System Specification for a Web-Based Integrated Crime and Justice Information Management System

CariSecure Project

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Contents

Revision History

Name of Document	Date of Submission	Date of Revisions Submitted	Date of Re-submission

List of Acronyms

Caricom	Caribbean Community
CariSECURE	Strengthening Evidence-Based Decision Making for Citizen Security in the Caribbean
CHDR	Caribbean-wide Human Development Report
CIO	Crime Information Office
CMS	Crime Management System
DBMIU	Divisional Based Management Information Unit
DPP	Director of Public Prosecution
ECF	Electronic Case File
FSD	Functional Specification Document
HDR	Human Development Report
ICIS	Integrated Crime Information System
IDB	Inter-American Development Bank
JEMS	Judicial Enforcement Management System
LIU	Local Intelligence Unit
MIS	Management Information System
NDMA	National Data Management Authority
OECS	Organization of Eastern Caribbean States
PIMS	Prosecutor's Information Management System
SPSS	Statistical Package for the Social Sciences
UNDP	United Nations Development Program
USAID	United States Agency for International Development
YES	Youth Empowerment Services

Introduction

The United Nations Development Program (UNDP) - Regional Bureau for Latin America and the Caribbean (RBLAC) in collaboration with the UNDP Caribbean network of offices – Guyana, Jamaica, Trinidad and Tobago, Suriname, Barbados and the OECS undertook the formulation of a first Caribbean-wide Human Development Report (CHDR) on Citizens' Security. Using Global UNDP HDR processes, analysis and methodologies, the Caribbean HDR reviewed crime and security in the Caribbean with data analysis and information from a human development perspective. One of the primary recommendations from the report is the urgent need for the region to shift from traditional concepts of state security to a broader multidimensional concept that focuses on citizen security and safety and wellbeing of Caribbean citizens.

CARISECURE (Strengthening Evidence-Based Decision Making for Citizen Security in the Caribbean) is a project implemented by the United Nations Development Program (UNDP) and funded by the United States Agency for International Development (USAID). The objective of the project is to support the ten countries of the Caribbean zone in the development of data collection and analysis capacities relating to crime and violence. The CariSecure project specifically concentrates on the challenges relating to youth victims and/or those in conflict with the law, an integral part of one of the three components of a broader project known as Youth Empowerment Services (YES). The CARISECURE Project promotes a culture of evidence-based policy-making and program development in national institutions, and it focuses on addressing the root causes of youth involvement in violence and crime.

Background

An assessment of youth, insecurity and juvenile justice systems, conducted by USAID/ESC in the Caribbean pointed to a lack of standardized data on crime and violence and their drivers. Raw data is available in different forms and at different stages of the criminal justice process; however, due to the diversity of entities that generate security statistics, the absence of clear guidelines, and weak inter-institutional coordination and information sharing remains a problem.

National consultations and assessments conducted by UNDP in the Eastern and Southern Caribbean point at four interrelated key problems:

1. Deficient evidence-based citizen security policies due to,
2. Lack of reliable and comparable national and regional statistics,
3. Weak coordination at national, sub-regional and regional levels, and,
4. Weak institutional and CSO capacities.

The data gaps resulting from these challenges are further aggravated by:

- different definitions of security concepts,
- non-standardized indicators and inconsistent use of information;
- dispersion of information and a multiplicity of information sources;
- sporadic initiatives in the area of information management;
- lack of unified technical criteria and permanent technical capacities within the national and regional institutions;
- absence or lack of understanding of a preventive focus in information management;
- low citizen participation in discussions on citizen security;
- and, absence of mechanisms and capacities to mainstream gender into the analysis and management of citizen security related information and public policies.

Based on this, UNDP seeks to work with countries in the Eastern and Southern Caribbean (Antigua and Barbuda, Barbados, Commonwealth of Dominica, Grenada, Guyana, Saint Lucia, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Suriname, and Trinidad and Tobago) to improve institutional capacity for evidenced based decision making on youth crime and violence policy making and programming. The focus of this project will be in improving data collection, analysis and use of data for decision making on youth crime policy making and programming.

The project intends to achieve two components:

1) Improving the quality, comparability and reliability of data and information and youth crime and violence;
2) Regional collaboration and networking on youth crime and violence strengthened.

These components will be achieved by improving regional and national institutional capacity to collect, monitor, and analyse citizen security and apply it to decision-making and policy formulation at both levels.

In March 2017, CARISECURE beneficiary countries participated in a study tour and knowledge exchange in Belize. During the tour participants were exposed to the processes and current practices in Belize that support automated data collection, analysis, and sharing amongst government agencies and with the public. After the study tour, there was a request from participants for the CariSECURE project to consider a crime-reporting database that is shared by all via a network, and which permits access by different users. To advance the recommendations made by project beneficiaries, UNDP has hired a Consultant to develop a robust Functional Specification Document (FSD), which includes a three (3) year support service program.

Consultancy Objective

The Objective of this CARISECURE consultancy is to develop a complete Functional

Specification Document (FSD) for:

- A web based Crime and Justice Integrated Management Information System, which can adequately integrate information from different systems across ministries or departments in St. Kitts/Nevis, Guyana and St. Lucia and generate graphs and tables;
- The web based system should utilize geo-localization capability to generate hot spots and crime maps using static or time series data;
- A comprehensive and secure program database, consistent with national infrastructure and capacity requirements of CARISECURE, based on pre-determined indicators and reporting requirements;
- Detailed hardware and infrastructure requirements based on each country including recommended minimum upload and download speeds based on available ISPs in each country;
- Detailed equipment specifications based on the minimum system requirements of the chosen database. (Servers, Switches, Laptops, PCs, Monitors);
- Provisions for the capturing, cleaning and migration of any existing historical data; and,
- Full standard procedures and guidelines for maintaining the database, and the integrated system.

The Deliverables for the consultancy are the following:

- First draft of the Functional Specification Document;
- Debrief presentation to main Stakeholders/Participants; and,
- Final version of the Functional Specifications Document adopted by all participants.

Methodology

The Methodology for this consultancy consisted of the following:

Desk Analysis

A Desk Analysis review of documents provided by CariSECURE and relevant stakeholders was undertaken as a part of this analysis.

Consultation Meetings

Consultation meetings were held with CariSECURE stakeholders in St. Kitts and Nevis , Guyana and St. Lucia to obtain feedback on the current information management needs of the crime agencies in these countries, and recommendations for strengthening the information management systems in the pilot countries. These meetings were held at various times during the month of November 2017. A list of those interviewed as part of this assessment is presented in Annex One of this report.

Technical Analysis

A Technical Analysis of the current hardware and software needs of crime agencies in the three target countries was undertaken by the Consultant as part of this assessment. The Consultant personally visited crime agency offices in the three target countries in order to assess what was on the ground.

Assessment of the Current Situation

This section of the Report focuses on the current state (the "As Is") of the information systems at law enforcement agencies in St. Kitts and Nevis, Guyana and St. Lucia, the three CARISECURE pilot countries. It then describes the issues with the current crime information systems in these countries that were identified via field visits and consultation meetings facilitated by the Consultant with the CARISECURE stakeholders in these countries. Specifically, this section of the Report describes particular issues as reported by the Primary and Secondary Actors in the above three pilot countries.

Primary and Secondary Actors

Primary Actors are those agencies that are the main producers and users of crime and violence data. The Primary Actors that will be addressed in this Report are the Police, the Director of Public Prosecution's Office, the High Court and the Magistrate's Court (the Judiciary), the Prison Service and the Rehabilitation/Probation Services.

The Police is one of the main sources of crime and violence data in the three pilot countries. Crime data collection generally begins with the Police and then is provided to the Police High Command and to other law enforcement agencies and in some cases to the media and the public as well. Therefore, in many cases, the Police is the organization where crime data enters the law enforcement system in all three pilot countries.

The Director of Public Prosecutions (DPP) is the office or official charged with the prosecution of criminal offences in several criminal jurisdictions around the world. The title is used mainly in jurisdictions that are or have been members of the Commonwealth of Nations including members of the Caribbean Community (CARICOM). The Director of Public Prosecution has the power to initiate, authorize, take over and terminate prosecutions in all the courts in the three pilot countries.

The Judiciary in the three pilot countries include the Magistrate's Court and the High Court. The Magistrate's Court in the three target countries is a Court of Summary Jurisdiction. The High Court is comprised of a Supreme Court and a Court of Appeals.

The mission of most Prison Services is to protect society by providing a controlled, secure, safe, humane, productive and rehabilitative environment for those assigned to their custody. The Prison services in the three target countries contain a major adult correctional facility and in some cases secondary facilities such as a prison farm.

Probation services deal with minors, with variation by country, either under the authority of justice in relation to the implementation of diversion (alternative mechanisms to the incarceration of minors), or in the context of delinquency prevention activities (counseling,

conflict resolution awareness, etc.). Probation services also deal with adults in the context of non-custodial sentences.

Secondary Actors are those agencies that provide and/or receive data that can be correlated particularly with the root causes of crime. They include National Statistical Offices which provide data on the unemployment and poverty rates in the pilot countries and also receive and report on crime related data. They also include ministries such as the Ministry of Social Services and Youth which gather data particularly on at risk juveniles who access their probation, counselling and other crime prevention programs.

St. Kitts and Nevis

The Royal St. Kitts and Nevis Police Force

There are a total of thirteen (13) police stations in St. Kitts and Nevis. There are nine (9) police stations in St. Kitts and four (4) in Nevis. The Police Department is managed centrally from St. Kitts via three divisions:

1) Division A comprising four St. Kitts police stations;
2) Division B comprising five St. Kitts police stations
3) Division C comprising the four Nevis police stations.

Data Collection

Currently, data is collected manually by the police via an Incident Report form, a Crime Report form, a Charge Sheet form and a Custody Report form at all 13 police stations in St. Kitts/Nevis. A unit within the Police Department called the Local Intelligence Unit has over the last three years collected and analyzed data from these forms sent to their office within five days by the 13 police stations. Data from these forms are entered into an Excel sheet, and reports and dashboards are then produced by the Local Intelligence Unit in Excel.

There is also another unit in the Police Department called the Crime Information Office (CIO) that collects data and produce reports. The CIO receives information (in the form of Warrants and Conviction Sheets) from the Director of Public Prosecution's office and from the High Court and the Magistrate's Court regarding warrant and conviction status of offenders. The CIO then inputs this information into an Excel file.

The work undertaken by these Units is very systematic and thorough. The Units do record data relative to the presumed perpetrator, victim, modus operandi, as well as police investigation and judicial data where possible. The statistical classification employed is based on criminal law but only takes into consideration major crimes. The location of crimes is also collected and noted via pushpins on Google Earth. When syntheses from police stations are incomplete, the Local Intelligence Unit follows-up with them so that they may bring data up to date. Evidence is also centralized and stored at police headquarters on an Excel spread sheet.

All of the 13 Police stations in St. Kitts have internet access although they are not on a wide area network.

Information Management System

The Local Intelligence Unit and the Crime Information Office of the Police Department collects data in a very systematic and thorough manner from the paper-based reports via an Excel file. There is no formal information system although the Local Intelligence Unit and the Crime Information Office have been very creative and innovative in using Excel to store data, and in producing reports and dashboards via Excel. The data that the police collects in Excel is saved on computers in the Police Department.

The Immigration Department of the Police has a database following the computerization of the Border Offices. It was reported that the Police has a traffic information system as well.

A weekly operational summary of the data collected is sent to police stations and to the Police High Command every Monday. An annual summary is presented to the public and the media and transmitted to the Ministry and Statistics Department yearly. All Superintendents have to display crime statistics weekly from their Divisions. Data is normally displayed using a three year comparisons.

There is also a monthly Policy Advisory Group of the Police High Command that reviews the crime statistics from the previous month.

The Crime Information Office also provides criminal record certificates to members of the public upon request.

Director of Public Prosecution

There is a Director of Public Prosecution's Office (DPP) in the Ministry of Justice and Legal Affairs. The DPP in St. Kitts is the chief prosecutor tasked with reviewing criminal reports submitted by law enforcement, and advising if charges should be filed with the court to prosecute alleged perpetrators. Court cases are tried by the DPP or other prosecutors in the DPP's office.

Data Collection

Data is received from the Police in the form of charge sheets which are sent to the office of the DPP. The DPP reviews the Charge Sheet from the Police and makes an opinion as to the legal validity of the charge. The DPP currently uses log books to document the decision as they do not have an information management system. The information collected by the DPP on crime and violence relates to different types of offences, particularly categories of sex offences, age, nationality, and results (conviction or acquittal).

Information Management System

The Director of Public Prosecution's Office does not have a computerized information system.

The Judiciary - High Courts and Magistrate's Courts

There are four Magistrate's Courts in St. Kitts and Nevis. Two are in the main building in Basseterre, one in the rural area of St. Kitts and one in Nevis. There are two High Courts in the main court building in St. Kitts and one in Nevis.

Data Collection

The Magistrate's Court and the High Court uses a "Warrant Remanding a Prisoner" form for an individual that the court remands to the Common Goal in Basseterre and a "Commitment Warrant" form to the Superintendent of Prisons in Bassetere/Charlestown to receive a prisoner who has been sentenced by either Court for a period of imprisonment. These warrants are also received by the Police and stored by the Crime Information Office in their files.

Information Management System

The High Court and the Magistrate's Court in St. Kitts both use the Judicial Enforcement Management System (JEMS) as their case management tool. The Judicial Enforcement Management System, as described on their Website, states that it is:

> *An integrated case management software that automates all common procedures in your court. JEMS helps you automate your processes, workflows, and court's unique business rules, easily share data with other law agencies, manage documents, enable electronic filings, and help citizens pay online.*

It was reported that individuals in the Magistrate's court in St. Kitts uses JEMS based on their roles within the court. Although the information system is centrally managed out of St. Lucia, employees of the Court who use the system for various functions such as recording Court decisions reported that their requests for "fixes" to the system are responded to in a timely manner. The Magistrate's Court also has access to the Police's License Information System which they use to record the payment of traffic tickets at the Court.

The main crime reports that are produced by the Courts are the Remand and the Commitment Warrants. The Office of the Director of Public Prosecutions does collect information on crime and violence as they relate to different types of offences, particularly categories of sex offences, age, nationality, and results (conviction or acquittal). However, no data is extracted for reports and dashboards mainly because the data is collected manually.

The JEMS case management system enables users to:

1. Access real-time mobile access to cases, while at the bench, or on the move;
2. Access to calendars;
3. Capabilities to add secure notes to cases;
4. Features to send administrative staff instructions on letters to attorneys and prosecutors.

The Attorney General's Office of St. Kitts indicated that the Ministry is contemplating introducing another judicial case management system called **e-Judiciary** from a group called Crimson Logic. The **e-Judiciary** system, according to Crimson Logic's website:

> *eJudiciary transforms and improves the efficiency and transparency of the Judiciary Process. It embraces the new ways of managing the Judiciary Process, through a configurable and flexible core engine together with third party products. Infused with Crimson Logic's domain knowledge of the judiciary process, eJudiciary is a compelling product for countries that have selected it for their transformation towards Digital Judiciary.*

The Prison Department

There are two (2) prisons operated by the Ministry of National Security in St. Kitts and Nevis:

1. Her Majesty's Prison which is operated on St. Kitts and;
2. The Prison Farm in Nevis.

Her Majesty's Prison in St. Kitts is located in downtown Basseterre. It was built in 1840 by the British. It is situated next to the Police Headquarters on Cayon Street. It was originally designed to accommodate 60 inmates.

The Prison Farm in Nevis whose official name is Russell's Rest is located in the hills of Maddens. It is used as a prison for inmates soon to be released from prison and inmates who do not pose a security risk.

Data Collection

The Prison collects data on prisoners during their remand and commitment to the Prison. The Superintendent of Prisons accepts the prisoner and documents this acceptance on a form referred to as a "Prisoner Remand Sheet". This form is used to record the entire history of the prisoner while he is in the custody of the prison and captures data such as visitations, previous convictions, reporting on offenses, weight changes, and state of health.

Management Information System

Her Majesty's Prison in St. Kitts collects data in a very impressive and thorough manner; however, the data is currently all being collected manually. Both administrators and staff at the Prison have expressed great enthusiasm for the possibility of the creation of a computerized management information system at the Prison as they express the belief that it would greatly enhance the efficiency and effectiveness of their data collection and report generation processes.

Most of the reports that are currently being produced at the Prison are done in Word and Excel on a "need to" basis. The lack of a computerized information system serves to impede the production of such reports in a timely manner.

The New Horizons Juvenile Rehabilitation Centre

The New Horizons Juvenile Rehabilitation Center in St. Kitts is a juvenile residential facility for juvenile delinquents aimed at rehabilitation. The residents there are exposed to a well-rounded program which include academic and vocational education as well as counselling.

The facility's building was completed in September 2012 with monies donated in the form of equipment and furniture by the United States Government. It was officially opened in March, 2013. There are currently eight individuals housed at the New Horizon's Facility and it has the capacity to house 36 individuals (12 girls and 24 boys). The Facility can house individuals from the age of ten years.

Data Collection

An individual is referred to the New Horizon Facility from the court via a warrant form. If the individual is a juvenile and is sentenced by the court, then they are sent to the New Horizon Facility to serve their sentence via a committal form. Juveniles can also be sent to the New Horizon Facility with a Care form.

The New Horizon Facility does an initial assessment of individuals who are sent to the facility using an assessment form. The form records demographic data such as name, age sex, etc… as well as under what type of order they came to the facility. They then develop a "total care package" for each individual housed at the facility and reports the data on a Residential Care Plan form. This total care package acts as a manual case management system for the individual for the duration of their stay at the Center. The case files are kept as manual files although some effort has been made to store some of the case file data on Excel.

Management Information System

The New Horizon Facility does not currently have an information system. There has been discussions on the introduction of the TheraScribe[1] case management system into New Horizons and some members of staff received training on it two years ago. However, currently, the system has not been installed and the facility has been experiencing networking issues such as not having internet connectivity since June 2017 as well as the current state of their computer hardware.

Whatever reports are currently being produced by the New Horizons Facility are being done via Excel as the facility does not currently have a computerized management information system.

Guyana

Guyana Police Force

Data Collection

The Ministry of Public Security in Guyana oversees various departments including the police and the prisons. The logbooks at Guyana Police Force stations' reception desks feed the current crime data system with data provided when an individual comes to register a complaint or when police intervenes in a situation. A Sergeant verifies the input at the police stations. The logbooks that the Police uses to document incident reports and crime data are:

1. General Occurrence Logbook,
2. Domestic Violence Log Book,
3. Prisoners Charge Sheet,
4. Property Log Book

Data from the logbooks is inputted into the Integrated Crime Information System (ICIS). The data center is housed at the Ministry of Public Security in an office called the Policy Research Unit which receives data from the police stations and produce reports. The data is also shared with the Crime Observatory which is housed in the same building. The Crime Observatory receives reports from the Policy Research Unit using ICIS and then inputs the information into the crime observatory using Excel and the Statistical Package for the Social Sciences (SPSS) software.

Management Information System

The Ministry of Public Security under which the Guyana Police Force falls has a dedicated IT system for criminal monitoring: the Integrated Crime Information System (ICIS). The Citizen Security Program financed by the Inter-American Development Bank (IDB) in 2008 undertook the financing of the development of the ICIS to allow the Police to report especially on major crimes.

The Guyanese company Brain Street developed the system as a Case Management System for the police, and it includes a number of modules from complaint registration to trials, and it was

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[1] Thera*Scribe*® is a behavioral health treatment planning and clinical record management system.

also conceptualized to include all the steps of an investigation in between. The system, however, was never fully implemented and users have complained that it is slow and time consuming to use and lacks many necessary operational features. According to the IDB's Citizen Security Strengthening Program which sponsored the implementation of the software during the first phase of the project, four of the major challenges that faced the implementation of the ICIS are:

1. A design problem for users who are unable to formulate reports;
2. The modules are not integrated;
3. Most of the officers who were involved with the creation of the ICIS and have the most intimate knowledge of it have left the Ministry;
4. Many police stations do not have computers and only 50% have internet access.

A second version of ICIS was supposed to have been implemented in 2014, but this has so far not been accomplished. Therefore, for all intents and purposes, the Guyana Police Force still does not have a complete computerized information system.

Whatever reports and dashboards are currently being produced by the Guyana Police Department are being produced in Excel.

Director of Public Prosecution Office

Data Collection

The DPP's office reviews the Police charge sheet as well as other evidence for a person charged by the Police and makes an opinion as to the validity of the charge. The DPP itself does not do any investigation; they take the evidence that the Police collects and makes a judgment as to the validity of the charge to take it forward to the courts. The DPP currently uses log books to record the data received from the Police and to send information on decisions to the court and back to the Police as they do not have a functioning computerized management information system. File documentation on the above is a manual process and is susceptible to being mislaid.

Management Information System

The DPP's office had invested in a locally produced information system called Prosecutor's Information Management System (PIMS) which is a module of the Integrated Crime Information System (ICIS) developed by BrainStreet. However, users reported that the PIMS software was not user friendly and was complicated to use; therefore, the software was abandoned and the DPP's office is now in the process of budgeting for the procurement of another case management software called "Case Closed" from the United States. Therefore, currently, the DPP's office does not have a computerized information system.

Whatever reports and dashboards are currently being produced by the Guyana DPP's office are being produced in Excel as the DPP's office does not have a computerized information system.

Guyana's Magistrate and High Court

Data Collection

The Magistrate's Office collects and stores data on cases via a Case Jacket. A Case Jacket is the central repository for all documents filed in a court case. The case jackets are catalogued by number and contains such data as:

1. The arresting police officer's name;
2. The offender's name
3. The magistrate's name;
4. The judgment;
5. The date when the matter was concluded;

Management Information System

There is no computerized way of entering such information as the Magistrate's Court does not have a computerized information management system. Neither does the Supreme Court. There is also no electronic document management system for the case jackets and storage has become a big problem. The Magistrate's Court stated that computerization and the development of an electronic document management system would greatly enhance the efficiency and effectiveness of the Magistrate's Court. The Guyana court system is also expecting to create a juvenile court in the near future.

Whatever reports and dashboards are currently being produced by the Guyana Courts are being produced in Excel as the Guyana Court System does not have a computerized information system.

Guyana Prison Services

Data Collection

The five prisons in Guyana (placed under the authority of the Ministry of Public Security) are equipped with a Prison module of the ICIS information system created by the Brain Street Company.

Data concerning prisons is first collected in the prison' paper logbooks, before being transmitted onto the computer in the ICIS. Computerized data is stored on the Ministry of Public Security's server. The ICIS puts the data of different prisons on a network, in order to facilitate the monitoring of prisoners transferred from one penitentiary institution to the next. All significant modifications to the profile of an inmate (name, date of birth, etc.) must be subject to a formal request to the Ministry's IT service, in order to secure such data.

Management Information System

Due to the difficulties relating to the ICIS software, it appears challenging to formulate requests on the prison module interface (selection of inmates by age or type of sentence, for example). It thus becomes difficult to analyze prison data using the ICIS. Other issues experienced by users of the Prison module include:

1. The Prison module and the Police module in the ICIS cannot share data;
2. The Prison module is slow to use;
3. Some features do not function as they were supposed to;
4. Some important features such as the generation of reports were left out;

It must be noted that the IDB's Citizen Security Strengthening Program is currently funding the development of a new prison information system for Guyana.

Guyana Probation Services

Data Collection

The Probation Department of the Ministry of Social Protection evaluates the situation of minors in conflict with the law in order to make recommendations to the courts. The service then ensures the supervision of youth for whom the courts have chosen a non-penitentiary option. In terms of prevention, youth can be voluntarily recommended to probation by their families, schools, etc., and participate in the education and professionalization activities of the program. Nearly 300 youth are under the tutelage of the Guyana probation service, distributed across the territory (10 districts).

Upon engagement with the probation service, an interview is conducted and qualitative data regarding the individual's background is collected on paper, with all subsequent procedures being inscribed in forms and added to the minor's file. However, only one social worker is utilized, part-time, for data analysis, the output of which is a yearly activity report sent to the Ministry of Social Protection and to the Bureau of Statistics.

Management Information System

The Probation Department reports that 95% of what data they collect are collected manually as they do not currently have a computerized information management system. They reported that they would want to be able to capture information from the police charge sheet and be able to provide information in an electronic format to the court and back to the Police. Therefore, they are very enthusiastic about the possibility of computerizing their data systems.

Whereas data is very rich, including the entire history of youth in conflict with the law, it is not subject to a computerized processing that would allow for systematic analysis because of the lack of a computerized information system.

The Probation Department aggregates statistics on a monthly basis by regions. They currently use Excel to produce such reports. They noted that it would be useful for the Police and the Courts to be able to access this information in a timely basis via a computerized information system as it would provide the police and the courts with information relevant to their decisions to charge or convict juvenile offenders.

Guyana Crime Observatory

The establishment of the Guyana Crime Observatory was an initiative of the IDB's Citizen Security Strengthening Program. Analysts at the Crime Observatory extract data from the ICIS for analysis. The analysts use Excel and SPSS for their analyses and for the creation of reports, charts and graphs for dashboards. However, they can only access the necessary information from the ICIS via the screens and then have to manually input the data into Excel and SPSS. This is a very slow and laborious process. Even given these constraints, the Crime Observatory has been able to produce crime reports such as:

1. A Serious Crimes Report detailing monthly comparisons of serious crimes;
2. An Injury Surveillance Report;
3. A quarterly Fatal Accidents and Traffic Deaths Report;
4. A Domestic Violence Annual Report

National Data Management Authority

While not a Primary Actor, the National Data Management Authority (NDMA) was visited because of the impact that its proposed e-government initiatives may have on the development of an integrated web-based crime information system in Guyana.

The NDMA provides technical advice on the acquisition of all hardware and software for the Public Sector; and the establishment and maintenance of reliable communication linkages in the Public Sector in order to achieve optimal utilization and deployment of computer networks resources and the establishment of guidelines for the recruitment and work conditions for ICT professionals.

Now merged with the e-Government Agency, the NDMA will retain its responsibilities, but its scope of work will be extended to include the functions of the Agency, which focuses on providing support to Ministries and government agencies to enable them to provide government services to citizens on an interconnected database. Some of the proposed initiatives of the newly constituted NDMA include:

1. The installation of an e-government network which spans from Charity in the Pomeroon-Supenaam Region (Region Two) to Skeldon in the East Berbice-Corentyne Region (Region Six);
2. The provision of internet access and network connectivity for schools and technical and vocational institutions through its Improving Digital Equity, Access and Learning (IDEAL) Program;
3. The distribution of laptops to teachers across the country through the President's One Laptop per Teacher (OLPT) initiative; and,
4. The establishment of 51 Community ICT Hubs which will enable outlying communities free high speed internet access.

St. Lucia

The Royal St. Lucia Police Force

The Royal St. Lucia Police Force falls under the Ministry of Home Affairs and National Security. There are 15 Police Stations in St. Lucia. The St. Lucia Police Force includes:

1. A Marine Unit;
2. A Drug Unit;
3. A Traffic Unit
4. A Crown Prosecution Unit
5. Immigration
6. The IT Unit
7. A Criminal Intelligence Unit

Data Collection

Currently, data is collected manually by the police via an Incident Report form, a Crime Report form, a Charge Sheet form and a Custody Report form similar to what was found in St. Kitts/Nevis although there has been previous attempts at implementing a computerized crime management system. The Criminal Intelligence Unit of the Police edits a criminal activity analysis report monthly for the country, based on paper data. Data is analyzed by type of crime (harm to individuals and property damage, firearms, drugs, etc.), month (with a comparison over 3 years) and administrative region. As was found in St. Kitts, the work undertaken is of good quality, but geo-mapping elements are lacking. Elements analyzed are the subject of weekly, monthly and trimestral reports transmitted to the heads of police stations, heads of the two geographic divisions (north, south) and police headquarters. A yearly synthesis is communicated to the press, Central Statistical Office, CARICOM, and the embassies requesting them.

Information Management System

A Crime Management System (CMS) was developed with the assistance of the Taiwanese government in the years 2008-2009. It was installed in all the police stations of the country. The Crime Management System was designed to capture information on victims, date, time of offence, location where the offence was committed, suspect/perpetrator, circumstances, arrest of suspects/perpetrators and issuance of warrants for arrests, with the capability of uploading photos of suspects. A police officer was trained in supplying the system in each police station.

However, the users of the Crime Management System reported the following issues:

1. It is not possible to record two cases simultaneously from two different workstations;
2. The testing period for the implementation of the system was too short and some needed modules were not incorporated;
3. The system is not multi-browser;
4. The reports that can be extracted from the system is limited;
5. The source code documentation is in Mandarin;
6. The software does not allow for the input of certain data, including geo-location data;
7. The software does not allow for the automatic generation of reports or graphs.

It was recommended by the St. Lucia Police High Command that the current information system is not functional. They also recommend that an Information Technology Unit be created to:

1. Administer any new system created;
2. Create a set of standard operating procedures for the new system;
3. Train officers and supervisors on the use of the system;
4. Continuously enhance and update any new system.

The Royal St. Lucia Police Force indicated that they produce a daily crime report which is then aggregated monthly, quarterly, bi-annually and annually and reported as such.

Department of Justice of St Lucia

The Department of Justice of St. Lucia is comprised of the following units:

1. A Civil Status Registry that maintains vital national records.
2. A Director of Public Prosecution Office
3. A Legal Aid Office.
4. Magistrate's Court.
5. High Court.
6. Deeds and Mortgages Office.

The Department of Justice reported that they do not have a computerized information system that would allow them to share information across these units and that the implementation of such a system would greatly enhance the efficiency and effectiveness of the Department of Justice. The Department of Justice also reported the following issues:

1. It is possible to change vital statistics records without referring to other departments data;
2. Incidents of offenders in the justice system using multiple names are increasing;
3. There is no means currently of units within the Department of Justice being able to cross reference information;
4. There is no way currently for the Legal Aid Unit to be able to validate calls from the police or the prisons;
5. The manual system that exists at most of the units within the Department of Justice makes it difficult to share data across agencies.
6. The internet speed is slow and the computer hardware that exists across the Department of Justice is old and outdated.

Data Collection at the DPP Office

As in St. Kitts, data is received from the Police in the form of charge sheets and are sent to the office of the DPP. The DPP reviews the Charge Sheet from the Police and makes an opinion as to the legal validity of the charge. The DPP currently uses log books to document the decision as they do not have a computerized information system. Data collected by the Office of the Director of Public Prosecutions (DPP) is that necessary for judicial monitoring, but there is no computerized Case Management System.

Information Management System

The Director of Public Prosecution's Office does not have an information system although they are able to query cases via the JEMS software that the Court uses.

The Office of the Director of Public Prosecutions does collect information on crime and violence as they relate to different types of offences, particularly categories of sex offences, age, nationality, and results (conviction or acquittal).

The Magistrate's Court and the High Court Data Collection

The Magistrate's Court and the High Court uses a "Warrant Remanding a Prisoner" for an individual that the court remands to the Common Goal and a "Commitment Warrant" to the Superintendent of Prisons to receive a prisoner who has been sentenced by either Court for a period of imprisonment. These warrants are also received by the Police and stored in their files.

Information Management System

The High Court and the Magistrate's Court in St. Lucia both use the Judicial Enforcement Management System (JEMS) as their case management tool. High Court officials in St. Lucia also confirmed that the Ministry is contemplating introducing another judicial case management system called e-Judiciary from the Crimson Logic company.

The main crime reports that are produced by the Courts are the Remand and the Commitment Warrants.

The Prison Department

Data Collection

The Bordelais Prison is on the east of the island, and is the only prison in the country; no individuals under the age of 16 are detained there.

When inmates arrive, a series of forms are filled out (biography, sentence, evaluation of the social and psychological state, medical file, rehabilitation file, incident follow-up). Data is currently processed manually in a paper based Case Management System. Data is currently not computerized or extracted for analysis, a fact the management of the prison regrets and intends to address with the deployment of its own Prison information system.

Management Information System

The Consultants, upon their visit to the Bordelais Prison Facility in St. Lucia, was shown a demonstration of a new prison information system that is slated to be launched in the near

future. The new prison information system was developed locally and was customized to meet the needs of the Bordelais Prison facility. The system currently contains five modules: Admissions, Medical, Interdepartmental, Administrative and an Intelligence module. The system provides role based access, the ability to scan and upload documents, the ability to query by name, voice authentication and other such features. The consultants were impressed by the system which is said to be 90% complete.

Most of the reports that are currently being produced at the Prison are done in Word and Excel. The lack of a computerized information system serves to impede the production of reports in a timely manner but should be remedied with the introduction of the new information system.

St. Lucia Probation Services

Data Collection

The probation service of St. Lucia is responsible for individuals whose sentences do not involve incarceration (including minors under the age of 16). The probation service conducts pre-sentencing and social inquiry reports in order to orient the courts on possible sentences. The probation service also has the responsibility of following up on individuals benefiting from the probation system, and who serve their sentences outside of the penitentiary system. It is also responsible for court-ordered mediation.

At the point of interrogation of a minor by police, the probation services are alerted and the minor is taken into care until just after the decision of the juvenile court, if necessary pursuant to the Children and Young Person Act. An intake form capturing biographical, educational, employment, mental health, and criminal data is filled out in the context of a non-digital Case Management System.

Management Information System

The probation service undertakes monthly statistical monitoring (disaggregated by gender) of its activities for the two judicial districts of the country (north and south), representing nearly 250 individuals per year. The agency is slated to implement the use of the TheraScribe software although a firm timetable for implementation has not been set.

The needs of the probation service are significant in terms of equipment (outdated computers), but also in terms of training in the collection and analysis of data in order to reinforce existing capacities. However, the enthusiasm for the work that they do and their interest and eagerness to see the implementation of a web based computerized information system for their department and their knowledge of the benefits that such a system can accrue was evident.

The reports currently being produced by the St. Lucia Probation Services are being done via Excel as the department does not currently have a computerized management information system,

Overall Issues

1. The major issue with the St. Kitts crime agencies visited is that they do not currently have a computerized management information system. Most of the agencies visited by the consultant do a stellar job of collecting data and all have expressed the opinion that the development of a web-based computerized integrated management information system that would allow them to do their work more efficiently and effectively and that would allow them to share relevant data would be a great asset to the enhancement of operation and administrative tasks which will lead to better evidence based decision-making.

2. Although, of the three countries visited, St. Kitts/Nevis tended to be the one that is the least computerized, it was also the one found to be the most regularized and standardized in terms of their data collection and their procedures. Therefore, this makes St. Kitts/Nevis the most ideal pilot testing country for the development and piloting of a web-based integrated computerized management information system because of the level of standardization that currently exists.

3. A major issue found during the visits with crime agencies in Guyana is that the country has made several attempts at developing management information systems for its agencies that produce and utilize crime and violence data. The ICIS and PIMS are two examples of such prior efforts. While the development of such efforts have been commendable, however, such efforts have either stalled or have been entirely discarded because users have not found the systems very user friendly or useful. Therefore, decisions need to be made as to whether these various software programs will be enhanced by Guyana to become fully operational or whether a new computerized integrated web-based information system will be put in place to replace such systems.

4. St. Lucia shares many of the same reporting and standardization features of St. Kitts/Nevis although the country appears more advanced in terms of its efforts to develop information systems such its prison information system and the acquisition of the JEMS software that is being used in many judicial systems across the OECS.

5. The way that most of the agencies in the three target countries collect data is perhaps not the most appropriate way for an effective integrated web based information system. Currently, much data is stored in spreadsheets and desktop databases such as Microsoft Excel. While Excel can provide enough functionality for certain tasks, it does not have the technical controls in place to collect, store, and verify data. Some other issues with solely using desktop spreadsheets such as Microsoft Excel are:

   a. **Data is not secure** – Spreadsheets have very limited permission controls when it comes restricting access for multiple users. This lack of protection can lead to data manipulation, which compromises data integrity;

b. **Errors can go unnoticed** – While one can use basic data validation in Excel with various formulas, data entry errors can still easily go unnoticed. There are several types of data errors in addition to misplaced, lost, or omitted data. Even though using Excel usually saves time up front because staff already uses the program and therefore do not need to be trained, a significant amount of time can be wasted on consolidating files and checking for errors;

c. **No secure central location for forms and data** – Spreadsheets can be difficult to locate if they are saved to several files and folders. Often times, important information is scattered and multiple copies of a document are created;

d. **It lacks data integrity**. Because every cell in Excel is a unique snowflake, things can get very inconsistent. What one sees doesn't necessarily represent the underlying data. A number is not necessarily a number. Data is not necessarily data. Excel tries to make educated guesses about what is wanted, and sometimes it's wrong. It's also not very good for working with multiple datasets in combination. In addition, It's not very good for answering detailed questions and undertaking such analysis with the data;

e. **It doesn't scale**. As the amount of data increases, performance suffers, and the visual interface becomes a liability instead of a benefit. It also has fixed limits on how big a spreadsheet and its cells can be;

f. **Collaborating is hard**. It's hard to control versions and have a "master" set of data, especially when many people are working on the same project;

6. An important challenge common across law enforcement agencies in the three pilot countries is the issue of confidentiality and data sharing. The implementation of a confidentiality policy between actors regarding data sharing could contribute to establishing a relationship of trust. In addition, the development of a standardized process for data collection (in order to render it comparable) including the introduction of standardized forms that can be digitized and training on such tools and forms for data collection and analysis are key to helping to establish such trust.

Proposed Functional Requirements

Introduction

This section of the Report addresses the proposed system (the "To Be") by describing the specifications for the proposed integrated web-based crime and justice information system. The objective of this proposed system would be to computerize and digitize the data collection and analysis processes of the Primary Actors (the Police, the DPP, the Judiciary, the Prison and Probation Services) especially where such computerization and digitization does not exists. The second step would be to integrate the information systems of these Primary Actors in such a way that they can share relevant data while at the same time preserving the confidentiality and data integrity of each individual system.

The proposed web based integrated crime and justice information system should be developed using independent but data connected institutional systems that are hosted and managed by their respective organizations.

It should be designed to share agreed upon data sets; hence, achieving data integration and avoiding data duplication. This will lead to a more effective and efficient operations for each unit involved. Such integration will provide a way to analyze the problem of crime in a more holistic way and provide the evidenced-based statistics needed for policy makers to better address the problem of crime.

The main systems that are recommended to be incorporated into the proposed crime and justice information system are:

1. Police Records and Management Information System;
2. The DPP office and Police Prosecutors Case management System;
3. The Courts Case Management Systems;
4. Prison Records and Management Information System;
5. Probation Case Management System.

Integrated Crime and Justice Information System - Primary Actors

Data Sharing - Secondary Actors
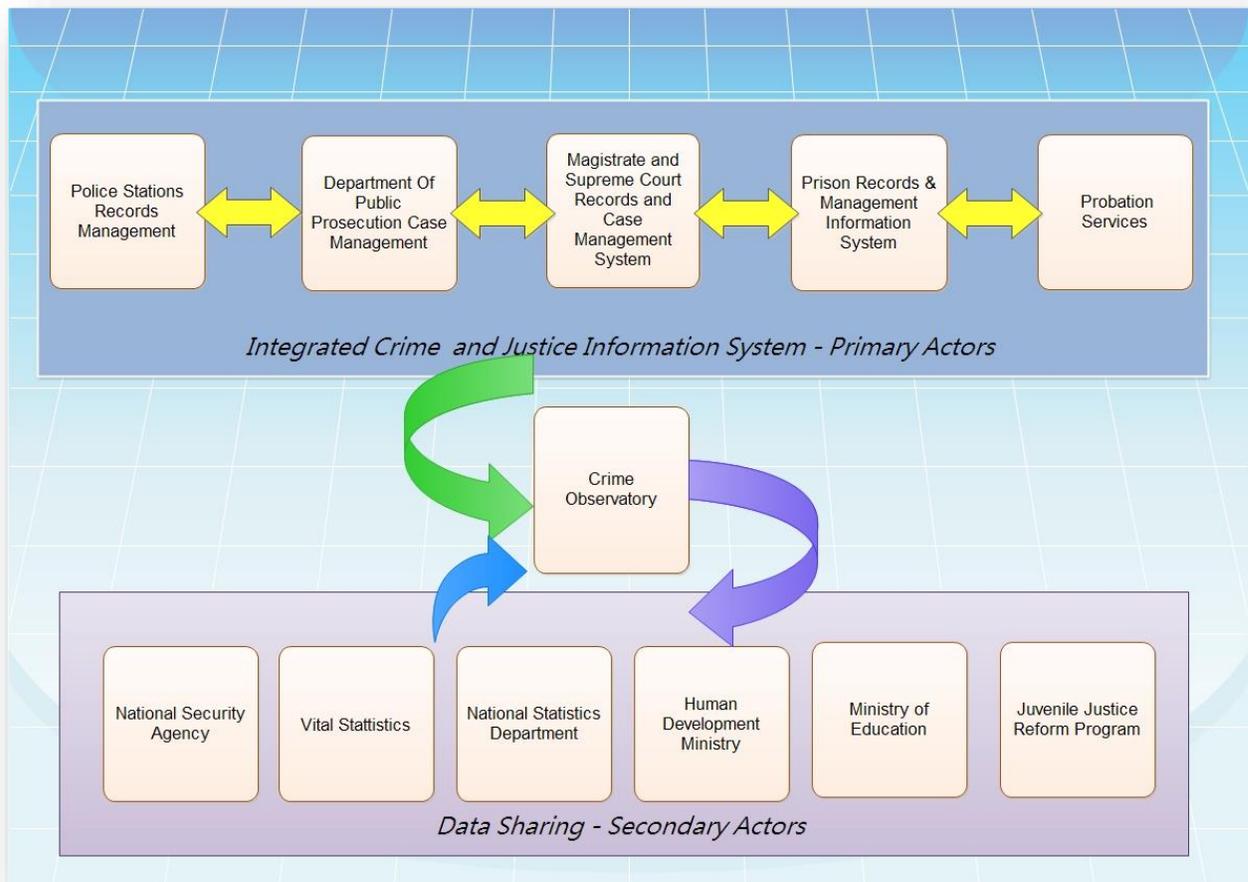
Police Records Management Information System

This system should contain the following Modules:

1. Incident/Crime Report Module
2. Address Registry Module
3. Person Registry Module
4. Vehicle Registry Module
5. Property and Evidence Module
6. Crime and Charges Module
7. Warrants, Arrest and Booking Module
8. Jail Module
9. Firearm Registration Module
10. Traffic Accident Module
11. Registrant (Sex Offender, Deportees) Module

Incident/Crime Module

The Incident/Crime Report Module is the heart and soul of any law enforcement records management system. This module is designed to capture information found on a typical incident/crime reported to the Police. The modules should contain the tracking of the Incident/Crime report status as it is moving through the established workflow.

This Module should capture the following data:

- Incident Number or Case Number
- Address where incident/crime was reported – Connected to the Address Registry Module
- Address where incident/crime was said to occur – Connected to the Address Registry Module
- Date and Time when Incident/Crime was reported
- Date and Time when incident/crime was said to occur;
- Offenses (according to local laws)
- Offenses (standard regional formats)
- During what season of the year did the incident/crime occur
- Location Type (workplace, hotel) where the incident/crime was said to occur
- Crime Related Contributing Factors (Domestic Violence, Alcohol Related, School Related, Gang Related etc....)

- Modus of Operandi
- Persons Involved (connected to the Person Registry Module)
- Vehicle Involved (connected to the Vehicle Registry)
- Properties Involved (connected to the Property Registry Module)
- Firearms Involved (connected to the Firearms Registry Module
- Incident Narrative
- Synopsis
- Press Release

Address Registry Module

The Master Address Registry Module provides a central file for all address references used within the system.

The address registry will capture the following data:

- District and Geo-reference
- Parish and Geo-reference
- Town and Geo-reference
- Street and Geo-Reference
- Addresses and Geo-reference

Person Registry Module

Unlike most master indexes, the Master Name Index Module is a true Master reference for a person. This module provides you with the ability to capture basic identifying information about a subject. It also permits you to track a subject address and telephone number history and any alias names that the subject has been known to use. This module also utilizes a Known Offender concept where specific traits and characteristics about a subject can be maintained. You can also store multiple photos of the subject referenced by date.

The fields to be captured include:

- Name
- Date of Birth
- Driver's License
- Address
- Home, Work, Cell number and/or email
- Sex
- Race
- Height
- Weight
- Hair Color
- Eye Color
- Relationship to the incident/crime (victim, witness, suspect/perpetrator, reporting party)
- Occupation
- Religion

- Disabilities
- Level of Education
- Education Status

Vehicle Registry Module

The Vehicle Registry Module should provide all data about a vehicle and its relationship to any type of incident/crime.

The fields that will be captured in this section include:

- License Number
- District Tag Number
- Year of Vehicle
- Type of Vehicle
- Vin Number
- Make and Model
- Style and Color
- Registered Owner
- Vehicle Relationship to incident/crime (stolen, recovered, left at scene of crime, impounded, used in crime)

Property and Evidence Registry Module

The Property and Evidence Registry module should contain information related to items associated with an incident/crime and the status tracking of those items. The module should integrate also with the Firearm Registry, Evidence Registry and Drugs Registry.

The module should contain following sections

- Physical Properties
  - Item No
  - Description
  - Category
  - Value
  - Stolen?
  - Recovered?
  - Evidence?
  - Date
- Cash
  - Cash Amount
  - Currency
  - Stolen
  - Recovered
  - Evidence
  - Date
- Drugs
- Firearms

Drugs Registry Module

The Drugs Registry module should contain information related to drugs associated with an incident/crime and the status tracking of those items. The module should integrate also with the Evidence Registry.

- Drug Name
- Type
- Count
- Weight
- Value
- Seized?
- Evidence,
- Claimed?
- Found?
- Date

Firearm Module

The Firearm Module should be designed to record the registration of multiple firearms to a single person and to register firearms associated with an incident/crime.

In this module we capture basic name, address information on the subject registering the firearm. Names from this module are linked into the Person Registry Module.

Data to be captured:

- Firearm registration data
- Firearm associated to incident/crime.
- Firearm Characteristics

Arrest and Booking Module

The Arrest & Booking module should be the entry place for ALL arrests made and subjects held in custody. This module is used in conjunction with the jail module and the incident module in circumstances where subjects related to an incident are arrested. This module captures all the identifying information about a person, any associated vehicle and all the circumstances surrounding an arrest such as what agencies were involved, the charges being filed, charge dispositions, bail amounts, and personal property inventories. Booking photos can be captured directly from this module using a TWAIN compliant camera.

- All names are linked into the Person Registry Module
- Vehicles are linked into the Vehicle Registry Module
- Addresses are linked into the Address Registry Module.

Warrants Module

The Warrants Module should be designed to track various types of Arrest and Bench Warrants issued by the court for law enforcement service. This module tracks all the key court warrant document information as well as the name, address and description of the person for which the warrant has been issued. Persons entered into the warrants module are linked to the Person Registry Module.

Jail Module

The jail module should provide a comprehensive management console to track critical information about all the various activities associated with each person in custody. The jail module utilizes the Arrest and Booking module as the intake mechanism to add subjects to the in custody list.

Traffic Accident Module

The Traffic Accident Module captures and indexes the basic information found on a traffic accident form. This includes the basic data concerning when and where the accident occurred and what the weather, road and traffic conditions were at the time of the traffic accident. Additionally the accident module has the ability to capture an unlimited number of associated persons and vehicles. Both persons and vehicles are classified to indicate how they relate to the accident.

Registrant (Sex Offender, Deportees, Gangs) Module

The Registrant Module should contain a file of known Sex Offenders, Deportees and Gangs registrants.

Prison Information System

General Description

The broad functions of a prison is to keep a record of all inmates, administrative functions, visitors management, court case related functions, record of work allocation to prisoners, record prisoners personal belongings, hospital/dispensary management etc.

The proposed Prison Information System should be designed to streamline record keeping processes and systems with a single integrated management information system solution. The resulting information system should include software, hardware and processes designed to transform paper-based offender processes into digital processes. The system should also create workflow processes for efficiency and effectiveness. As a result, prison management should have access to more information through intelligence reports, trending data and dashboard reports to make evidenced based decisions based on real-time facts about inmates, the institution and staff.

Proposed Prison Information System Modules:

Inmate Admission, Release and Remission Module

This module should control the intake or re-entry of an inmate into the prison system and maintain a central criminal history of all inmates, including detailed demographics. It should also provide a detailed checklist of tools to manage inmate release on the sentence schedule or remission date.

Inmate Property Inventory Module

This module should maintain an inmate's property inventory including personal or state issued items and the status of disposed or returned property. The property inventory module should include photos of items attached to the inmate's record. When an inmate leaves a facility, the inventory is automatically updated to reflect the status of the property and a receipt is printed for the inmate. When the inmate arrives at the receiving location, the same electronic list should be available in the module for the receiving and updating process.

Inmate Population Tracking Module

This module should keep track of the physical location of inmates over time. This includes all external movements in and out of facilities. In addition, it should include internal movements within a facility (i.e., housing/bed assignments). The module should maintain inmate counts and identifies vacant beds. The module should also be used to collect case management notes. It should be able to produce numerous reports regarding the inmate population. Events in other modules that affect an inmate's placement, such as a custody level change should automatically trigger the creation of an alert to review the inmate.

Inmate Behavior Classification Module

The Inmate Behavior Classification module should generate and maintain the custody classification scores and actions for all inmates. Each factor should be automatically scored using inmate information already in the system such as offenses, disciplinary history, program participation, etc. The review and approval process for inmates should also be tracked in the module.

Inmate Jobs and Programs Module

This module should maintain data about all full time and part time assignments of an inmate to jobs and/or programs at a facility including selection criteria, time offered and capacity. The module should maintain waiting lists for jobs and programs and inmates on the waiting lists are prioritized based on inmate data and prison rules.

Inmate Medical Details Management Module

The Medical Details Management module should allow prison medical staff to enter and manage inmate medical information such as:

- Medical Appointments,
- Illness history
- Active and Historical Prescriptions,
- Order Date From-To,
- Drug Name,
- Doctor.

This module should also allow for the electronic entering of a medical pre-screening form. Medical notes should also be able to be electronically entered into an inmates' record. Permission rights should secure the medical module; only those staff who have medical clearance should have access ensuring privacy.

Inmate Security Threat Module

This module should maintains data regarding the enemy list of each offender. This data allows the production of "protect from" and "threat to" information. Records of conflicts with staff should also maintained by the module. The automated comparison of the inmate profile with the facility profile should identify and help to ameliorate potential inmate conflicts.

Inmate Visitation and Gate Tracking Module

This module should maintain information about each potential visitor and their visits starting at the prison gate. The initial potential visitor list is the list of relatives and associates collected during intake and additional proposed visitors are added and visitation tracked.

Inmate Grievance Tracking Module

This module should allow for the entering of detail content and tracking of inmate grievances through the process as defined and implemented. Each grievance should be acknowledged and each then assigned to a person or team of persons for review. After an appropriate level of investigation, the results should be documented in the record. The documentation should also be used to support a decision that is documented back to the inmate and staff members should then be notified as appropriate.

Inmate Cash Management Module

This module should maintain inmate cash accounts. This should include all transaction types including cash receipts, payroll receipts, canteen purchases, and other authorized inmate expenses.

Security Threat Group Module

This module should create and maintain information about gangs (street and prison), gang membership, gang details as well as photos, tattoos, incidents and intelligence gathering. The module should also include an objective scoring instrument and an incident log for tracking inmates and incidents that are gang related.

Incident Reporting and Tracking Module

This module should provides a fully automated incident reporting system to encompass any type of incident report regardless of the generating discipline, i.e. custody, classification, healthcare or community supervision.

Prison Staff Human Resources Management Module

The Prison Staff Human Resource module should coordinate the prison's personnel matters, including pay and leave administration, incentive awards, retirement, work-life programs, background investigations, adverse and disciplinary actions, and performance evaluations. This module should also allow for the scheduling of prison guards.

Prison Court Information Management Module

The Court Information Management module should include all information necessary to start or continue the legal process for a remanded or committed inmate including arrest information provided by the Police and the recording of the legal orders authorizing prison custody of an inmate such as remand and committal warrants, All necessary information entered can be made becomes available to the courts and becomes part of the inmate's court information record. It should also allow prison management to obtain information from the court history of the inmate and view any prior criminal activity.

Director of Public Prosecution Information Management System

General Description

The Prosecution Case Management system should be designed to allow prosecutors to efficiently compile, maintain and track information relating to defendants, crimes, criminal charges, court events, and witnesses. The system should allow prosecutors and support staff to electronically file court documents, access criminal histories, track evidence, provide discovery materials and perform a range of other tasks without having to rely on a physical case file.

Proposed Prosecutors' Information System Modules

Document Management and Generation Module

This module should leverage existing case information already entered to build out documents such as letters, motions, subpoenas and pleadings, standardizing how every document flows in and out of the system in a consistent format. The module should have the ability to generate subpoenas, witness documents, or victim letters on multiple cases without going into each individual case. This module should also allow users to generate all subpoenas for a specific docket setting.

Evidence Tracking Module

This module should allow case evidence to be entered and tracked either offsite or on a shelf in the evidence room. Evidence entered is automatically cataloged with options to include a photo or a link to a media file. Evidence can be checked in and out with all transactions recorded to complete the chain of custody.

Workflow Management Module

This module should allow prosecutors to:

- Generate a document,
- Set a court date, and,
- Send an email notification all with the entry of one workflow event.

Investigative Services Module

This module should allow prosecutors to request services from their investigators right from the case. Whether it's to interview a witness or transport evidence, investigators should be able to track their time performing the service and when the service was completed.

Electronic Docket Module

This module should be designed to update a docket with upcoming events without having to search for each case individually, thereby lessening the need for files and reducing manual data entry to update cases coming back from court.

Courtroom Calendar management Module

This module should allow prosecutors to take in information in real time as it happens in the Courtroom using laptops, tablets and other connected devices. By entering information in real time in the Courtroom as it happens, work doesn't have to wait on a file to snake its way back to the office. Staff can begin to work on tasks immediately as the events happen in Court. From generating judgments plea agreements and subpoenas to notifying victims and preparing restitution orders; all can be done as they occur and as they are needed for Court.

Electronic Court Filing Module

This module should include a built-in court interface to electronically file cases with the court. This module will allow prosecutors, with the click of a button, to easily submit cases and documents electronically including the import of court dates and minutes.

Reports Module

This module should be able to generate real time analytics about prosecutors and staff time management and workloads, financial and diversion programs, and real time community-based crime statistics.

Judicial Management Information System

General Description

The electronic judicial information management system should allow for court documents to be filed, served and extracted electronically thereby increasing efficiency and effectiveness. It should also facilitate easy and convenient submission of court documents and online access to active case files through electronic filing. The system should be able to accept and submit agreed upon information with other agencies such as the Police, the Office of the Director of Public Prosecution and the Prison and Probation Services.

Judicial Information System Modules

Case Management Module

This module should be able to manage the case life cycle, from initiation and tracking, to post-judgment activities. Cases and work items should be able to be monitored and automatically routed to the designated judicial users based on progress. Electronic tracking should enable judicial users to proactively track cases by critical milestones and system alerts. Content management should also be an integral part of this module. It should provide the capability to electronically store and manage case documents and contain anti-tampering features designed to ensure document authenticity.

Hearing Management Module

The Hearing Management Module should provide a reliable and convenient way for judicial users to schedule hearings. It should contain a calendaring system that can be used for various court division scenarios, such as civil, criminal and family. It should also offer greater scheduling flexibility through the incorporation of individual and group views and it should feature an automated scheduling function that is designed to simplify the scheduling process by checking the availability of resources such as court rooms and judges' quota before making optimal recommendations.

Performance Monitoring Module

A backlog of judicial cases is a common phenomenon that plagues judiciaries in the Caribbean and around the world. This module should be designed with built-in business intelligence capabilities coupled with pre-defined Key Performance Indicator (KPI) templates to provide performance measurement for various levels such as the entire Judiciary, jurisdiction, individual courts or division, etc. Performance presented through the dashboard interface should allow judiciary management to easily identify and address bottlenecks.

eServices Delivery Module

This module should contain legal community-centric e-Services portal to enhance interaction with other members of the legal community, other law enforcement agencies and secondary actors who may require and may be able to provide certain information to the judiciary. The module's portal should be able to provide access to:

- Electronic Filing – Online filing of court documents with the Judiciary
- Electronic Extract – Online request to extract official records from the Courts
- Electronic Service of Documents – Online serving and sharing of documents with other lawyers/parties
- e-Notary – Authenticate digital and digitized documents for online safely.

Practice and Office Management Module

This module should contain e-Tools for judicial officers and staff such as:

- Online Case Management – An online case repository that can be integrated with eFiling services, enabling seamless filing of case documents with the Courts;
- eCalendar – An online calendaring system for judicial officers to synchronize their schedules with the Judiciary's hearing system;
- Billing/Accounting – where fees incurred during the course of interaction with the Courts can be consolidated in the case file;
- Reporting – where standardized reports can be generated in real time to provide judicial officers and others with information on cases, usage and billing/fee payment;

Legal Research Repository Module

The Legal Research Module Repository Module should be designed to be the central repository of legal information as the place where the judicial information system consolidates all legal information, such as legislation, statues and past cases from both local and international resources into a single repository. Leveraging on sophisticated index and search technology, it should enable judicial officers to identify and retrieve the necessary information to support legal decisions, to find primary and secondary sources of laws, to search for legal references and materials for supporting information, and to conduct due diligence searches. Judicial officers can also tailor the final deliverables to their precise requirements, with various ways to save, filter and view results.

Juvenile Probation Management Information System

General Description

The proposed Juvenile Probation Management Information System should be an integrated case management module that will provide comprehensive case information about juvenile offenders and the services they receive from juvenile justice agencies in the country. It should assist agencies and providers in managing individual youths' cases and in tracking youth through the system. The module should also aid in planning, developing, and evaluating services designed to reduce crime; and it should recognizes and support other law enforcement and social services partner agencies' common information needs.

Proposed Juvenile Probation Management Information System Modules
The proposed Juvenile Probation Management Information System should contain the following modules:

Juvenile Offender Demographic Module

This module should describe country-specific demographic analytics describing offenses committed by juveniles and the characteristics of the juveniles committing those offenses for the reporting year. It should also information on the current medical status and medical history of juveniles.

Juvenile Recidivism Module

This module should be able to analyze data on recidivism rates of youth offenders. Tracking recidivism supports the measures the extent to which agency services have been able to protect the public. In addition, reporting the recidivism measure reflects the agency's values of excellence in public service, openness, and accountability to the public.

Juvenile Detention Module

The module should be able to provide biannual or annual juvenile detention information including the following information:

- **Detention Admissions Reasons by Demographics** -- a unique count of admissions to a detention facility during the year, by the reason the youth was admitted to the facility and demographic characteristic (gender, age, and race/ethnicity) of the youth being admitted.
- **Detention Length of Stay by Demographics** -- for each detention release during the year, the length of time spent in the facility (length of stay) by demographic characteristic (gender, age, and race/ethnicity) of the youth. (The admission may have occurred prior to the reporting year.

- **Detention Length of Stay by Admission Reason --** For each detention release during the year, the number of days the youth spent in the facility (length of stay) by the reason the youth was admitted to the facility. (Note: The associated "admission" may have occurred in a prior reporting year.)

Juvenile Disposition Module

Disposition is a phase of delinquency proceeding similar to "sentencing" phase of adult trial. The judge must consider alternative, innovative, and individualized sentences rather than imposing standard sentences. The judge (1) considers evidence about the juvenile's needs, available resources, and other relevant factors and (2) designs a plan to meet the juvenile's needs and the interests of the state.

The module should be able to produce country-specific information of dispositions assigned during the reporting year and the characteristics of the juveniles receiving the dispositions. Dispositions should grouped into reporting categories consistent with national reporting categories. Sub-totals and grand totals are provided for each category. Each statistic should be broken down by the youth's gender, age at the time of disposition, and race/ethnicity.

Juvenile Programs and Services Module

The Programs and Services module should contain juvenile data and information regarding the number of juveniles receiving various types of services and the completion status for service episodes closed during the reporting year. It should be able to generate reports includes all services and interventions tracked by probation agencies and all state Basic and Diversion funded treatment programs provided by juvenile probation agencies.

Juvenile Restitution Module

The Juvenile Restitution Module should include data and information describing the number and status of Restitution conditions closed during the year. It should be able to generate reports that count the number of juveniles along with the amounts of restitution ordered and collected.

Juvenile Community Service Module

The Juvenile Community Service module should include data and information describing the number and status of juvenile community service conditions closed during the year. It should be able to generate reports that count the number of juveniles along with the amounts of community service ordered and completed.

General Features of the Proposed Crime Information System

Web Based Platform

It is recommended that the proposed crime information system should be web-based. A web-based application is any application that uses a website as the interface (the 'front-end'). Users access the application from any computer connected to the Internet using a standard browser, instead of using an application that has been installed on their local computer. Almost any desktop software can be developed as a web-based application. Unlike traditional applications, web based systems are accessible anytime, anywhere, via a PC with an Internet connection, putting the user in charge of where and when they access the application. Extra layer of security can be achieved by using Virtual Private Network (VPN) configuration to access the application from remote sites.

Central Repository

It is recommended that the proposed crime information system should contain a single database to act as a repository for all data, thus eliminating data redundancy and duplication. It should also preserve data integrity and provide adequate security for all data. The database should have the capabilities to accept different types of data formats such as: input fields, GIS maps, attachments and pictures.

Centralized Administration

The system should offers a comprehensive menu of administrative options for managing or administrating the entire system, including the maintenance of users and roles, configuration and setting the operational parameters.

Multi-environment Architecture

The architecture of the proposed crime information system supports the deployment of the product in multiple sites simultaneously. Applying database replication technology keeps all sites working independently but at the same time synchronized for sharing information based on security policies in place.

In addition, in order to facilitate data communications among domestic and international law enforcement and regulatory agencies, it is recommended that the proposed crime information system be adaptable to build, maintain and publish special lists (watch lists, most wanted, travel restrictions, etc.,) on suspects. Those lists can be released for publishing on designated Web sites, or can be provided upon request through Web Services. It is also recommended that the proposed system use XML (the universal data format for publishing and exchanging structured documents on the Internet) for information exchange.

Open Source Platform

It is recommended that the Linux open source be utilized for the proposed crime information system. Linux is an operating system that was designed to provide users a free or very low-cost operating system comparable to traditional and usually more expensive operating systems. Linux has a reputation as a very efficient and fast-performing system. The advantages of using Linux as an operating system are:

- **Easy to install applications**. Installing new programs in Linux is easier than in Windows. You don't need to accept agreements because it is all open source so there is no need to click "Next" twenty times before the program is installed.
- **Secure**. Security is not just an enhancement like in Windows. It is a pilar of the Linux Core which makes it hard for virus creators or for hackers. Linux can be used without an antivirus program and without being ever annoyed by a virus.
- **Easy to change options**. Linux comes with a control panel but also comes with a menu next to the Applications menu where one can simply select the thing you want to change, be it the desktop background or the network settings. Everything on the windows that appear is simple and there are just the options needed so it is easy to change the options.

Web Browser Independent

The proposed crime information system should have cross platform compatibility. Most web-based applications are more compatible in different platforms than traditional installed software; hence, this is one of the reasons for the recommendation that the proposed crime information system be web based. The minimum requirement would be a web browser (Internet Explorer, Firefox, Netscape etc.) and the use of an operating system such as the one recommended (Linux) to run the web applications.

Strong Search Capabilities

Using the full-text search capabilities, the 'General Search' service provides an efficient tool for inquiring about information stored in case files. Before the user receives the query answer, all matching results the software finds are filtered according to the security settings of each individual case file.

Security & Auditing

The system should employ multiple security layers to eliminate unauthorized access to any part of the system itself or information held within it. Controlling access within the system is achieved by the assignment of different roles in the case investigation processes to different individuals or groups.

The assigning of a role entitles the user to access parts of the system or information within the system associated with that role. For example, a data entry clerk may have access only to that part of the system that allows the input of new data, whereas the manager of an investigation team would have access to all information associated with cases held by his or her team.

The system should track and log all activities carried out within the system. This is done through the audit trail using timestamps and user credentials and recording the names of individuals who have accessed any part of the system or changed any information on any case, including the time the changes were made.

This feature ensures that comprehensive audit trails are available to system administrators and management at all times. Furthermore, and prior to saving any change to any existing record, an image of the older version of the data is captured. This allows an immediate auditing and comparison between records before and after changes.

Workflow Management

The system should define, manage and drive the flow of the case life cycle according to the pre-determined standard operating procedures of the agency. It should also manages tasking and notification services. In other words, the system itself guides the user through whatever process they are performing according to a pre-set series of tasks and schedules. Because the activities associated with different tasks vary from one operation to another and from one agency to another, the system workflow should be completely flexible, allowing it to be fully configurable to comply with local standard operating procedures and policies for performing intelligence, investigation or prosecution operations. It can, however, be overridden when users are faced with situations that do not fit the standard workflow.

Data Integration

- o Web Services
- o Download/upload of excel or CSV format files.

Electronic Case File

The proposed crime information system should contain an electronic case file (ECF) module capable of capturing, storing, querying and retrieving information relating to various objects (individual's records, documents, exhibits, events, photo albums, etc.). The collection of object types should be customized according to the process requirements of the cycle: intelligence, investigation or prosecution. Any object in the ECF should be able to be linked to other objects within the same case file. Such links should enable the possibility of visual presentation (diagramming/charting) of Electronic Case File objects.

Message Board

The proposed crime information system should contain a Message Board to allow users to receive alerts when an action is taken and that action has progressed through the case cycle workflow, eliminating the need for a manual paper chase and follow up. This speeds up the entire case management process. Notifications and alerts should be able to be sent to other users (Case Manager, Case Officers, etc.) by email and directly to the Message Board in the crime information

system portal to ensure that cases are followed through quickly and efficiently. Case conclusions are also automatically reported to management with links to the case files.

Reporting Capability

It is recommended that the proposed crime information system offer a very flexible yet robust reporting capability. The reporting module should offer a rich list of reports grouped by operational requirements (investigative purposes, management, statistics, etc.) Each report should have two presentations: a data-oriented form that enables users to group, reorder and drill-down in the result set as required; and formal forms for printing. The graphic representation of data should also assist analysts/users to further analyze and assess the trends and patterns in investigative processes.

Crime Mapping

It is recommended that the proposed crime information system contain a crime mapping feature. Clarifying where different types of crime occur is one of the many important functions of crime analysis. The proposed crime mapping feature should facilitate the following:

- Visual and statistical analyses of the spatial nature of crime and other types of events;
- Linking unlike data sources together based on common geographic variables (e.g., linking census information, school information, and crime data for a common area);
- It should also provide maps that help to communicate analysis results.

Proposed Non Functional Requirements

The non-functional requirements for the proposed crime information system specify the information attributes such as user-friendliness, and performance of the system that are critical for the increased user-acceptance of the system. The non-functional requirements are:

1. The proposed crime information system should provide detailed context-sensitive help material for all the possible actions and scenarios on all user interfaces in the application;
2. The proposed crime information system should provide an interface for the user to log any defects or enhancement requests on the application and track thereafter;
3. An audit trail is a record of actions taken by either the user or the system triggers. This includes actions taken by users or Administrators, or actions initiated automatically by the system as a result of system parameters. The proposed crime information system must be able to keep an unalterable audit trail capable of automatically capturing and storing information about:
   – All the actions (create/read/update/delete) that are taken upon the critical entities (case, suspect, property,…) in the system;
   – The user initiating and or carrying out the action;
   – The date and time of the event.
   – Administrative parameters;
4. The proposed crime information system must be able to capture and store violations (i.e. A user's attempts to access a case to which he is denied access), and (where violations can validly be attempted) attempted violations, of access control mechanisms.
5. The proposed crime information system must allow the user to limit access to cases specified by users or user groups.
6. The proposed crime information system should provide for role-based control for the functionality within the system.
7. The proposed crime information system must allow a user to be a member of more than one group.
8. The System must allow only admin-users to set up user profiles and allocate Users to groups.
9. The proposed crime information system must allow changes to security attributes for groups or users (such as access rights, security level, privileges, password allocation and management) to be made only by system administrator.
10. If a user performs a quick or advanced search, the proposed crime information system must never include in the search result list any record which the user does not have the right to access.
11. The proposed crime information system must provide End User and Administrator functions which are easy to use and intuitive throughout;
12. Vertical scrolling should be minimized. This may be done by placing important information at the top and providing links to information that is further down the page. Horizontal scrolling should be avoided wherever possible.

13. Acceptable opening / download times: Application pages should be designed and implemented so that there are acceptable opening times and download times for the expected range of technical contexts of use (e.g. bandwidth between the application and the user).
14. Using colour: Colour should be used with care, taking into account human capabilities and restrictions in perceiving colour, and not as the only means of conveying information. Color should never be the only means of coding. Some users may have difficulties in perceiving certain colors or color combinations (color-blindness).
15. Linking back to the home page or landmark pages: Each page should contain a link leading to the home page of the application or to a landmark page that is easy to recognize for the user.
16. Providing a site map: A separate navigation overview such as a site map should be provided for application showing the structure of the site in an overview form.
17. The System shall be saleable and must not have any features which would preclude use in small or large police stations, with varying numbers of cases handled.

Conclusion

An integrated crime information system, at its core, is any computer network system or architecture that allows law enforcement and justice practitioners and agencies to electronically access and share information between systems and/or across jurisdictional lines. Integrated crime Information sharing generally refers to the ability to access and share critical information at key decision points throughout the law enforcement and justice enterprise. Integration also includes sharing information with traditionally non-law enforcement and justice agencies. These can include other governmental agencies, health and human services organizations, treatment service providers, schools and educational institutions, licensing authorities, etc. or what is referred to in this Report as Secondary Actors. Law enforcement and justice information is also shared with the public and the media, which is increasingly demanding greater and more varied access to an expanding array of government information and services in Caribbean countries. Moreover, this information sharing and access extends across agencies and branches of government at the local level (that is, horizontal integration), as well as interested parties in the region such as Caricom Statistics (that is, vertical integration).

It is very important to note that building integrated crime and justice information systems does not mean that all information between agencies is shared, without regard to the event, the agencies involved or the sensitivity of the information available. Rather, agencies need to share critical information at key decision points throughout the law enforcement and justice process. This is the rationale for proposing independent systems that share necessary data but are maintained autonomously by their respective agencies.

Proposed Hardware/Software Specifications

System Software Architecture

The proposed crime and justice information system should be built using the Linux, Apache, MySQL and PHP (LAMP) architecture. LAMP is an archetypal model of web service solution stacks, named as an acronym of the names of its original four open-source components: the Linux operating system, the Apache HTTP Server, the MySQL relational database management system (RDBMS), and the PHP programming language. As a solution stack, LAMP is suitable for building enterprise level web based applications.

Operating System

The system should be built using the CentOS operating system. CentOS (Community Enterprise Operating System) is a Linux distribution operating system that attempts to provide a free, enterprise-class, community-supported computing platform functionally compatible with its upstream source, Red Hat Enterprise Linux.

Web/Application Server Software

The system should be built using the Apache HTTP Web Server. The Apache HTTP Server, colloquially called Apache, is a free and open-source cross-platform web server software, released under the terms of Apache License 2.0. Apache was developed and is maintained by an open community of developers under the auspices of the Apache Software Foundation.

Relational Database Engine Software

The system should be built using MYSQL RDBMS. The MySQL is an open source relational database management system (RDBMS) based on Structured Query Language (SQL). MySQL runs on virtually all platforms, including Linux, UNIX, and Windows.

MySQL is an open-source relational database management system (RDBMS). It is the world's second most widely used RDBMS, and the most widely used open-source client–server model RDBMS.

Network Architecture

Web/Database Server

The physical configuration of the system should be a multitier architecture. In software engineering, multitier **architecture** (often referred to as **n-tier architecture**) or multilayered **architecture** is a client–server **architecture** in which presentation, application processing, and data management functions are physically separated.

The physical configuration of the system should contain two virtual servers. One of the servers should be configured as an Apache Web Server to contain the PHP web application and the other server will contain the MySQL database management system (DBMS). The database server should be separated from the rest of the environment to eliminate the resource contention between the application and the database, and to increase security by removing the database from the DMZ, or public internet.

The communication between the user's computer and the web server should be via https protocol. **HTTPS** (also called **HTTP over Transport Layer Security** (**TLS**), **HTTP over SSL**, and **HTTP Secure**) is a communications protocol for secure communication over a computer network which is widely used on the Internet. HTTPS consists of communication over Hypertext Transfer Protocol (HTTP) within a connection encrypted by Transport Layer Security, or its predecessor, Secure Sockets Layer. The main motivation for HTTPS is authentication of the visited website or web application and protection of the privacy and integrity of the exchanged data.
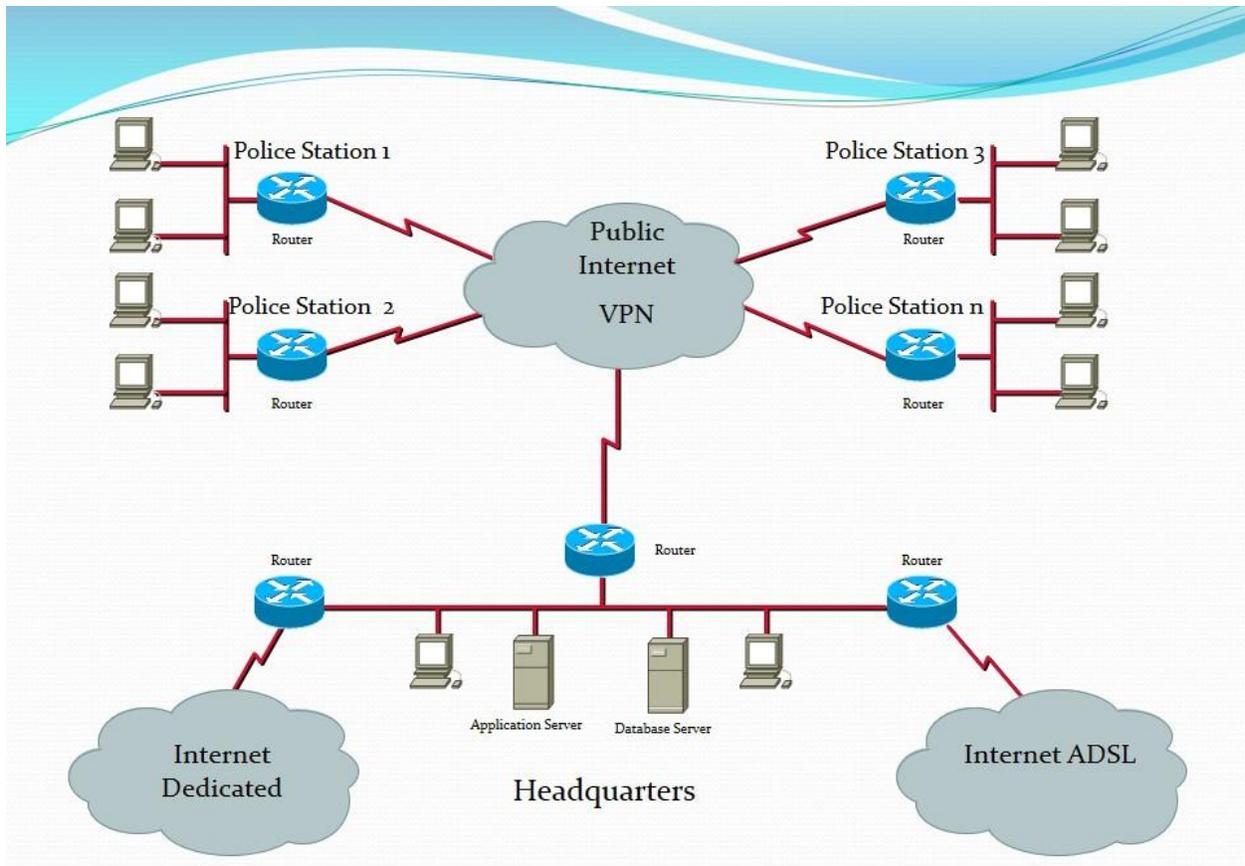
Figure 1: System Physical Configuration

Server Hard Drive Storage and System Memory

The recommended storage device is RAID-10. RAID is an acronym for Redundant Array of Independent (or Inexpensive) Disks. It is a method of storing information on multiple hard disks for greater protection and/or performance. There are several different storage methods, named levels, numbered from 0 to 9.

Some levels can be combined to produce a two-digit RAID level. RAID 10, then, is a combination of levels 1 (mirroring) and 0 (striping), which is why it is also sometimes identified as RAID 1 + 0. Mirroring is writing data to two or more hard drive disks (HDDs) at the same time – if one disk fails, the mirror image preserves the data from the failed disk. Striping breaks data into "chunks" that are written in succession to different disks. This improves performance because the computer can access data from more than one disk simultaneously. Striping does not, however, provide redundancy to protect information, which is why it is designated 0.

To implement RAID 10, at least four physical hard drives as well as a disk controller that supports RAID is needed.

RAID 10

```
                    RAID 0
        ┌─────────────────────────────┐
     RAID 1                          RAID 1
   ┌──────┐                        ┌──────┐
```

A1	A1	A2	A2
A3	A3	A4	A4
A5	A5	A6	A6
A7	A7	A8	A8
Disk 1	Disk 2	Disk 3	Disk 4
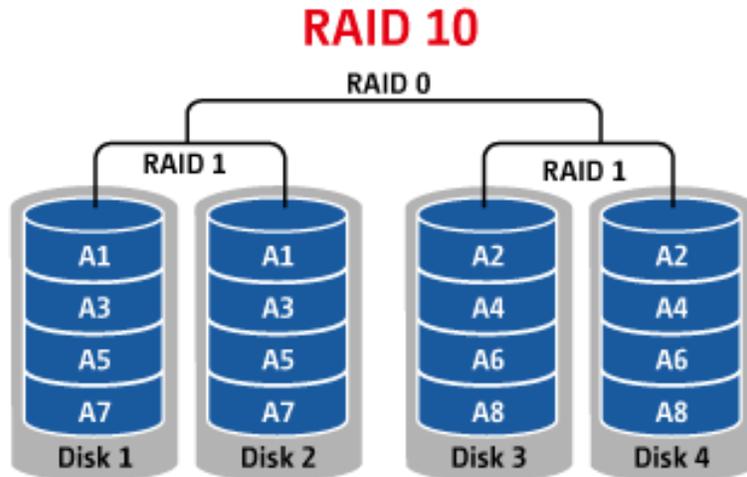
It is recommended that each hard drive have an initial capacity of 4TB oh hard drive space.

The two virtual servers should have a dual core processor at a minimum speed of 2.4 GHz with 16GB of RAM Memory each.

Server Minimum Specifications

Option	Selection	SKU / Product Code	Qty
Base	PowerEdge R740 Server	[210-AKXJ] / R740	1
Trusted Platform Module	No Trusted Platform Module	[461-AADZ] / NTPM	1
Chassis	Chassis with up to 8 x 2.5" SAS/SATA Hard Drives for 1CPU Configuration	[321-BCSJ] / 5102089	1
Processor	Intel® Xeon® Gold 5115 2.4G, 10C/20T, 10.4GT/s 2UPI, 14M Cache, Turbo, HT (85W) DDR4-2400	[338-BLUU] / 5103406	1
Additional Processor	No Additional Processor	[374-BBBX] / 1P	1
Processor Thermal Configuration	1 Standard Heatsink for 125W or less CPU	[370-ADPF][412-AAIQ] / 5102438	1
Memory DIMM Type and Speed	2666MT/s RDIMMs	[370-ADNU] / 5099278	1
Memory Configuration Type	Performance Optimized	[370-AAIP] / PEOPT	1
Memory	16GB RDIMM, 2666MT/s, Dual Rank	[370-ADND] / 5098888	2
RAID	C5, RAID 10 for HDDs or SSDs in pairs (Matching Type/Speed/Capacity)	[780-BCDQ] / 5098874	1
RAID Controller	PERC H740P RAID Controller, 8Gb NV Cache, Minicard	[405-AANQ] / 5102516	1
Hard Drive	960GB SSD SAS Read Intensive 12Gbps 512n 2.5in Hot-plug Drive, PX05SR,1 DWPD,1752 TBW	[400-ASEZ] / 5103679	6

Boot Optimized Storage Cards	None		1
Operating System	No Operating System	[619-ABVR] / NOOS	1
OS Media Kits	No Media Required	[421-5736] / NOMED	1
Embedded Systems Management	iDRAC9,Enterprise	[385-BBKT] / 5099556	1
Group Manager	iDRAC Group Manager, Disabled	[379-BCQY] / 5100926	1
Password	Unique Random Password	[379-BCSF] / 5101343	1
PCIe Riser	Riser Config 0, No Riser, 0 Slots	[374-BBOW] / 5101686	1
Network Daughter Card	Broadcom 57416 2 Port 10Gb Base-T + 5720 2 Port 1Gb Base-T, rNDC	[540-BBUK] / 5100009	1
IDSDM and VFlash Card Reader	VFlash Card Reader with 16GB Vflash SD card	[385-BBLR] / 5102684	1
Internal SD Module	None		1
Internal Optical Drive	No Internal Optical Drive	[429-ABBJ] / NODVD1	1
Fans	4 Standard Fans for R740/740XD	[384-BBQB] / 5100150	1
Power Supply	Dual, Hot-plug, Redundant Power Supply (1+1), 750W	[450-ADWS] / 750R	1
Power Cords	NEMA 5-15P to C13 Wall Plug, 125 Volt, 15 AMP, 10 Feet (3m), Power Cord, North America	[450-AALV] / 125V10	2
Bezel	No Bezel	[350-BBBW][350-BBOOKING] / INBEZEL	1
Quick Sync	No Quick Sync	[350-BBJV] / 5101166	1
BIOS and Advanced System Configuration Settings	Performance BIOS Setting	[384-BBBL] / HPBIOS	1
Advanced System Configurations	UEFI BIOS Boot Mode with GPT Partition	[800-BBDM] / UEFIB	1
Rack Rails	ReadyRails™ Sliding Rails With Cable Management Arm	[770-BBBR] / RRCMA	1
System Documentation	No Systems Documentation, No OpenManage DVD Kit	[631-AACK] / NODOCS	1
Virtualization Software and Support	vSphere Standard 1CPU License, 5Y Subscription w/Dwngrd Rights	[634-BHBY] / VSPH5Y	1
Enabled Virtualization	None		1
Microsoft SQL Server	None		1
Services			
Web Tracking	None		1
GSA Purchase Order	None		1
Warranty	3 Years ProSupport with Next Business Day Onsite Service	[813-9119][813-9126][813-9138][989-3439] / PN3	1
Deployment Services	No Installation	[900-9997] / NOINSTL	1

Remote Consulting Services	Declined Remote Consulting Service	[973-2426] / NORCS	1
Keep Your Hard Drive	None		1

Software Development Tools

PHP - Hypertext Preprocessor scripting language

The proposed PSIP/MIS main programming language is PHP. The PHP is a widely-used open source general-purpose scripting language that is especially suited for web development and can be embedded into Hypertext Mark-up Language (HTML). PHP is used by 82.7% of all the websites and web applications.

Bootstrap – front end web framework

Bootstrap is a free and open-source front-end web framework for designing websites and web applications. It contains HTML- and Cascading Style Sheets (CSS) - based design templates for typography, forms, buttons, and navigation and other interface components, as well as optional JavaScript extensions. Unlike many web frameworks, it concerns itself with front-end development only.

JavaScript - lightweight, interpreted, programming language

JavaScript is a programming language commonly used in web development. JavaScript is a client-side scripting language, which means the source code is processed by the client's web browser rather than on the web server. This means JavaScript functions can run after a webpage has loaded without communicating with the server.

HTML – Markup Language

Hypertext Markup Language (HTML) is the standard markup language for creating web pages and web applications. With Cascading Style Sheets (CSS) and JavaScript it forms a triad of cornerstone technologies for the World Wide Web. Web browsers receive HTML documents from a webserver or from local storage and render them into multimedia web pages. HTML describes the structure of a web page semantically and originally included cues for the appearance of the document.

Google MAPS - web mapping service

Google Maps is a Web-based service that provides detailed information about geographical regions and sites around the world. In addition to conventional road **maps**, **Google Maps** offers aerial and satellite views of many places. In some cities, **Google Maps** offers street views comprising photographs taken from vehicles.

FPDF Library – PHP PDF Class

FPDF is a PHP class which allows to generate PDF files with pure PHP. FPDF requires no extension (except Zlib to enable compression and GD for GIF support). The latest version requires at least PHP 5.1.

Software Infrastructure Requirements		
Software	**Purpose**	**Version**
Linux - CentOS	Operating System	6.9
Apache	Application Server/Web Server	2.2+
PHP	Server-side scripting Programming Language	5.4
MySQL	Relational Database; Storage Engine	5.5
Bootstrap	HTML– CSS Framework	3.0
HTML		N/A
JavaScript		N/A
FPDF PHP Class	Generate PDF documents	1.81

Figure 1: Software Architecture and Development Languages

Appendix A

List of Persons Interviewed

Name	Title	Organization	Country
Mr. Osmond Petty	Permanent Secretary	Ministry of National Security	St. Kitts/Nevis
Hon. Vincent Byron	Attorney General	Ministry of the Attorney General, Justice, Legal Affairs, and Communication	St. Kitts/Nevis
Sgt. Winston Thompson	Head, Data Unit	Royal St. Kitts Police Force	St. Kitts/Nevis
Mr. Asheila Connor	Assistant Superintendent of Prisons	Her Majesty's Prison, St. Kitts	St. Kitts/Nevis
Assistant Commissioner Hilroy Brandy	Assistant Commissioner	Royal St. Kitts Police Force	St. Kitts/Nevis
Mr. Carlton Phipps	Director	Central Statistics Office	St. Kitts/Nevis
Adele Williams	Director	New Horizons Rehabilitation Facility	St. Kitts/Nevis
Magistrate Josephine Webbe	Magistrate	Magistrate's Court	St. Kitts/Nevis
Mr. Courtney Samuels	Head, Policy Research Unit	Ministry of Public Security	Guyana
Ms. Nicole Cumberbatch	Statistician, Policy Research Unit	Ministry of Public Security	Guyana
Shabnam Mallick	Deputy Resident Representative	UNDP	Guyana
Sidney James	Assistant Commissioner, Special Organized Crime Unit	Guyana Police Force	Guyana
Towna Wilson	Statistician and IT Officer	Guyana Prison Department	Guyana
Clement Henry	Project Manager	Citizen Security Strengthening Program	Guyana
Osyln Crawford Smith	Assistant Chief Probation Officer	Ministry of Social Protection	Guyana
Parsuran Persaud	IT Administrator	Director of Public Prosecution	Guyana
Ann Mcclenan	Chief Magistrate	Magistrate's Court	Guyana

Name	Title	Organization	Country
Kim Kyte	Solicitor General	Attorney General's Ministry	Guyana
Lance Hinds	CEO	Brain Street	Guyana
Floyd Levi	Chairman	National Data Management Authority	Guyana
Agosta Degazon	Permanent Secretary	Ministry of Home Affairs and National Security	St. Lucia
Yolanda Jules Lewis	Director	Probation and Parole Services	St. Lucia
Lyndel Archibald	Project Coordinator	OECS Juvenile Justice Reform Program	St. Lucia
Edwin St. Catherine	Director of Statistics	Ministry of Finance	St. Lucia
Dr. Cadelia Ambrose	Permanent Secretary	Department of Justice	St. Lucia
Severin Moncherry	Commissioner of Police	Royal St. Lucia Police Force	St. Lucia
Gregory Girard	Executive Administrator	Eastern Caribbean Supreme Court	St. Lucia
Verne Garde	Director	Bordelais Prison Facility	St. Lucia