of the water body or channel with an accuracy of ± 1 cm at 210 KHz frequency (exclude any local influence). The depth profiles are plotted in a thermal paper with selectable ranges of depth (0.5m to 650m). During survey the measured depth can be collected and stored in a computer file via serial port for post processing for preparing cross-section profile, contour, volume calculation etc.

Electronic Total Station is a combination of electronic theodolite, distance meter and level with on-board computer having graphic icon menu with LCD display and built-in MS-Dos operating system. It can measure and store the positioning data of a target point in digital form. It consists of a microprocessor with special software for operation, data capture, storage & processing, transmission and receiving to/from a computer. The data can be stored in internal memory or in external memory card. It transmits ledger beam towards the target where a reflector (i.e. prism) is placed and receives the reflected beam by which calculate the distance, bearing and 3-D coordinate of that target point with respect to the reference points whose coordinates are known.

Auto Level (AT-G3) is the TOPCON-exclusive automatic levelling system with greater accuracy level. In one kilometer of double run levelling, accuracy is ± 1.5 mm without optical micrometer and ± 1.0 mm with optical micrometer.

Pathfinder Office is Microsoft Windows-based software for planning and processing of GPS data. With Pathfinder Office, all aspects of data collection management are simplified which provides many timesaving techniques for optimizing the productivity with higher accuracy. Pathfinder Office ensures all functions including GPS planning, data dictionary creation, batch processing and data export etc. The post processing option for carrier phase GPS data provides decimeter level accuracies for point, line and area features. GIS/CAD data formats are supported such as ArcInfo, AutoCAD, MOSS etc.





Geomatics Office is Microsoft Windows-based software for design, collection, storage, analysis, display, and retrieval of GPS data. It can process GPS static, fast static and real-time and post processed kinematic measurements as well as the optical survey data. The software includes an extensive feature set which helps to verify field data quickly, and easily perform data processing tasks with high accuracy and export data to a third media format such as ArcInfo, AutoCAD etc. GPS baseline processing, network adjustment, digital terrain modelling & contouring, datum transformation and projections, quality assurance & quality control of data etc. can be done by different module of Geomatics Office.

HYDRO the hydrographic survey package is a fully integrated software solution for advanced hydrographic survey. The software supports multiple sensor inputs, ranging from heading sensor to tide gauges and digital echosounders. Combined with Trimble DGPS or RTK receivers, it provides precise 3D positioning in real-time. The HYDRO software offers a complete field-to-finish solution, with processing software that allows automation production of pre or post plots with an extensive range of processing tools. The processing software suite provides generic data processing, reporting, and plotting functionality enabling the system to be utilized in a wide variety of survey applications, including:

- Bathymetric surveys and charting
- Charting and volume computations for dredging programs
- Coast and river monitoring surveys
- Navigation route surveys
- Pipeline route surveys
- Site survey charting & reporting for offshore construction projects
- Sediment and erosion studies
- Environment research and monitoring studies

Self-Recording Current Meter is lightweight flow meters, ideal for use for flow measurement in channels and rivers where the superior durability and accuracy of the larger meters is not necessary. It gives speed of current with direction as standard, with further options of temperature and depth. Data (logged or real time) is compatible with Veleport's DataLog™ software.



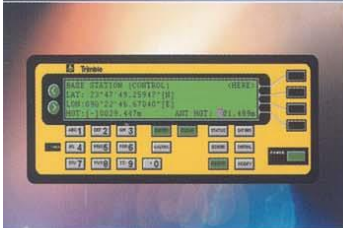
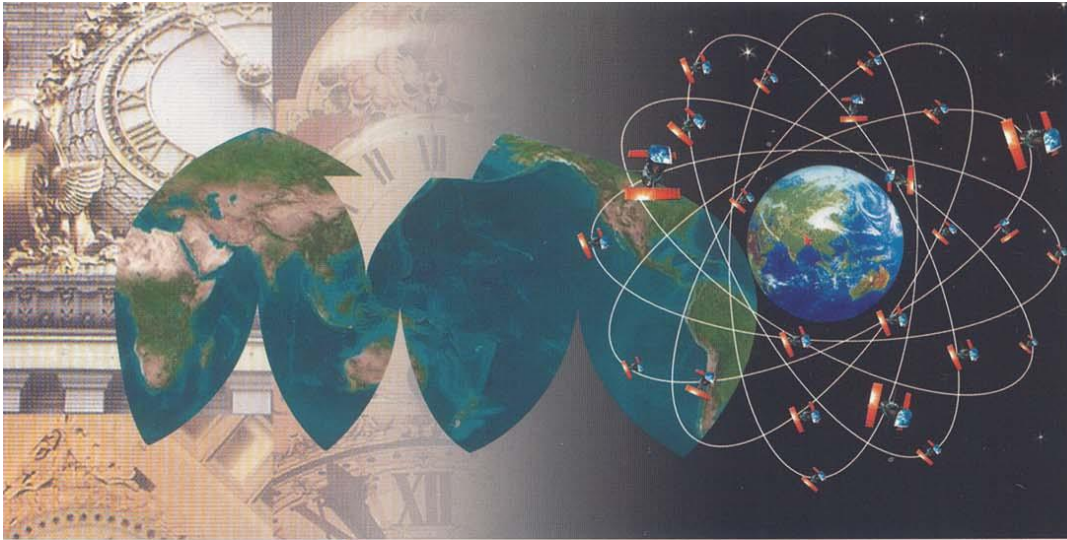


ADCP

Acoustic Doppler Current Profiler (ADCP) is a sophisticated hydrographic survey system, which is able to measure vertical current profiles using acoustic energy and Doppler shift principle, and by means of additional software package calculates the discharge from a moving boat. The ADCP operates by transmitting sound at fixed frequency and listening to echoes returning from sound scatters in the water. The sound scatters are small particles or plankton that reflect the sound back to the ADCP. Scatters are every-where in the rivers and float in the water & on an average the move at the same horizontal velocity as the water. The doppler shift (frequency shift in Hz) between the transmitted acoustic pulse and the returning echoes is measured by the ADCP and converted to velocity from each depth cell along the acoustic beams. The system is an excellent tool for measurement of flow velocity in three dimensions by using 4 narrow acoustic beams along the defined direction in to water. One beam is required for each current component. Therefore, to measure three components (i.e. East, north, and vertical), it is necessary to have at least three acoustic beams. Four beams obtain more data than is mathematically needed to compute velocity, and the extra data collected by 4th beam is used to compute data quality. By means of the bottom track feature, the ADCP is also able to measure the doppler shift of the returning bottom echo and thereby calculating the vessel's (and the ADCP's) velocity over the ground. This bottom track velocity is subtracted from the combined ADCP/water velocity in order to obtain the net water velocity.

Discharge is the total volume of water flowing through a cross-section of water per unit of time. The ADCP in combination with a personal computer and a dedicated software package is able to compute river discharge directly and accurately while the vessel is crossing the river from bank to bank. The ADCP measures profiles of water current with high resolution both horizontal and vertical. It also measures the velocity distance over the riverbed and the depth. Computation of discharge depends on these data. The transect can be on arbitrary curve as long as it starts near one side of the channel and ends near the other side.





GPS

The Global Positioning System (GPS) is worldwide all-weather radio-navigation and positioning system formed from a constellation of 31 satellites and their 5 nos. ground control & monitor stations. GPS receivers use these US Navigation Satellites for Timing and Ranging (NAVSTAR) to calculate positions accurate to meter of meters. To ensure precision and accuracy in survey work and to facilitate georeference digital data and map production by GIS software and finally to complete the whole work in a rather shortened time schedule, GPS technology was the best and logical approach to be followed. The facility of GPS has been utilized in different kinds of ground surveys including geodetic, topographic and hydrographic survey in the recent times. Differential Global Positioning System (DGPS) and Real Time Kinematics-Global Positioning System (RTK-GPS) are different versions of GPS technology, each with its own range of applicability and accuracy. GPS based surveying has a number of advantages over conventional surveying methods. These are : Highly accurate and reliable, Very fast, Line of sight not required, Unified 3-dimensional global co-ordinate system (x,y,z) output, and Digital/computerized data storage, processing facility.

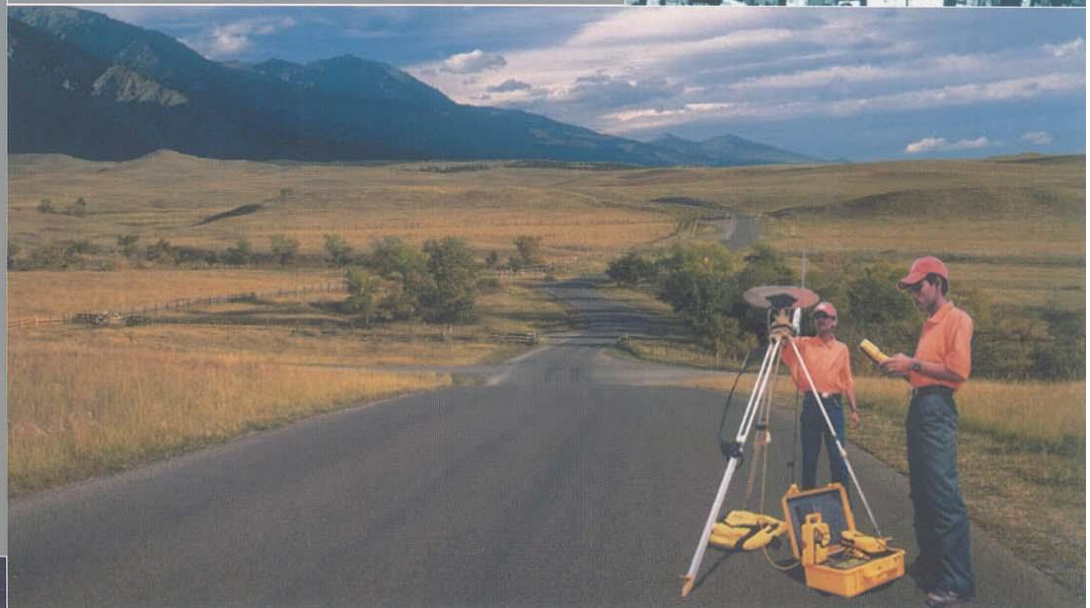
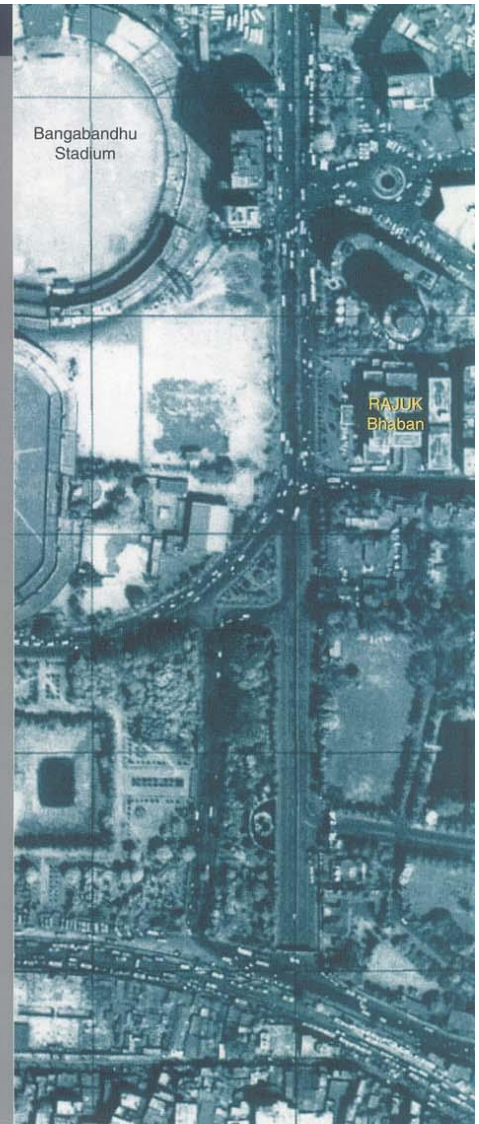
Differential GPS (DGPS) involves the operation of two units having two GPS receivers, one reference unit and the other rover unit. In DGPS mode, stationary receiver (reference receiver) is the key one. It ties all the satellite measurement into a solid local reference i.e. known point of benchmark. Reference receiver put in an accurately measured position i.e. the reference station (latitude, longitude, ellipsoidal height), measure and record the timing errors and then provide correction information to other roving around receivers. The correction information could be transmitted through online radio communication system or could be incorporated by off-line data processing software. In general the positioning accuracy of DGPS is about \pm one meter.

Real Time Kinematic GPS (RTK-GPS) is a special form of Differential GPS that gives about one hundred times greater accuracy. The GPS system uses a coded signal from which a receiver derives distance and thus position. The GPS satellite provides the equivalent of tape measure from space. The tape labeled tick marks at \sim 300m intervals (the C/A code), as well as unlabelled tick marks at \sim 20m intervals (the carrier). A GPS receiver can measure the code to one-meter (1m) precisions, and the carrier to one-centimeter (1cm) precision. A receiver that can compute the "Labels" on the carrier can then deliver centimeter position accuracy. This is what RTK does.

GPS and GIS for Planning

Our cities are growing in population and area without any significant management. Urban infrastructure and services are at best inadequate if not absent. Even the scopes of future provision of services are becoming more difficult because of the unplanned incremental growth of the cities. The academicians and policy makers grew aware of highest level of urban planning for the country quite a long time ago. All these planning activities need to deal with a large amount of digital and spatial data, maps and reports. Unfortunately, most of these data were kept in the form of paper documents and maps without any georeference. It has been a well said that we are lagging in advanced survey and mapping technology. The automation, digitization and georeferencing of planning information deserves attention to the quality, vision of the extent of future applications, flexibility for the possible user groups and openness to easy access, all of which we are lacking in our country.

The development of computer and information technology, and its successful application in every sector of society today is well known and most impressive. Like all other sectors, planners also needs an automated information system like Geographical Information System (GIS) capable of dealing with spatial database to make their task efficient and effective. For which a digital and georeference data and information are very much needed. A comprehensive GIS includes software and hardware used to capture, store, organize, manipulate, analyze and display spatially referenced information. GIS are constructed in layers with each layer containing different geographic information. Easy manipulation and display of information helps to facilitate the decision making process by allowing planners to customize the maps and models produced. Spatial data collection and georeference digital mapping have now become very easy with satellite based advanced survey techniques using Geographical Positioning System (GPS) and processing and presenting in Geographical Information System (GIS). Now a day's through proper technique accuracy of GPS is at centimeter level. Furthermore the development of high-resolution images helps to determine the spatial features as well as verify the survey data more apparently. Recently launched IKONOS satellite can provide one meter resolution images, which is able to distinguish even the roof colors of the cars on the street.



Major Fields of Activities

Starting with specialized data services to cater for the need of quality primary data for development planners and designers, datEx, in course of time, has attained the stature to provide independent and holistic consulting services. A leading entity in the private sector for High-end Surveys & Investigations and Data Services (Acquisition and Processing), and equipped with GPS, GIS and RS technology, datEx is able to provide pragmatic solution to any problem/development **issues**. With intimate interaction and familiarity with potential clients, and having minutely observed projects from genesis to completion being already a party to many undertakings, datEx is now fully prepared for providing consulting services in:

Habitat Planning & Development
Water Resources Development & Management
Irrigation Development & Expansion
Infrastructure Development
Environment & Ecology Studies
Rural & Community Development
Agriculture, Fisheries and Forestry Development
Information and Communication Development
Satellite Based Advanced Survey, Investigations.
Decision Support System (DSS).
Management Information System (MIS).
Project Evaluation.

Range of Services

High-end Surveys & Investigations.
Data Services (Acquisition and Processing)
Land Use and Physical Planning
Urban and Rural Infrastructure Planning.
Participatory Planning (RRA, PRA, PLA etc).
Detailed Economic and Technical Pre end Feasibility Studies.
Architectural Planning and Design.
Detailed Engineering Design & Construction Supervision.
Environmental Studies (IEE, EIA, ESIA).
Procurement Support.
Training, HRD and Technology Transfer.
IT and System Support.
Project management, Co-ordination and Supervision

Clientele

The clientele now includes all the major clients in the country as Bangladesh Army (BA), Bangladesh Rifles (BDR, now BGB), Bangladesh Water Development Board (BWDB), Local Government & Engineering Department (LGED), Roads & Highways Department (RHD), Dhaka City Corporation (DCC), Chittagong, Khulna and Rajshahi Development Authority (CDA, KDA & RDA), Rajdhani Unnayan Karttripakshma (RAJUKJ), Rangpur City Corporation (RCC), Bangladesh National Scientific Documentation Centre (BANSDOC), etc.

Among foreign and international clients are, Japan International Cooperation Agency (JICA), Food & Agricultural Organization (FAO), Asian Disaster Preparedness Centre (ADPC), Comprehensive Disaster Management Program (CDMP), etc. The major private clients are Jolshiri Abashon (JA), Sonargaon Resort City, Hamid Real Estate, etc.

The services range from planning to detailed design and construction supervision, Initial Environmental Examination (IEE) & Environmental Impact Assessment (EIA) and Evaluation of Development Projects as well as renovation of large establishments. The Peer Review of Jolshiri Abashon, when the undertaking reached stalemate, is worth mentioning.

The goal of datEx is to provide one-stop services to its invaluable clientele.

OUR STEADY MARCH FORWARD TOWARD BEING A DEVELOPMENT PARTNER OF OUR NATION, OUR REGION AND BEYOND

Data Experts (Pvt.) Limited, alias datEx, started with data services in late 2000 to fill the vacuum in supply of quality data in adequate quantities. That was a time when there had been serious dearth of quality and quantity data. High-end, State-of-the-Art equipment and machinery, as illustrated and narrated in later pages of this compilation, were used to automatically gather and process the data into meaningful information and explanatory texts.

After less than a couple of years of successful delivery of survey and precision primary data gathering and processing services to a high client satisfaction, datEx embarked on extending mainstream consulting services by mid-2001. This logically commenced with consulting services that were integral with data services, i.e. planning. Our maiden planning project was Preparation of Structure Plan, Master Plan and Detailed Area Development Plan for Rajshahi Metropolitan City in 2001, followed closely by GPS & Total Station Based Advanced Survey & Preparation of GIS Based Detailed Area Plan for Purbachal New Town Project (6150 Acres) of RAJUK in 2002.

Within less than half-a-decade, city, town and urban planning projects as well as major and challenging river engineering projects were vied for and eventually won over, given the competence, experience and an irresistible desire to and expand and improve. RAJUK planning projects followed in numbers in succession. Khulna City Master Plan for KDA, Master Plan for Rangpur City and 19 Upazila Pouroshobhas of Rangpur Region for LGED, Master Plan for Infantry Brigade at Sylhet and Ramu Cantonment of Bangladesh Army added diversity in planning experiences.

Since we in datEx enjoy enviable confidence and control over data, the very basic input for any undertaking, our planning and design activities are based on informed decision. The planning activities inevitably and logically led to design and supervision involvements.

Successful delivery of RAJUK planning projects invited design and supervision of an important 300ft wide link road of RAJUK. That assignment was Detailed Design, Supervision and Monitoring for the Construction of Roads, Bridges/Culverts of Purbachal Link Road (Debgram-Pragati Soroni Link Road, 6 Lane excluding 2 Service Lanes) in Total 12.9km. That gave the confidence to embark on consulting services for the 4 Lane Road Construction Supervision of Joydebpur-Mymensingh Road Improvement Project (JMRIP).

Building design and construction supervision assignments also did not lag far behind and followed with Architectural and Engineering Design for Constructing Ten (10) Storey Students' Dormitory Building at Hatirghat, BDR HQ, Pilkhana, Dhaka. The satisfied authorities also awarded "Interior Decoration Works of BDR Darbar Hall of BDR Headquarters at Pilkhana" to datEx. We are now designing and supervising 4 multi-storey, hundreds-men barracks inside the Ramu Cantonment.



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