

e-Government Solutions

Helping governments
and people to benefit
from technologies



The NCS Edge



NCS is a leading information and communications technology (ICT) provider in more than 10 countries in the Asia Pacific and Middle East regions. It is headquartered in Singapore and a wholly-owned subsidiary of the SingTel Group.

Established in the early 1980s, NCS has helped implement over 2,000 large-scale, mission-critical and multi-platform projects. As the principal IT solutions provider to the Singapore government in the computerization of the Singapore public administration, we have experience in industries ranging from Government, Defence, Education, Financial Services, Healthcare, Homeland Security to Manufacturing & Logistics, Telecommunications, Transportation and Utilities.

In today's competitive environment, being able to optimise your business value and carve out a sustainable competitive edge are vital factors for success. NCS has a suite of e-Government solution offerings which can be tailored to suit your respective country or agency's needs. The solutions are classified into:

GOVERNMENT

- e-Customs System
- Human Resource Matters Management System
- Population Census System
- e-Government Hosting Infrastructure System
- e-Government Consulting
- Electronic Handheld Terminal System (EHT)
- Electronic Registration & Filing System (iBizFile)

HEALTHCARE

- Integrated Hospital Information System (iHIS)
- Healthcare Information Exchange System
- Integrated Pharmacy System (iPharm)

EDUCATION

- School Administration and Management System
- School Examination System
- Virtual Canvas

HOMELAND SECURITY

- Emergency Preparation and Management Solution
- Case Management Solution
- People Population System
- Immigration and Registration Solution
- Prisons and Rehabilitation Solution

INFRASTRUCTURE MANAGEMENT SOLUTIONS

- Managed/Technology Solutions
- Regional Operations
- Consultancy Services



eCustoms System

The primary tasks of customs administrations relate to the movement of goods. A well-organized customs service can successfully balance its various responsibilities to ensure a high level of compliance with revenue objectives and regulatory requirements while enforcing minimum intervention in the legitimate movement of goods across borders.

Challenges

- **Establishing Adequate Customs Controls**
- **Security Concerns**
- **Improving and Streamlining Customs Processes**
- **Enabling Information and Communications Technology (ICT) Adoption**
- **Governance and Corruption Issues**

Our Solution

The eCustoms System is a comprehensive suite of integrated and robust applications with intuitive back-end systems to support critical Customs operations.

The main modules include:

- a) Permit Processing System
- b) Cargo Manifest Systems
- c) Warehouse Inventory Control of Dutiable Items (e.g. Petroleum, Liquor, Tobacco etc.)
- d) Assessment and Collection of Duty and Goods and Services Tax (GST)
- e) Customs Valuation System
- f) Security Clearance of Goods
- g) Case/Offence Management and Tracking
- h) Customs Compliance of Tracking
- i) Cargo Targeting and Risk Profiling
- j) Electronic Application (E-file) of Customs Services

Key References

Singapore Customs

Hong Kong SAR Commerce & Economic Development Bureau (CEDB)

Brunei Royal Customs & Excise Department

Human Resource Matters Management System

Common Human Resource applications like processing leave and HR-related forms can amount to a lot of paperwork and bottleneck situations. With NCS' Human Resource Matters Management System, such problems can be avoided while improving the way your HR Department performs.

Challenges

- **Reduce paperwork**
- **Improve processing time for HR applications**
- **Consolidation of all HR processes**

Our Solution

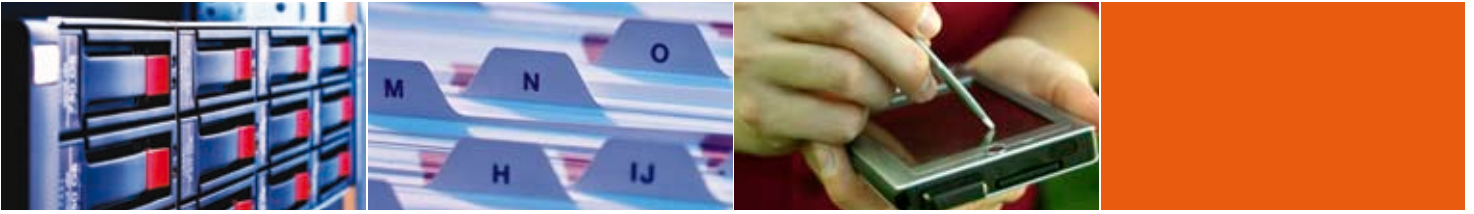
Human Resource Matters Management System is a centralized human resource management system that consolidates HR processes such as performance appraisal, recruitment, termination, career management and personnel benefits management.

The main features of this system include:

- a) Recruitment
- b) Appointment
- c) Posting
- d) Benefits
- e) Leave
- f) Training
- g) Manpower Planning
- h) Career Development
- i) Exit
- j) Employee Self-Service Functions (e.g. leave application, change of personal particulars etc.)

Key Reference

Singapore Prime Minister's Office



Population Census System

A Population Census is a complete process of collection, reception, assessment, analysis, publication and distribution of demographic, economic and social data that provides the fullest and most reliable picture of a country's population and its characteristics at a certain point in time. In the census, data is collected at a specified time from the entire population and requires a significant amount of manpower and resources. By leveraging advanced IT, NCS' Population Census System brings significant benefits in improving the collection and management of data.

Challenges

- **Avoiding data discrepancy**
- **Streamlining data collection processes**
- **Eradicating manual and time-consuming paperwork**
- **Better manage operational workflow and resources deployed**

Our Solution

The Population Census System is an integrated data collection system that centrally manages, processes and disseminates Census data.

The main features of this system include:

a) E-infrastructure

Designed to allow for scalability and availability, an e-infrastructure will be set up for applications to be developed and implemented. It also provides the facilities for collection of data through the Internet and telephone.

b) Call Centre

A Call Centre will be set up to handle the collection of Census data and queries from the public.

c) Document Management System

Using Optical Mark Recognition and Optical Character Recognition, this system will facilitate the capture of data collected from interviews.

d) Enterprise Server

Completed data from the Internet, Call Centre and Document Management System will be synchronized at the Enterprise Server for computer-assisted coding and verification.

e) Census Portal

A Census portal will be created for the dissemination of Census-related information to improve public awareness.

Key Reference

Singapore Department of Statistics

e-Government Hosting Infrastructure System

There are multiple aspects of a Government and it is important to ensure collaboration between government agencies to channel their resources more effectively towards betterment of public services. One way to achieve this is to reduce costs in investing and maintaining IT infrastructure and services for government agencies. NCS can provide a central environment for government agencies to host their websites and deploy e-Services and applications. This central environment will allow agencies to simply deploy applications on the shared infrastructure whenever required, avoiding the need to build their own IT infrastructure.

Challenges

- **Decreasing IT costs for individual government agencies**
- **Improving collaboration among agencies**

Our Solution

Our e-Government Hosting Infrastructure System is a reliable shared services platform and hosting environment to cater to government agencies' myriad needs. This system can cater different service-level agreements for differing needs, with high levels of service availability.

Main services offerings include:

- a) Common Services (e.g. payment, authentication etc.)
- b) Hosting
- c) Storage
- d) Data Centre
- e) Infrastructure Services

Key References

Singapore Infocomm Development Authority

e-Government Consulting

Governments have recognized the potential of Information and Communications Technology (ICT) to enhance competitiveness and improve efficiency and capability of its institutions. As governments make substantial investments in ICT, it is essential that such investments are well managed and delivered to meet the increasing demands of its community.

NCS' Digital Nation Architecture (DNA) 2.0 framework for e-Government Strategic IT Planning and e-Government Blueprint Formulation encapsulates decades of our e-Government experience. This framework has been successfully applied in consulting projects in multiple countries.

Challenges

- Complex government structures that require careful planning and implementation of ICT
- Quality and timeliness of government services
- Connectivity within and amongst government agencies
- Maturity of the ICT Governance Framework

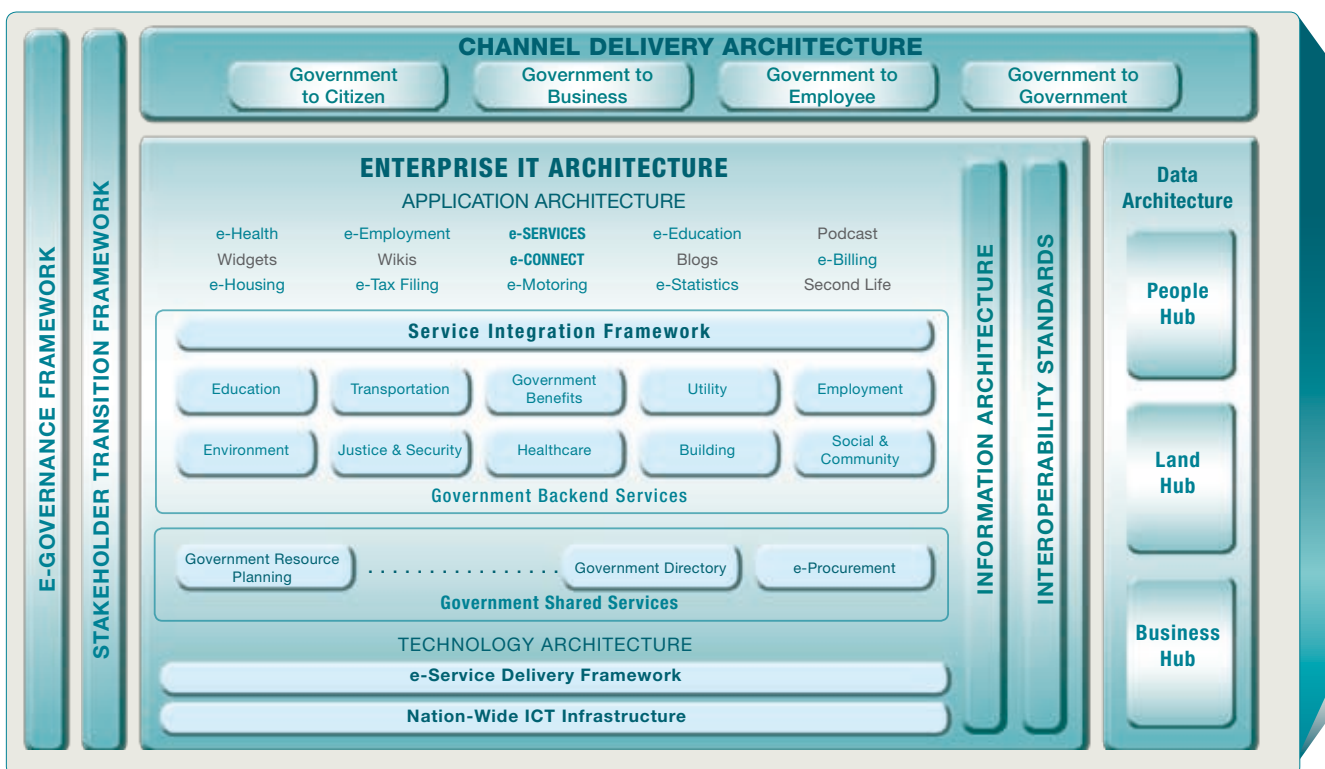
Our Solution

The types of consultancy services available are:

- a) Strategic ICT Planning
- b) E-Government Blueprint Formulation
- c) Smart City Planning
- d) Portals and Information Architecture
- e) Enterprise/National Architecture
- f) E-Government Interoperability Framework
- g) Business Process Reengineering
- h) ICT Competency Development Framework
- i) ICT Governance Model
- j) Transition Management – people, infrastructure, application and processes.

Key Reference

- Singapore
- Sri Lanka
- Kuwait
- Fiji
- Vietnam
- Pakistan
- Oman
- Saudi Arabia
- Thailand



Digital Nation Architecture (DNA) 2.0 Framework

Electronic Handheld Terminal System (EHT)

With increasingly advanced technology and wireless communications becoming widely available at a reasonable rate, people are expecting greater convenience and faster updates of information today. Whether for rule enforcement, inventory tracking, warehouse management, utilities or services and etc, NCS can enhance your operational efficiencies, productivity, data management accuracies and provide greater convenience for your customers with our mobile business application.

Challenges

- **Enabling mobile real-time data uploading and downloading**
- **Providing reports real-time**
- **Ensuring data accuracy between EHT Host, EHT Client and Enterprise Server(s)**

Our Solution

The Electronic Handheld Terminal System (EHT) is a mobile wireless system that allows enforcement officer to carry out enforcement work on the HDB/URA car park. It supports real-time data updating and synchronization, increasing productivity of management decision-making through availability of key information anytime.

The main features of this system are:

- a) Real-time data synchronization between EHT Host and EHT Client
- b) Enforcement data updated online to Host via General Packages Radio Services (GPRS) / 3G
- c) Bluetooth printing of notice using the Mobile Printer
- d) Scanning of RFID tag using the Handheld Terminal
- e) Encryption and Password Management modules to ensure authorized access to the Handheld Terminals
- f) Query and reporting features that are also extended to other agencies
- g) Audit Management module
- h) Remote Control module for remote access to the Handheld Terminals (esp. during troubleshooting)
- i) Scheduling of GPRS connectivity, transmission timings, audit trails and logs

Key References

Singapore Housing and Development Board
Singapore Urban Redevelopment Authority
SP Services
Singapore Population Census 2000

Electronic Registration & Filing System (iBizFile)

Maintaining accurate and up-to-date information on registry databases can be a challenging task, taking up manpower resources, time, high operational costs and storage costs for physical data. NCS offers a paperless system that makes it fast, easy and convenient to update and retrieve accurate information.

Challenges

- **Time-consuming paper-based processes**
- **Inconvenience to businesses**
- **High operational costs**
- **Inaccuracy of data**

Our Solution

Our web-based electronic registration and filing system (iBizFile) is specially designed to enable registry authorities to improve their services for both business partners and end-customers. iBizFile is scalable to handle simple to extremely complex transactions.

The main features of this system include:

- a) Online name registration, Incorporation, maintenance and cessation of company
- b) Notification of successful transaction
- c) Online enquiry for transaction status
- d) Online search for registered company
- e) Payment gateway
- f) User-friendly graphical user interface

Key References

Accounting and Corporate Regulatory Authority of Singapore

Financial Services Commission of British Virgin Islands



Integrated Hospital Information System (iHIS)

With today's advanced technology, hospitals and clinics are increasingly looking to IT to enhance operational efficiencies, manage patient information and provide a higher level of service to patients. NCS can provide a simple and flexible paperless solution that enables healthcare providers to quickly and efficiently manage the administration, clinical and financial transactions of patients' visits.

Challenges

- **Connect existing support service units**
- **Fast and accurate retrieval of patient information**
- **Reduce paper-based processes**
- **Improve operational workflow efficiency**

Our Solution

The Integrated Hospital Information System (iHIS) is designed to be used in single, group or multi-location hospitals and clinics from a single application and database instance. It has a simple but full-featured user interface, ensuring ease of usage.

The main features of iHIS include:

- a) Patient biodata, allergies and medical alerts
- b) Patient accounting including charging, billing, discounts and concessions, claims management, doctor fees, accounts receivable, general ledger etc.
- c) Appointments, patient registration and queue management
- d) Bed management, admissions, discharge and transfer
- e) Order management for medication, diagnostic imaging, procedure and treatment ordering and charging
- f) Operating theatre module for surgery rostering and management
- g) Pharmacy management for bagging, labeling and dispensing of ordered drugs
- h) Materials management including item master, stock take, transfer etc.
- i) Job scheduling for easy task management and follow up
- j) Integration with third party accounts systems, laboratory information systems, radiology information systems and materials management systems.

Key References

- Singapore Mount Alvernia Hospital
- Singapore Jurong Medical Centre
- Beijing Tongren Hospital

Healthcare Information Exchange System

To overcome the challenges of accessing medical information from various, unconnected healthcare institutions, creating a secure electronic healthcare information exchange is the solution. This allows healthcare providers to access the right information on the right patient at the right time. This exchange is a win-win solution for patients and healthcare providers, ensuring a safer, more effective and cost-efficient healthcare delivery environment.

Challenges

- **Increase accessibility and accuracy of patient records**
- **Improve connection and communication between healthcare institutions**
- **Improve operational efficiency**

Our Solution

The Healthcare Information Exchange System allows medical professionals from a healthcare institution to access patient records residing in another healthcare institution. A portal for the submission and viewing of medical alerts and patient drug allergies is also included.

The main records include:

- a) Hospital Inpatient Discharge Summary
- b) Drug Allergies
- c) Laboratory Results
- d) Prescriptions
- e) Immunization History
- f) Medical Alerts

Key References

- Ministry of Health, Singapore

Integrated Pharmacy System (iPharm)

As drug therapy is becoming ever more sophisticated, so is the preparation and administration of drugs. As such, it is essential to maintain accurate patients' profiles, their medication histories and ensure accurate prescriptions given. NCS is able to provide the computerization of in-patient pharmacy operations, increasing efficiency and bringing patient service standards to a higher level.

Challenges

- **Long waiting times at pharmacies**
- **Streamline prescription processes**
- **Improve operational efficiency**
- **Accurate and up-to-date archival of information**

Our Solution

Our Integrated Pharmacy System (iPharm) is a patient-centric enterprise integrated pharmacy system that provides a fully-automated workflow process between consultation rooms and the pharmacy. It enables medical practitioners to have quick and easy access to accurate drug descriptions as well as patients' medical records. iPharm is highly scalable, reliable and can also integrate with a robotic medication packaging system.

The key features of iPharm are:

- a) Patient registration, biodata, medication history, allergies, alerts and preferences
- b) Capturing and dispensing of patient medications
- c) Charging, billing, claims management and patient accounting
- d) Retail pharmacy including appliance rental, promotion and point-of-sales system with cash drawer and LCD display integration
- e) Supports flexible electronic ordering, preparation, dispensing and counseling workflows
- f) Electronic prescription and service, queue management, automated routing and self-registration



Key References

Singapore National Healthcare Group (comprising Tan Tock Seng Hospital, Alexandra Hospital, National University Hospital, Institute of Mental Health, Jurong Medical Centre and National Healthcare Group Polyclinics)



School Administration and Management System

With multiple administration aspects to manage in a school system, obtaining and managing information effectively is key to improving education service levels. Education professionals, students and parents stand to benefit from NCS' integrated school management system which offers more functionality, higher efficiency, transparency and accurate data updates conveniently.

Challenges

- Integrating multiple management components
- Increasing administration efficiency
- Minimising system maintenance cost
- Creating a user-friendly interface

Our Solution

The comprehensive web-based School Administration and Management System is designed to assist in school administrative tasks. The system also enables education officers and other staff working in schools to carry out duties such as registration and fee collection. It is suitable for country-wide implementation.

The main features include:

- a) School Management
- b) Housekeeping
- c) Security
- d) Student Management
- e) Student Assessment & Reporting
- f) Non-Academic Activities
- g) Student Attendance

Key References

Education and Manpower Bureau, (EMB),
Government of Hong Kong SAR

School Examination System

Conducting nation-wide examinations can prove to be an administrative and logistical nightmare by the sheer scale of it. NCS can provide a robust and flexible system that will cut down the tedious and time-consuming administrative processes. Ultimately, it will help users to operate more effectively to meet the constantly changing education landscape.

Challenges

- Improve administrative and logistical aspects
- Accuracy of various data
- Improved efficiency of processes

Our Solution

The School Examination System is designed to assist in the administrative tasks of conducting national examinations. It covers processes such as registration of examination candidates, allocation of candidates to the various examination centres, assigning invigilators and markers, marking and grading of exam papers and processing of results.

The main features are:

- a) Candidate Registration
- b) Personnel Allocation
- c) Posting to Exam Centres
- d) Marking
- e) Grading
- f) Processing of Results
- g) Certificate Printing

Key References

Singapore Examinations and Assessment Board
(SEAB)



Virtual Canvas

Teaching and learning classroom sessions are often disrupted by connecting and disconnecting individual notebook PCs to a projector for various presentations. This results in precious education time being wasted by the fumbling of wires and connecting plugs. By integrating both audio-visual and IT capabilities, NCS can provide a solution to the problem. This core initiative of NCS is able to provide value-added services to customers and bring education to new heights.



Challenges

- **Enabling a non-disruptive classroom teaching and learning experience**

Our Solution

Virtual Canvas is an application which integrates existing technologies to provide a unique, non-disruptive classroom teaching and learning experience. Virtual Canvas also enhances the interactive and participatory process of students within the classroom and is user-friendly. Technologies employed include pen-computing functions of Tablet PCs, overhead networked projectors, Windows Active Directories and control touch panels.

Main features of Virtual Canvas include:

- a) Wireless technology
- b) Secured Network Environment
- c) Lecturer-Student Control
- d) Many-to-Many Projections
- e) Wireless Real-time Streaming of audio and video clips

Key References

Singapore Management University

Singapore Air Force School

Singapore Armed Forces Military Institute

Australia Technical and Further Education



Emergency Preparation and Management Solution

It is important that a country's civil defense force is not bogged down by operational and administrative tasks, increasing their workload in addition to protecting the country. Their operational and administrative workload needs to be lightened to allow them to focus on their primary tasks. Another issue to look at is the management of fire response, which encompasses the handling of hazardous materials. This is dependant on timely and accurate information coupled with appropriate decision management. NCS' domain knowledge of a civil defense force's challenges has led to the development of our Emergency Preparation and Management Solution.



Challenges

- Reduce workload of operational and administrative chores
- Monitor and provide statistical data for planning and decision-making
- Improve effectiveness of handling incidents involving hazardous materials

Our Solution

With the Emergency Preparation and Management Solution, operational and administrative tasks are taken care of. Statistical data is also provided, which acts as a management tool for planning and decision-

making. Hazardous materials information is also offered, with integrated information from multiple sources and databases with sophisticated content-matching technology on the proper procedures to deal with a particular hazardous material.

The modules for this solution include:

- a) Duty rosters and attendance
- b) Drills and exercise
- c) Station visits
- d) Physical fitness tracking
- e) Performance Certification Test tracking
- f) Registration for public education courses
- g) Individual Readiness Assessment
- h) Fire Alarm Monitoring
- i) Hazardous materials information and content-matching

NCS Homeland Security Solutions Differentiating Features

PUBLIC - CENTRIC

- Multiple Touch Points
- Public and Business Friendly
- One-Stop Activities

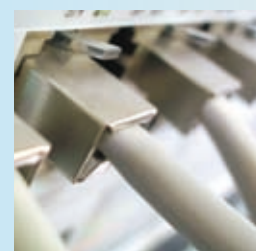


RESPONSIVE

- Accessible Anywhere, Anytime
- Paperless
- Sharing and Collaboration
- Secure

INTEGRATED

- End-to-End Solutions
- Knowledge Sharing



Case Management Solution

Increasingly complex threats in today's world have elevated the need for homeland security agencies to strengthen their ability to react to critical situations rapidly. NCS has understood this need for over 20 years. We have developed solutions that combat crime, improve public safety and enhance national security. These solutions are specially designed to support collaborative homeland security management at multiple levels and across various government agencies.

Challenges

- **Improve response management to issues**
- **Maximize limited resources**
- **Reduce manual work processes**

Our Solution

NCS offers a comprehensive suite of solutions ranging from e-police services for convenient public access to police justice systems which interface with judiciary systems that enhance communication and work efficiencies. It also includes collaborative case management solutions for narcotics enforcement.

The main solutions include:

- a) Incident Reporting
- b) Traffic Incident and Violation
- c) Criminal Investigation
- d) Criminal Records



People Population Solution

Government agencies face a common challenge in handling citizen information databases. With individual agencies keeping individual databases, one citizen's information may be updated with a particular agency but outdated with another, leading to data discrepancies. NCS can offer a solution – by centralizing citizen information, this will improve the citizen data retrieval and update process, leading to greater accuracy of data and enhanced workflow efficiency.



Challenges

- **Improve process of citizen data retrieval**
- **Enhance citizen data accuracy**
- **Improve workflow efficiency**

Our Solution

The People Population Solution is a secured centralized information hub that houses basic citizen information for common Government e-Services' verification and validation.

Its main features are:

- a) People Data Service
- b) Online Registration
- c) Code Table Maintenance
- d) Extraction-Transformation Loading
- e) Enquiry
- f) Reporting
- g) Supporting Administration Module such as Access Control, User Account Management, Workflow, Audie, Authentication, Notification



Immigration and Registration Solution

Going through multiple levels of checks during immigration and registration is a hassle that many face. With NCS' Immigration and Registration Solution, the public can benefit from faster and more accurate processing when they go through clearance. Our solution supports advanced identification technologies and deploys efficient workflow systems for the issuance and processing of passes and permits, eliminating manual form processing.

Challenges

- Improve work processes
- Enforce policy compliance
- Maximize limited resources

Our Solution

The Immigration and Registration Solution is an integrated solution that improves efficiency, enhances approval processes as well as enforces policy compliance for passport applications, identity cards, citizenship, work permits and other immigration-related documents.

- a) Immigration and Registration e-Services
- b) Advanced Clearance
- c) People Registration



Prisons and Rehabilitation Solution

By leveraging our extensive domain knowledge and technological expertise, NCS' Prison and Rehabilitation Solution innovatively manages all aspects of prison operations, from ensuring secure custody of inmates, monitoring inmate whereabouts, penal administration to rehabilitation needs.

Challenges

- Ensure safe and secure custody of inmates
- Reduce manual work processes
- Manage and address rehabilitation needs

Our Solution

Our Prison and Rehabilitation Solution comprises a comprehensive suite of solutions that manages all aspects of penitentiary care efficiently and in a people-centric manner.

The main modules are:

- a) Integrated Security Module
- b) Movement Tracking Module
- c) Admission and Discharge Module
- d) Records Management Module
- e) Rehabilitation and Incare Module
- f) Aftercare Module



Infrastructure Management Solutions

Managed/Technology Solutions

The business landscape is changing so rapidly today that enterprises constantly need to anticipate, react and evolve accordingly in order to ensure their continued survival. A reliable and scalable infrastructure allows enterprises to transform and compete effectively, realizing productivity gains and cost savings. With NCS' combination of niche expertise and leading edge technologies, we can deliver a business model that best suits your requirements.

Challenges

- **Drive IT efficiency**
- **Tackle evolving security threats and risks**
- **Minimise system downtime**

Our Solution

NCS' complete suite of infrastructure management and solutions offer consultancy and round-the-clock support for your enterprise's infrastructure development and operations.

Main solutions include:

- a) Network Integration
- b) IT Security
- c) Business Continuity Services
- d) Software-as-a-Service (SaaS)
- e) Facilities Management On-site

Key References

Singapore Government Ministries and Agencies



Regional Operations

With NCS' regional operations, you can operate your business in a trusted environment leveraging our global management infrastructure. Enterprises can focus on their core businesses and leave the complexities and daily operations of their regional offices in trusted hands.

Challenges

- **Acquiring skilled manpower resources**
- **Complex Infrastructure**
- **Excellent customer service levels**
- **Delivering a seamless end-user experience**

Our Solution

Our main solutions include:

- a) Managed Endpoint Services
 - Asset and Application Management
 - Real-time Endpoint Security
 - Enterprise Configuration Management
- b) Managed Application Performance Services
- c) Contact Centre Management
- d) Service Desk

Key References

Singapore Government Ministries and Agencies

Consultancy Services

At NCS, we creatively exploit technology to generate business value for organisations from both public and private sectors. We help companies define the blueprint and roadmap to transform their services and businesses by leveraging technology to bring about competitive advantage and business value.

Our consulting services combine thought leadership, best practices, deep industry knowledge, technological expertise, and best-of-breed alliances. We also create value through business transformation to increase revenue, reduce costs and optimise capital deployment. Our patented NCS Bizval™ value-based approach is also designed to help our customers define and systematically manage the large-scale business transformation they are embarking on.

Challenges

- Adopt industry best practices
- Increase competitive advantage
- Optimise capital deployment

Our Solution

NCS IMS offers a comprehensive portfolio of consultancy services that allow enterprises to build an agile IT environment. Our main consultancy services include:

- a) Network Integration
- b) IT Security
- c) Data Centre, Hosting and Operations
- d) Managed Storage, Server, Network, Security and Application Performance Services
- e) Business Continuity Services
- f) Managed Endpoint Services
 - Asset and Application Management
 - Real-time Endpoint Security
 - Enterprise Configuration Management
- g) Software-as-a-Service (SaaS)
- h) Contact Centre Management
- i) Service Desk
- j) Facilities Management

Key References

Singapore Government Ministries and Agencies



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