

# nevaeh

Building Partnerships, Creating Value

ISO 9001:2008 Certified

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**Nevaeh Technology Pvt. Ltd.**

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# Profile

Nevaeh Technology is a Business Consulting, Technology and Services Company.

## Vision

Nevaeh aspires to be an IT solutions and services partner of choice, globally, in our focused areas of operations through innovative, cost effective business driven processes which provide long term value to our customers.

## Mission

Nevaeh seeks to provide solutions & services to meet & exceed customers' current and future business needs.

## Quality Policy

Nevaeh aims to maximize customer satisfaction by:

Providing dependable, transparent and cost effective solutions which integrate technology with best business practices.

Developing a productivity environment that fosters improvement of all processes on a continual basis.

The company was promoted by a group of senior IT and Management professionals, with over 150 man-years of rich experience, to create a venture embodying a set of core values, which are fundamental to our existence:

**Teamwork** - We believe in collaboration and teamwork throughout the organization and with our customers and vendors.

**Employee Empowerment** - We believe in work environments that encourage and foster empowerment, professional and financial growth, entrepreneurial and technical freedom and operational objectivity.

**Integrity without Compromise** - We will at all times abide by the highest standards of ethical business conduct. Nevaeh aspires to deliver outstanding services and solutions in its areas of expertise to Corporate Houses, Small &

Medium Enterprises (SME) and the Government Sector. The company offers a range of specialized services and solutions for:

- Software Products & Services
- BPO/IT Enabled Services
- IT Infrastructure Development & Management

Nevaeh has deep domain expertise in Iron/Steel & Primary Metals, Manufacturing, Maintenance, Supply Chain, Financial Services, IT Infrastructure Services and e-Governance applications.

At a competency level, Nevaeh is strongly positioned in the areas of Open Source Applications, Smart card/Bio-metric Systems, Networking & Communications, Electronic Document Management Systems(EDMS) and SAP Practice.

Nevaeh's India Development Center (IDC), operating from an independent 5-storey building located at New Town, Rajarhat, Kolkata.

India, supports secured global connectivity, international standard technology & support facilities, qualified and experienced resources and process driven activities.

The company is ISO 9001:2008 certified by DNV.

Nevaeh is deeply funded and is backed by East India Securities Ltd, a leading and reputed Indian financial services company.

## Software Products & Services

Nevaeh's focus on Software Products and Services aims to leverage our domain strengths in key areas through our technology competencies.

Our Management Team and business specialists have deep domain strengths in functional areas such as:

- Scientific Applications
- Health Care Services
- Financial Services
- Manufacturing & Maintenance
- Supply Chain & Logistics

Complementing our domain strengths is our positioning and technology competency in communication, simulation, smart card/biometric systems, Open Architecture developments and System Integration, smart phone (Android/ IOS) and feature phone (J2ME/ Symbian) applications as standalone offerings, integrated with corporate systems or as part of a corporate portfolio.

Nevaeh supports requirements across a complete life cycle - feasibility/discovery, construction/migration, implementation, maintenance support.

Nevaeh's software team includes business analysts, designers/architects, developers and testers backed by experienced Project Managers. At Nevaeh we aim to provide solutions that empower our clients to achieve significant competitive advantage. We see each project as a building block in a long-term business relationship with our clients.

A key Nevaeh offering is outsourcing of total/select IT services complying to a Service Level Agreement (SLA) agreed between Customer and Nevaeh and executed from Nevaeh's India Development Center (IDC). A number of leading corporate, defense and government sector organizations have reposed their trust on Nevaeh's IT services.

## ITES - Information Technology Enabled Services

Nevaeh has the capability to set up, implement and successfully manage customized Business Processes at distributed locations, often in semiurban and rural areas of India.

Nevaeh is now an established and prominent player in the following areas:

- Electronic Document Management Systems (EDMS)
- Enrolment & Citizen Centric Services
- Data Digitization & Migration Services
- Transaction Processing services

In the area of document management for example, we offer a range of scanning/digitization/indexing services for drawings, documents and records to create web enabled electronic repositories. Nevaeh is partnering with Hewlett-Packard for implementing one of the largest Electronic Document Management Systems (EDMS) projects, at different sites across India.

Nevaeh has vast experience and major track record in implementing and managing various Govt. & Public Sector programmes aimed to provide solutions and services to different categories of citizens. These include, for example, Health Insurance programmes for Below the Poverty Line(BPL) citizens, all India registration system for ESIC beneficiaries, implementation of UID, etc.

Nevaeh also has considerable expertise in implementing and managing GIS projects based on GPS based surveys of different kinds. The survey data are then used to create maps with different attributes using various GIS tools and software and with the aid of aerial/satellite imaging. The Nevaeh GIS team has just completed a major GIS project aimed at creating a Disaster Management System for Kolkata Police. The team comprises experts with background of geology, geography, GIS survey techniques, etc.

## IT Infrastructure Development & Management

Our IT Infrastructure Development & Management services span a range of technical and management services for:

- IT Infrastructure Consulting and Implementation
- Assurance Services
- Managed Services

**1. IT Infrastructure Consulting & Implementation:** Nevaeh has major experience in consulting for and implementation of new IT Infrastructure/Data Centres and can be a single point nodal agency for large projects.

Our services in this area include:

- Advanced Power Management System
- Fire alarm, smoke detection and Fire Suppression Systems
- UPS, generator and Power Distribution System
- BMS controlling
- Precision Cooling System
- Data & Voice cabling
- Basic physical security
  - Manned access
  - Card Reader
  - Biometric Scanning
  - Smart Cards
  - Premise monitoring using IP Video surveillance
- 24/7 on-site monitoring of network connection and server availability
- Vendor management services

Our professionals have expertise with networking technology and products from all major vendors including Cisco, Lucent, Nortel, HP and 3Com and we can help our customers to plan, implement and support multi-vendor network infrastructure.

**2. Assurance Services:** Based on customer requirements, our assurance services support

review and audit of following critical functions to achieve desired operational levels:

- Network Traffic Assessment
- Security & Threat Assessment
- Asset Management
- Vendor Management
- License Management

**3. Managed Services:** Our Managed Services cater to every operational requirement of an IT services/data center and cover:

- Desktop Management
- Network Management
- Server Management
- Mail/Messaging Systems
- Security and Change Management
- Help Desk Services

These services are available on-site at customer locations or remotely through our NOC based Remote Infrastructure Management (RIM) services. Managing a complex and growing server and hardware environment is challenging and time consuming. Nevaeh Technology's Remote Infrastructure Management(RIM) addresses these challenges directly by giving you best in class systems management at a fraction of the costs normally associated with such quality. Typically, RIM allows for 90% of all systems management to be done remotely – Stress free IT!

Nevaeh follows ISO & ITIL/ITSM based practice.

All our systems and procedures are process driven. The quality of our support and services is tracked through a CRM system, which monitors every reported incident. Critical back up support is provided by a central Nevaeh team which is responsible for Customer satisfaction and support. Nevaeh supports a number of Corporate, Government and Public Sector customers with our services in the three areas of IT Infrastructure Management.

Defense Projects & Scientific Applications  
@  
nevaeh

# **1 Testing & Documenting Air-Vehicle Simulation – RCI, Hyderabad**

DRDO's Air-Vehicle simulation software is based on SixDOF (six degree of freedom) theory and was originally written in Turbo C++. It used to run under DOS platform and lacked real-time capabilities. The purpose of this project was to test all the functional modules in this project and document all the routines that implemented the entire simulation. The total document was designed as a booklet and was divided into 6 (six) main sections and an Appendix. The purpose of the document was to give a complete description of the software designed.

In Chapter 1 the Scope of the document was discussed clearly outlining its purpose, its creator and the recipient along with a brief overview of the objective.

Chapter 2 covers all the documents referenced.

The system wide design of the software was covered in Chapter 3, along with a block diagram illustrating all the components of the system as blocks.

Chapter 4 dealt with the System Wide Architecture covering components of the system clearly explained through a Call Tree structure.

In Chapter 5 the Detailed Design of the system was given. Furthermore, all the functions used in the system was discussed in detail.

Chapter 6 covered the Sign Conventions used in the system.

The Appendix listed all the variables used in the main routine as well as the variables which have been saved in or read from external files.

# **2 Porting Air-Vehicle simulation in RTLinux platform – RCI, Hyderabad**

The purpose of this project was to port the DRDO's air-vehicle simulation software in a real-time operating system. The platform chose was RT-Linux pro – 1.2 from fsm labs. The total project was split into two separate modules:

## **2.1 Real-time RTLinux Kernel Module**

The module implemented SixDOF simulation (written in C) and the other was a user space KDE-GUI application (C++/QT) that received the simulation results from the kernel-space through a set of real-time FIFOs. Within the simulation loop, the delta-commands generated from the autopilot routine were looped back through a pair of ADC/DAC for inspection by any externally connected display device. The user-space GUI application also plotted the current position of the trajectory with respect to the inertial frame onto its view area. The project contained a driver package for the data acquisition cards mentioned below. The cards were required to transfer/receive the simulation results/parameters to/from externally connected devices.

## **2.2 Drivers for Advantech PCL-726, PCL-818hg, PCI-1756 data acquisition cards for RTLinux platform**

The driver package for DRDO's real-time air-vehicle simulation comprised of some low level routines to work with Advantech's PCL-818hg (ADC), PCL-726 (DAC) and PCI-1756 (DIO) cards for the RTLinux platform as Advantech does not supply the RTLinux drivers for these cards.

### **3 Real-time Graphical Scan Stabilization software console based on Linux/RTLinux - RCI, Hyderabad**

The system was desired to have three inter-connected sub-systems namely: the antenna, controller and the console. The antenna is mounted on a platform that can move on two perpendicular axes. A motor is fitted with sensors, which controls the movement of the platform on which the antenna is mounted. The controller sub-system is a digital controller based on i960 microprocessor. The controller receives commands on the 1553 BUS, executes the servo-controller and sends back the positional data on the same 1553 BUS at an interval of every 2 milli-seconds. The console is a PC connected to the controller over the 1553 BUS and through a RS 232 link.

The scope of work was defined as to design and develop a scan stabilization graphical console, which will have the following features:

1. Power-on the system through the console
2. Check the health of the digital controller
3. Continuously scan the positional views and view the movement of the antenna in 3 dimensions.
4. Send signals to control the movement of the antenna and stabilize its position
5. Continuously feed the data to the trajectory simulation system.

With reference to point 2 above, the typical health check includes the following:

1. Memory read
2. Memory write
3. DAC output
4. ADC read
5. File download
6. Program execution
7. Invoke application
8. Transfer to 1553 based communication

The graphical console consists of several pages of graphical user interfaces to communicate with the digital controller on the 1553 BUS and RS-232, which in turn, communicates with the antenna sub-system as illustrated in the figure above. Depending on the type of test a particular page is selected. The position of the antenna is continuously displayed on the console. Each of the buttons of the console have sub-menu to select the parameters related to the button. The console system consists of a PC equipped with a 21" color monitor and a 1553 BUS card with RTLinux drivers.

#### **Existing System:**

There was a DOS based PC software which was used for the diagnostics of the controller as well as for the stabilization system. This software had to be integrated into real time console software.

### **4 Real-Time Missile Simulation Software – ITR, Balasore**

The team, on behalf of Vision Comptech, developed this Simulation Software in phased manner. The phases of the development have been elicited below:

In phase-1 of this project the first product of the entire suite was developed, which had the

following features:

1. Model creation of objects with zoom, tilt & pan facilities
2. Digital map designing and loading
3. Real time rendering/image generation
4. Geometric representation of terrain, vehicles, mountain etc.

In phase 2, special effects was integrated into the product.

## **4.1 Phase 1: Modules & Features**

This section describes each of the features that exists in the product

1. Model creation of objects with zoom, tilt and pan facilities  
We created a library of objects from where the user can pick and choose the desired object for simulation operations. The specifications for the objects to be created were provided by I. T. R., Balasore (DPD) and we used standard modeling tools to create the models for the objects
2. Digital map designing and loading  
Terrain model of 3 meter resolution WGS-84 standard DEM (Digital Elevation Model)/Contour Maps (with sampled height points) to be rendered through OpenGL visualization. The entire library had the capability of reading any WGS DEM and computing various LOD (Level of detail) based on the factor of zoom of the world view of the user.
3. Real time rendering/image generation  
Real Time rendering with simple shading model was developed to render the simulation. The stage/payload separation and deviation from the actual path were (through a 3D safety corridor) was rendered.
4. View generation  
The system had the capability of displaying two types of views (based on the vantage point chosen by the user)
  1. From a moving camera following the object
  2. From a fixed location specified by it Lat, Long and Height
5. Interface  
The developed system was interfaced with the existing acquisition system present in the DPD laboratory in ITR through UDP interface and data filtering and data fusion were done to get the input data to the Visualization System.

The developed system had other features like provision for callable routine for object loading from library etc.

## **4.2 Phase 2 Features**

As discussed in the section above, phase 2 comprised of development and incorporation of special effects features in the visualization system. The features were

1. Volumetric Smoke
2. Fire/Flames
3. Muzzle Flash



4. Missile Trail
5. Rotating Blade
6. Tracer
7. Explosion
8. Debris
9. Water Explosion

Besides the above features the product also had database management module, which included flat earth model, spherical earth model, ellipsoid earth model (WGS 84), database origin (Cartesian and latitude and longitude) and conversion of alt-long to X.Y and other Cartesian coordinates.

## **5 Missile Inspection & Feedback Acquisition – RCI, Hyderabad**

The objective of the project was to get rid of complex and large H/W setup for health check-up of missiles. Nevaeh was assigned to identify and custom configure an ultra mobile computer which should be powerful enough to carry on such tasks in tablet like ultra-mobile rugged PCs and port existing S/W systems into a GUI based dashboard for carrying out health check-ups of missiles. The scope of the project included, in objective terms:

1. Supply of a Ruggedized Ultra-mobile Computer
2. Developing a Health Check-up System for Missiles

### **5.1 Supply of Ruggedized Ultra-mobile Computer**

Nevaeh identified a ruggedized ultra-mobile PC having physical dimension of 7.28" x 9.05" with Vehicle Mount Cradles, Desktop Cradles and closely worked with the OEM to custom-configure the H/W and S/W to meet requirements of the project, including porting of Linux and device drivers like touch screen for Linux. Nevaeh also imported the items on behalf of RCI, Hyderabad and supported as per AMC of the product throughout its lifetime.

### **5.2 Health Check-up System for Missiles**

The software system, MIFA was ported from existing DOS based CUI systems into a modern GUI based system in a Linux/QT platform. MIFA carries out health checking of missile subsystems through an Ultra Mobile PC. The tablet PC is connected through a communication (RS 232) interface with the On Board Computer of the missile and send commands accepted by the OBC, gathers feedback from the OBC based on the commands sent and present the feedback in a dashboard to empower the user with decision making capabilities.

The scope of the software system developed, in objective terms, is mentioned below:

1. Connect an Ultra Mobile PC with OBC (On Board Computer) of missile through RS 232 link
2. Send commands to OBC through the serial link
3. Get feedback from the OBC
4. Format the data based on the particular function requested
5. Record the data in user specified files
6. Present data in GUI meaningfully
7. Plot/Represent historical data in the same user interface

### **Significant functionalities of the system included:**

1. CGC check – Null check, Analog check and Diagnostic check
2. NULL check – A sub-system of CGC, it checks the health of equipments like Actuators, Sensors, Seeker etc. and presents the user with a comprehensive dashboard view of the health of such sub-systems.
3. DAC Write – This function enables the user to input DAC voltage values for 8 number of DAC channels.
4. ADC Read – The purpose of this function is to read and display interpreted ADC values from the ADC channels in volts format.
5. Sensor Package Checks – This function allows the user to monitor SPU (Sensor Package Output) for a controlled time duration. User invokes the monitoring and end it by a toggle switch built in the S/W. The output is also plotted in line graph format to present user with graphical view of it.
6. Others – Various other health checks like CAS checks and Seeker checks were also provided to allow the user test the health of a missile comprehensively.

### **Development of Simulator**

To develop and test such a system, it was required that complete OBC functionality is ported in a simulator. Nevaeh developed a complete simulation system of OBC to develop the product. Development of simulator reduced mobilization time from envisaged 3 months to 21 days and minimized dependencies on the availability of missile sub-systems to test the product.