

Information Technology & Software Engineering Sector

“Information technology and business are becoming inextricably interwoven. I don’t think anybody can talk meaningfully about one without the talking about the other.”

Bill Gates

World is undoubtedly going through the era of Information Technology (IT) big bang. During the last couple of decades, rapid development in Information and Communication Technology (ICT) has revolutionised the system of governance, businesses, education, health, science, defence, space, economics, socialism, engineering and so on. The ICT Sector has cast a magical impact on almost every other sector. It is not that technology can bring someone's fortune but it helps someone a lot in winning his fortune. IT has not only revolutionised a man's way of working but also its very existence. It can safely be said that the 21st century belongs to the IT world.

In this age of IT revolution, NESPAK could not live in isolation. It took the leap and as one of the pioneers in the Information Technology and Software Engineering Sector in Pakistan, NESPAK has been offering a wide range of IT-related consultancy services to several distinguished clients in Pakistan for the last 25 years. In the IT and Software Engineering Sector, the Company provides a broad range of services starting from project conception to completion. With an ambitious expansion plan, NESPAK expects to register a strong growth in this Sector. So far, as many as 50 projects have been undertaken in this Sector for the clients in addition to providing specialised in-house services. NESPAK's IT and software engineering experts have requisite technical knowledge and experience to ensure the optimisation of all processes in line with basic business principles.

SCOPE OF SERVICES

In the IT and Software Engineering sector, NESPAK offers a broad spectrum of services comprising:

- Specialised vendor-independent IT Management Consultancy
- Customized Software Development including Web and Android based Applications
- Hydro-informatic Systems
- WebGIS Development
- Web Portal Development

- Process Modelling and Requirement Engineering
- Business Process Reengineering and Gap Analysis
- Data Migration Strategy and Volumetric Analysis
- Prequalification of IT Contractors
- Public Tendering Process for Software, Hardware and Networking and other IT Equipment
- Network Design, Implementation Supervision and Commissioning (LAN, WLAN, WAN) including Data Centers, Voice Networks, Video Conferencing Systems, e.t.c.
- Third Party Evaluation/Validation of Mega IT Projects
- Design and Supervision of Safe City Systems
- Customised Enterprise Resource Planning Systems
- UI/UX and Graphic Design

BUSINESS DOMAINS

NESPAK has carried out projects of different nature in a variety of business domains. The domain knowledge of NESPAK's IT and Software Engineering Sector is a blend of engineering-based IT services. Some of domains in which NESPAK has gained strength and experience are Hydro Informatics, E-Governance, Finance, HR, Health, Waste Management, Education, Retail, POS, Land Management, Property Management, Policing, Excise Duties and Taxation, Arms Licences, Town Planning, Police, Health, Agriculture and Food, Revenue, Road and Building Construction, Irrigation, Water Resources Management, Accounts, Tender Management, Auction Management, Complaints Management, Hydro and GIS Integrations, Security and Surveillance, Assembly Buildings, Smart Campuses, Metro Transportation, Composite Schedule of Rates and Safe City Projects.

Consultancy Services for Electronic Government Directorate, Ministry of IT and Telecom: NESPAK has provided consultancy services for the Electronic Government Directorate, Ministry of IT and Telecom, Government of Pakistan. Under this

umbrella, NESPAK has successfully executed the following four projects:

- Recruitment System for Federal Public Service Commission
- E-Enablement of Islamabad Police
- E-Services at Chief/Deputy Commissioner Officer, Islamabad Capital Territory
- Provision of E-Services at Capital Development Authority, Islamabad Capital Territory

NESPAK has furnished complete system Requirement Specification Documents, Volumetric Analysis, Data Migration Strategies, Technology Roadmap, and Business Process Re-engineering for the afore-mentioned projects.

Consultancy Services for Punjab

Information Technology Department: NESPAK became IT Consultant of the Punjab Information Technology Department in 2003. NESPAK has carried out 25 e-Government projects of various departments of the Punjab Government. Most of the e-Government projects are related to the computerisation of key departments of the Punjab Government. Different phases of this mega assignment were closely managed and monitored by NESPAK to ascertain their timely and successful completion.

SOFTWARE USE FOR PLANNING, DESIGNING AND MONITORING

Following is the detail of software applications extensively used by NESPAK on various projects for planning, designing and monitoring.

Primavera P6 Professional is a high-speed Project Management tool used for project planning and scheduling by NESPAK in all working Divisions. It is especially designed for large-scale, highly sophisticated and multifaceted projects. Primavera has the ability to organise projects of up to 100,000 activities with unlimited resources and number of target plans.

NESPAK uses CSI's SAP, ETABS, SAFE and Bridge on its various projects for design and

analysis of various buildings and other structures. These software applications have been used on various projects including Munda Dam, Pakistan Kidney & Liver Institute and Research Center, Lahore, Lahore Orange Line Metro Train Project, e.t.c. Similarly, BENTLEY STAAD PRO is a structural design tool which is also used in the design review of various steel structures. This software tool has been used on various projects including Expansion and Upgradation of Motorway (M-9), Regasified Liquefied Natural Gas (RLNG) based Combined Cycle Power Plants at Bhikki and Haveli Bahadur Shah and LDA Projects.

NESPAK possesses licenced air dispersion modeling software AERMOD View 9.1.0, of Lakes Environmental Software, Canada. NESPAK has used AERMOD on Environmental Impact Assessment of various projects including of Clinker Cement Production Line, RLNG-based Combined Cycle Power Plants at Balloki, Bhikki and Haveli Bahadur Shah, 6,600 MW Coal-based Gadani Power Park Project, 1,320MW Coal-Fired Power Plant near Sahiwal, e.t.c. SEEP/W module of GeoStudio is a finite-element software used by NESPAK to model groundwater soil seepage. It has been used for design and analysis of a number of dam projects including Works under Annual Development Programme, Small Dams Organisation, Punjab, Wadi Middein Dam,

Jordan, Hill Torrents Dam Management Study in Dera Ghazi Khan and Rajanpur, Strengthening of Flood Protection Bunds in Punjab, e.t.c.

Phase2 is in use of NESPAK for the numerical analysis of a wide range of projects including excavation design, slope stability, groundwater seepage, probabilistic analysis, consolidation, and dynamic analysis. It has been used for the projects like Neelum-Jhelum Hydropower, Dasu Hydropower, Nahaki Tunnel, Remodelling of Warsak Canal System Right Bank Auxiliary Irrigation Tunnel and 840MW Suki Kinari Hydropower Project.

Vissim and Visum software are being used extensively by NESPAK's Highways and Transportations Engineering Sector in various mega projects for traffic micro simulation and modelling.

Building Information Modelling (BIM) is an intelligent 3D model-based software that is used by architecture, engineering, and construction professionals to plan, design, construct and manage buildings and infrastructure. BIM software is being used on the New Oncology Block, Jinnah Post-graduate Medical Centre, Karachi and Standardisation of 200 Higher Secondary Schools in Khyber Pukhtunkhwa Province.

Lumion 8 Pro aids in crystal clear presentation of architectural designs for better understanding and hence effective decision making. NESPAK has used Lumion 8 Pro for designing of Greater Iqbal Park, Lahore and Various Facilities and Infrastructure Works on PCB Land.

Hourly Analysis Program (HAP 4.9) is being used for HVAC load calculations. It has been implemented at the Innovation Centre of the UET Narowal Campus, Facilities and Infrastructure Works on PCB Land and Upgradation and Improvement of HVAC System at the State Bank of Pakistan in Rawalpindi, Faisalabad and Multan.

Canute LLP 1.8.4 software is being used by NESPAK in hydraulic calculations and analysis for fire sprinkler and water mist industry. It has been used for hydraulic calculation for the projects like Federal

Hospital for Women and Children, Rawalpindi, Bhakkar Arts Council Auditorium, e.t.c.

Design of Water Supply System is being carried out using EPA Net 2.0 for various Projects including Master Planning of Water Supply, Sewerage and Drainage System of WASA Multan, Master Planning and Detailed Designing for Development of Chunian Industrial Estate, e.t.c.

PV Syst is used for hourly/daily/weekly/monthly and yearly energy yields of Solar PV System design parameters. It has been used for 20MW Solar PV Power Plant, Lahore.

Professional design of video surveillance systems and modelling parameters of video image and video equipment are being carried out using Video CAD. Video CAD has been used for CCTV Systems in over 20 NESPAK projects.

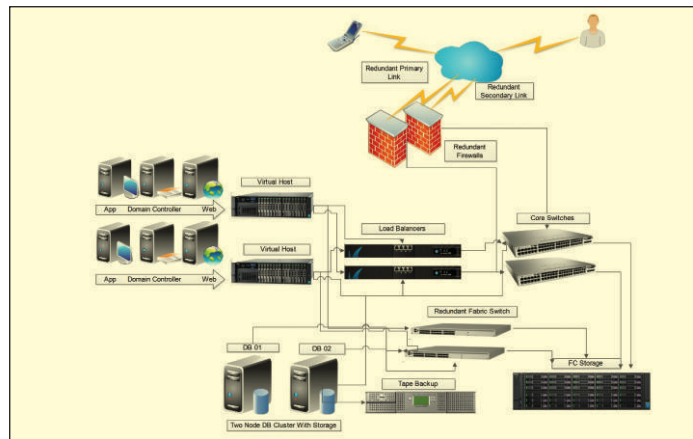
TURBNPRO program has been used in 409MW Torcamp Godubar Hydropower Plant (HPP), 20 MW Hanzel HPP and 16 MW Naltar-III HPP for selection of size and type of hydro turbines.

Software like PLS-CADD, SAG10, and PLS Tower have been used in various energy sector projects related to substations, hydropower plants and transmission lines for design.

Hydrologic Engineering Center's (HEC's) River Analysis System (HEC-RAS) software models the hydraulics of water flow through natural rivers and other channels. NESPAK uses HEC-RAS extensively on the projects related to water resources development.

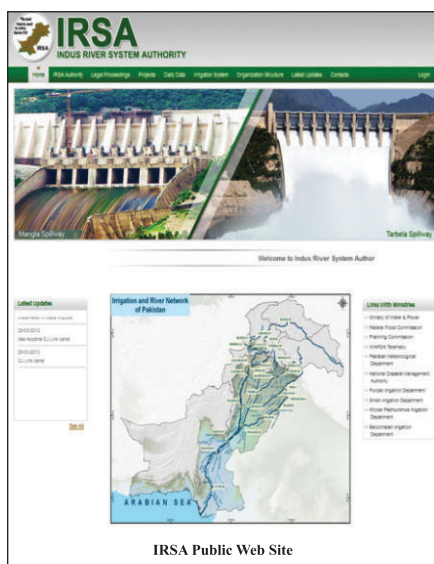
NESPAK is using Cinema 4D to create flythrough of various projects for 4D simulation. NESPAK uses Axure RP Pro for requirement analysis, prototyping, wire framing and specifications in IT-related projects. NESPAK is also using MS SQL Server for database and Microsoft Visual Studio for application development services. Adobe Creative Suite (CS) is being used in various projects related to graphic designing domains e.g., print, web and mockups for visualisation.





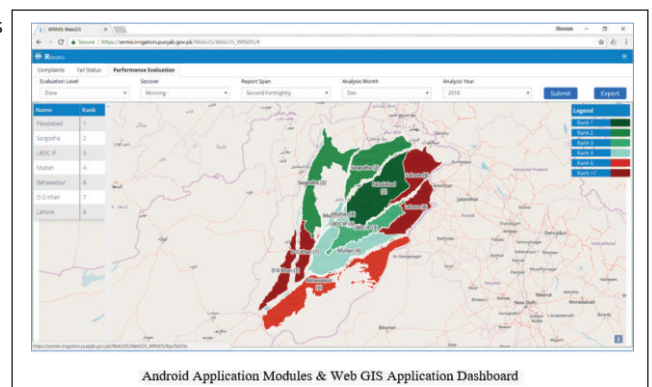
Improvement of Indus Catchment Water Resources Management for IRSA

The Indus River System Authority (IRSA) is a federal organisation, established in 1992 in the wake of the inter-provincial Water Apportionment Accord (WAA) of 1991 for the distribution of surface water among the four provinces. The project had been designed to upgrade various IT tools that were developed in previous study for supporting the existing procedures of IRSA, being performed to execute its function at the federal level as per WAA-91 and to enhance its capacity. The envisaged system was an integration of MIS, GIS and web-based application for efficient utilisation of new technologies towards overall functions of IRSA.

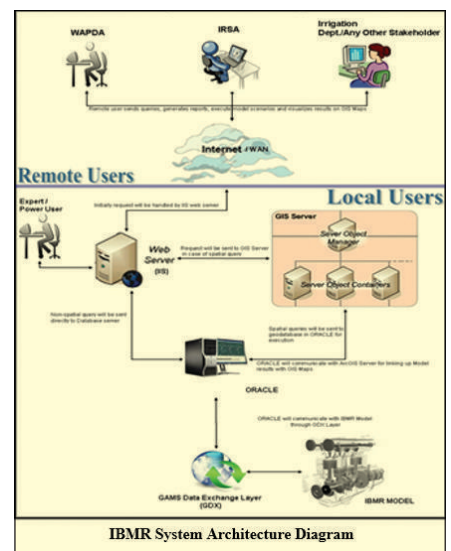


Water Resources Management Information System & Decision Support System in Punjab

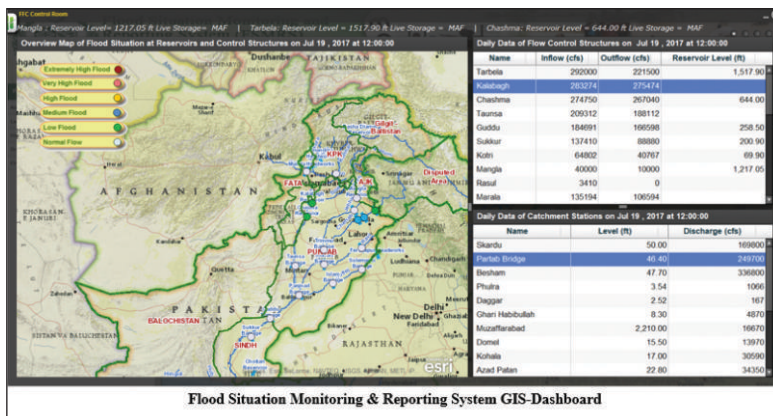
Under the Water Resources Management Information System (WRMIS) and Decision Support System (DSS) for Efficient Irrigation Water Management in Punjab, NESPAK has developed an interactive, graphical and web-based structure, comprising hydrological and hydraulic models with a Decision Support System (DSS). The new system facilitates the decision makers to undertake informed decisions regarding water availability and system response against various management scenarios.



Irrigation monitoring teams, capture field information such as theft, water shortage complaints, daily water flow, e.t.c., through custom-built android application and send data to the centralised database at Irrigation Department. Field information is then instantly available in the form of GIS/MIS-based dashboards.



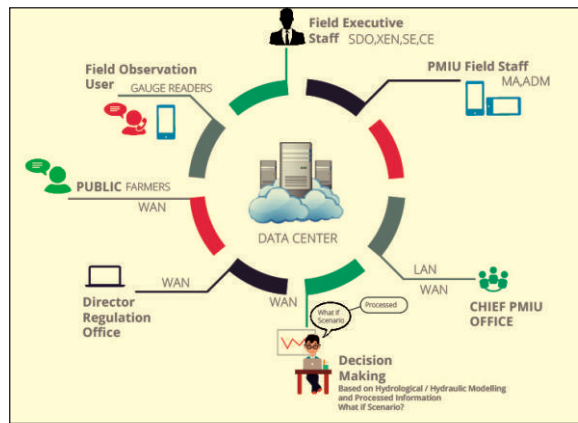
Development of National Flood Protection Plan, Phase-IV



The overall objective of the project was the development of National Flood Protection Plan-IV (NFPP-IV) for next 10 years. Under this project, NESPAK developed a web-based MIS/GIS application that caters flow data input from the Provincial Irrigation Departments, Water and Power Development Authority and Indus River System Authority (IRSA). Flow information is then readily available to the management of the Federal Flood Commission Pakistan through self-operative dashboard screens. Dashboard presents information on dynamic data driven maps through 'Red Blinking Alerts' where extremely high flood occurs. The application has the facility to highlight the Flood Early Warning System results through graphs and maps. Maintenance of inventory of all river training works/flood control structures on MIS and GIS modules is also part of the application.

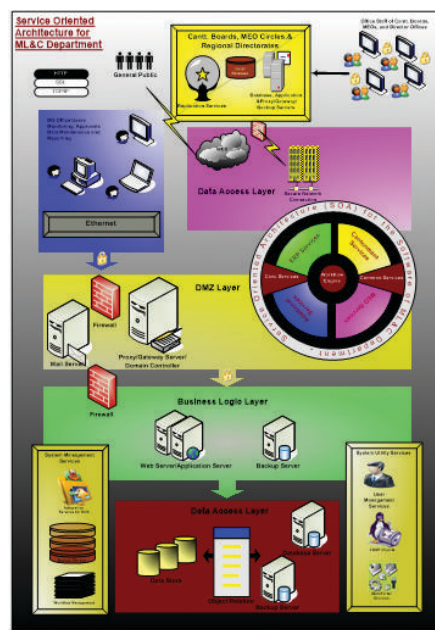
Upgrading of Tools, Water Resources Database, Management Systems and Models under WCAP Sub-Component 'B1'

The overarching objective of this project was to update and modify the Indus Basin Model Revised (IBMR). IBMR is a basin-wide planning tool initially developed in 1975 by the World Bank to analyse agriculture and irrigation investment projects. The Model incorporates a detailed representation of the basin characteristics, e.g., surface flows, storage and diversions, groundwater types and usage, cropping and livestock activities and production technologies. The modification in the IBMR were utilised in the water resources planning and optimisation of hydropower as well as by IRSA for operation and management of the Indus Basin Irrigation System.



Computerisation of Military Lands and Cantonments Department

NESPAK provided consultancy services for “Computerisation of Lands and Cantonments” all over the country for the Military Lands and Cantonments Department (ML&C). NESPAK scope of services included preparation of software, hardware and networks requirement specifications, prequalification and tender documentation, bids evaluation report, construction supervision and deployment verification report for ML&C sites.



Service Oriented Architecture of ML&C Department

IT/BMS-related Works at New Punjab Assembly Building

NESPAK is rendering IT consultancy services for two extension buildings of the Punjab Assembly Secretariat. Both the buildings are envisioned to provide the latest IT infrastructure and BMS facilities. The scope of work includes Local Area Network, Wireless Local Area Network, provision of Internet bandwidth from service provider, network management, monitoring and security, data centre, server machines and software, sound system, Simultaneous Interpretation System, audio/video coverage systems for conference proceedings, audio video streaming, video conferencing system, IP-based Surveillance System and Under Vehicle Surveillance System. NESPAK services for this important project comprise detailed design, tender documentation, design review, system study design and testing, debugging and implementation.

