



Dominica National Enterprise Network

Project Description

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Dominica National Enterprise Network (D-NEN) Project

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INTRODUCTION

The Government of Dominica is in the process of developing comprehensive economic and social development strategies intended to re-vitalize and diversify the national economy, resolve unemployment issues and establish a position of international competitiveness by increasing productivity in the private and public sectors.

The Dominica National Enterprise Network (hereinafter D-NEN) Project is considered part of these development strategies; and provides focus upon Information and Communications Technology (hereinafter ICT) as an important engine for economic renewal and development.

PROJECT RATIONALE

Dominica is a small, open economy, entirely dependent on international trade. The small size of the economy and the traditional reliance on exports of few primary commodities has severely constrained economic development. Past efforts to diversify the economy have not been fully successful. High rates of unemployment continue - particularly among the youth.

Globalization and the prospect of declining preferential treatment in traditional export markets require that Dominica diversify its exports and raise its international competitiveness.

Continuous growth in the tourism services sector, in recent years, indicates that Dominica may have an opportunity in the niche of eco-tourism; however, it is considered necessary to promote and develop other service sectors, particularly those that could provide higher wages and salaries. The ICT services sector is one of these.

Dominica has many attributes necessary to participate actively in the global information industry, including labor costs that are relatively low in comparison with the United States and other developed countries; linguistic, cultural and time zone affinities with the major markets in North America; and an open environment for private investment. The telecommunications system in Dominica is generally modern, reliable and can play a role in ICT-based economic development.

While there appears to be viable existing network infrastructure in place in Dominica, it has been deployed primarily to provide narrowband voice services. This network infrastructure will require significant enhancement to enable broadband¹ network services needed to support the types of uses envisioned for the future in Dominica; and, to provide cost effective access to this network infrastructure for anticipated users including the government.

Dominica's current business regulatory environment may not appropriately address the needs of ICT-based businesses in areas of data security, protection of privacy and recognition of electronic transactions and contracts. Any successful efforts in developing these types of businesses will require that these business regulatory issues be addressed.

¹ The term "broadband" is used throughout this document to mean 'having high capacity for information transfer' and does not imply the use of any particular signaling technology or communications protocol.

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Elements of this project are intended to address all of these issues and to ensure that full advantage is taken of those inherent advantages in place in Dominica today.

The vision of the Prime Minister and Government of the Commonwealth of Dominica is the integration of Advanced Information and Communications Technologies and Advanced Information Management Processes as core elements in the economic renewal and development strategy for the country. This forward looking vision includes: the issues of required infrastructure; the need for professional input and assistance to successfully initiate the processes involved; the need to coordinate future education and human resource development efforts to include required Information and Communications Technology (ICT) and Information Management (IM) skills; and the important role of leadership that the Prime Minister and Government must play now and that Dominica may be able to take in the future.

Time is short. The economy continues to deteriorate. New business candidates will continue to locate elsewhere until the economic development environment improves. This Information and Communications Technology Project should proceed without further delay.

PROJECT OBJECTIVES AND DELIVERABLES

The contemplated project is expected to involve costs of up to \$10.5 million (US). The project is designed to establish the strategic framework needed to: create a National Information and Communications Technologies Strategy; build-out the physical infrastructure; establish capabilities to support the deployment of private and public user networks; and, to encourage private sector business development that can rely upon advanced network services. This strategic framework will encompass the future economic, education and social development issues that are essential for successes in establishing and growing an ICT industry in Dominica. The principal deliverables of the project are:

- Network Demarcation Plan
- Broadband Infrastructure
- Procurement of required equipment and specialized training
- Ross University Access
- Government Information Network
- National information management system
- Advanced educational and human resource development
- Documented National Information and Communications Technology Strategy
- Positive economic development environment

These deliverables are further discussed in the following sections.

Network Demarcation Plan

The D-NEN Broadband Infrastructure to be deployed by this project will be largely independent of the networks of the existing telecommunications service providers. These service providers will be utilized wherever feasible to provide data connections between points-of-presence and to facilitate Internet access.

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Each of the points-of-presence, as discussed in the next section, represents a requirement to identify a line of demarcation between the responsibility of the service provider and the operation of the D-NEN local networks.

On the service provider side of the demarcation line, the service provider assumes responsibility for the information integrity as it is transported to its destination. The service provider will utilize technologies and management processes best suited to his business model to fulfill that responsibility. On the D-NEN side of the demarcation line, technologies and management processes will be chosen to maximize the user benefit while keeping costs within project budgets. There is not necessarily any similarity between the technologies and processes in use on either side of the demarcation line.

A demarcation plan will be developed which addresses both the technical issues of connections between D-NEN networks and Service Provider networks and administrative issues such as basic services to be provided, Service Level Agreements and Acceptable Use Policies. . The Demarcation Plan will be implemented through Service Agreements with the respective providers which will set out the types of telecommunications services to be provided, the technical interfaces to be provided, the conditions of service and the respective obligations of the parties to such agreements

Broadband Infrastructure

The major deliverable under this project is a Broadband Infrastructure to be financed through project funding and owned by the people of the Commonwealth of Dominica.

The D-NEN Broadband Infrastructure will initially be deployed to:

- Provide access where required to the networks of the existing service providers
- Provide Local Area Network (LAN) functionality for government departments and agencies, public education facilities throughout Dominica, linkage with Ross University and businesses included by the government in its economic development program.

There are three identifiable elements in the planned Broadband Infrastructure:

- Service points-of-presence to be located physically near existing service provider network facilities will establish physical connection between these networks and the Broadband Infrastructure. Equipment required establishing these points-of-presence will incorporate modern network engineering international standards and will employ a variety of Wide Area Network (WAN) technologies appropriate to the connection requirements.
- Client/user networks will be designed and deployed in response to user requirements within the aforementioned government offices, educational facilities and business premises and will employ state-of-the-art technologies.
- An Operation and Management framework for the Broadband Infrastructure will be developed. The framework will define the roles and responsibilities of the entity, which provides day-to-day management and operational support for the network equipment from user desktops to the demarcation point with service providers. The Project Contractor will provide Operation and Management services during the period of performance of the project.

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Basic geography, existing concentrations of potential network users, economic development opportunities and existing service provider capabilities are all factors which will guide the selection of initial locations of D-NEN points-of-presence.

All equipment deployed as part of D-NEN will have uninterruptible power supplies such that it will continue to operate for a reasonable interval despite failures or interruptions in the electricity supply.

A Broadband Infrastructure design will be produced which accommodates the immediate and future technology requirements of client networks and points-of-presence equipment. Basic infrastructure and initial client premises networks will be deployed early in the D-NEN project. The Project Contractor will provide Operation and Management services for the deployed infrastructure through the project period.

Procurement of Required Equipment and Specialized Training

A significant proportion of identified project funding is reserved for the procurement and implementation of state-of-the-art network equipment and systems that comprise the D-NEN Broadband Infrastructure. Appropriate vendor management practices will be established to ensure long term beneficial relationships are maintained with key vendors.

The D-NEN Broadband Infrastructure will become mission-critical to information systems throughout Dominica and will require the application of industry standard network management practices to maintain high standards of availability. Specialized training will be procured along with the equipment to enable Dominican personnel to manage the Broadband Infrastructure and maintain it in prime operating condition. The resulting technology transfer will have lasting benefit to Dominica.

Effective purchasing management processes and procedures, including acceptable “Industrial Benefits” considerations will be implemented. An overall procurement program will be defined and implemented for the required equipment and Dominican personnel will be trained to provide ongoing support and maintenance of D-NEN once deployment is complete.

Government Information Network

An effective information network infrastructure within the Government, should significantly improve effectiveness and efficiency in the delivery of government services. In addition, this implementation can be used as an effective ‘role-model’ or demonstration of ICT capabilities in Dominica and a very important validation of the commitment of the Prime Minister and the Government to ICT.

This information network infrastructure will ensure that every Government office has access to the national network and that human and technology resources are in place to facilitate the evolution of Government services as and when the opportunities arise. The information network will support conventional office automation and enterprise information sharing as well as specialty operational services like Police, Emergency Preparedness Services and Customs and Immigration.

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Every Government strives to contain the rising costs of services delivered to its constituents. The new network infrastructure offers an immediate opportunity to apply proven ICT systems and methods to Government management and delivery processes thereby improving overall efficiencies.

The Government can demonstrate leadership and commitment by becoming the first significant customer and user of the new network facilities. Over time, electronic service delivery opportunities will develop, enabling the Government to provide improved levels of administrative services to the people with materially reduced costs.

A Government-wide information network will be implemented by deploying workstations, LANs and network access technology in accordance with the Network Demarcation Plan. The entire system will be documented to facilitate training of support personnel and future network expansion and maintenance.

Medical Institutions

The Ross University School of Medicine is a major contributor to the economy of Dominica. As the senior educational institution in Dominica, the University has a well-developed internal ICT infrastructure and comprises a significant source of health-related information that would be useful to the people of Dominica. Usual practice would suggest that local medical practitioners and their patients might also benefit through access to such information.

The government should proactively seek out opportunities to use the Broadband IT Infrastructure in ways that will enable Ross University to use Web Based Distance Learning utilizing the latest Electronic Visualization Techniques to maintain and enhance its standing as world class institution that can attract larger numbers of quality students.

Other medical institutions such as the Princess Margaret Hospital, Doctors offices, Clinics, and Laboratories would be able to take advantage of this new technology to interact with Ross University and other medical institutions off shore in order to provide improved health care for the people of Dominica.

Discussions with Ross University officials will be undertaken to determine how D-NEN can assist them in meeting their business and educational goals.

Consultations with Public Health officials and with the medical community throughout Dominica will be held to determine how best to utilize the resources of the University for the benefit of the people of Dominica.

National Information Management System

Governments and private industry worldwide have invested heavily in establishing and updating Information Management (IM) systems.

At the core, these systems are intended to ensure the timely, accurate capture of relevant electronic information, cost effective storage of the information and the ability for users throughout the Government, to access and use the information effectively.

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With the advent of the Internet, governments and the private sector are once again revisiting IM systems and processes to enable appropriate access to electronic information by third parties.

A well-defined and implemented National Information Management System will place Dominica at a current standard in terms of providing access to important information for the people and businesses of Dominica and those outside who may be pursuing business opportunities on the island.

A comprehensive web presence will be designed and deployed, supported by state-of-the-art information storage and delivery technologies, to provide ready access to information for government departments and agencies, the citizens of Dominica and the World. Proven data security systems will be implemented to provide appropriate control over access to information.

Advanced Educational and Human Resource Development

The need for training human resources in Dominica is an immediate requirement and must continue on an indefinite basis.

In the immediate term professional training will be required to train the first round of users and support personnel. In the mid term specialized training will be required to develop certified instructors for future delivery of basic training. In the longer term education curriculum changes must be integrated through the elementary, secondary and post secondary education system to encompass ICT-related content.

The aforementioned ICT/IM strategies and the National Information and Communications Technologies Infrastructure must be integrated into the education system as quickly as possible. Prompt implementation of these education reforms coupled with the access to the Global Information Network will enable Dominica to leverage its attributes such as relatively low labor costs as well as linguistic, cultural and time zone affinities with North America to spawn a local Industry focused on providing cost effective Information Technology services to companies located primarily in North America, using a model successfully employed by such countries as India. This could also increase the opportunities for Companies to locate offices in Dominica.

Training facilities will be established, upgraded and maintained to standards established by major industry players such as Microsoft.

Certified instructors will be engaged under contract to deliver training at both basic and instructor levels. Where possible existing private sector players will be involved.

A comprehensive program including required facilities, and instructors will be designed in consultation with the Minister of Education to introduce and deploy (as broadly as feasible) computers and related material and equipment in schools. The education objectives for this program will cover a range from basic computer literacy as compulsory curriculum to more advanced vocational training in later grades.

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Opportunities will be identified and addressed to optimize scarce human and material resources through on-line instruction, on-line libraries and other facilities.

As a potential revenue generating or cost sharing initiative, in consultation with the Minister of Education, opportunities to provide similar on-line services to other OECS countries or businesses in the area will be identified and addressed.

Documented National Information and Communications Technology Strategy

A well-planned National ICT Strategy is necessary in order to ensure:

- The role of the Government of Dominica is established as a key stakeholder in the ICT industry within Dominica;
- A positive business environment, including relevant regulatory structures, is developed in order to attract future business opportunities and business operations to Dominica;
- The impacts of a developing ICT industry on the economic, educational and social structures within Dominica are fully understood and included in the future planning within these key areas;
- Current and future business communications issues are afforded due consideration in the general telecommunication regulatory process;
- The stated objectives for the ICT sector are consistent with the more broad development goals and strategies of the Government of Dominica as expressed in the 10 Year Development Plan recently announced by the Prime Minister.

A well documented National ICT Strategy will ensure that the commitment of the Government of Dominica to a thriving ICT industry are fully understood by: the people of Dominica; all current and future stakeholders in the ICT industry; and, other interested parties such as potential international participants in this industry. In addition, the leadership role of the Government as a key stakeholder in the ICT industry and the expectations of the Government in terms of contribution, by the ICT industry, to the economic future for Dominica will be clarified for all.

This project will see the creation, documentation and publication of a National Information and Communications Technology Strategy that will provide the framework for business, economic and social development within the ICT sector.

Positive Economic Development Environment

A fundamental premise in this project is that a positive economic development environment can be engendered in concert with an effective ICT/IM Strategy.

The only effective demonstration of success in achieving such an environment will be the successful launch of the first ICT businesses in Dominica.

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A principal objective for this project is to encourage and support, in concert with the appropriate government departments, NDC and the private sector, the successful launch of one or two exemplary ICT business units in Dominica.

The Project will assist the government to plan a Business Park that can serve as incubator space for ICT-based businesses. Such a park would offer all the D-NEN facilities to resident businesses. These new businesses will employ the products of the enhanced education system and are key to the sustainability of the ICT economic development initiative.

ICT businesses must be in position to move quickly to take advantage of fast moving, narrow market windows. Business licensing and regulatory processes must accommodate this characteristic if a significant degree of success is to be achieved in this sector.

It is not clear that Dominica's current business regulatory environment appropriately addresses the needs of ICT-based business in areas of data security, protection of privacy and recognition of electronic transactions and contracts. These issues are fundamental to the well being of ICT-based businesses.

A review of current business licensing, regulations and other relevant statutes will be undertaken in consultation with the relevant government departments, NDC and private sector organizations from the perspective of a competitive ICT business unit, with recommendations provided to the appropriate agencies.

CONSULTATIONS WITH STAKEHOLDERS

The Government of Dominica is committed to a process of consultations with stakeholders on all aspects of the ICT strategy. The consultations will assist the establishment of priorities for developing framework legislation, infrastructure development, e-Business promotion and community outreach.

PROJECT APPROACH

A provisional project budget of \$10,600,000 (US) has been established. This amount includes \$4.8M in equipment and \$5.8M in services. It is imperative that a project funding initiative begins as soon as possible. A feasibility study must be undertaken to confirm the project premise before funding can be secured. An application to the Canadian International Development Agency (CIDA) for financial support for the Feasibility Study is in preparation. Once project funding based on a positive outcome of the Feasibility Study has been secured, the project can be undertaken according to detailed action plans developed during the Feasibility Study. Project work could start as early as Q4, 2001.

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TIMETABLE

Major milestones of the project include:

Project Scope Agreement	31/03/01
Funding Initiative Start	02/04/01
CIDA Application Submitted	02/04/01
CIDA Financial Support Approved	15/06/01
Feasibility Study Start	16/06/01
Feasibility Study Complete	16/10/01
Partial Funding Agreement #1	31/10/01
Partial Funding Agreement #2	30/11/01
Project Startup	15/11/01
Initial Infrastructure Deployment Complete	01/12/02
All Programs Complete	01/12/03

Further implementation detail appears below:

ID	Task Name	2002				2003				2004			
		4Q01	1Q02	2Q02	3Q02	4Q02	1Q03	2Q03	3Q03	4Q03	1Q04	2Q04	3Q04
0	Dominica Project	▼											
1	DNEN Program Management	▶											
2	DNEN Project Implementation	▶											
3	Documented IT Strategy												
4	Network Demarcation Plan												
5	Broadband Infrastructure	▶											
6	POP Deployment												
7	School Networks Deployment												
8	Operation and Management												
9	Procurement & Training												
10	Government Information Network												
11	Information Management System												
12	Education & HR Development												
13	Economic Development Env												
14	Ross University Access												

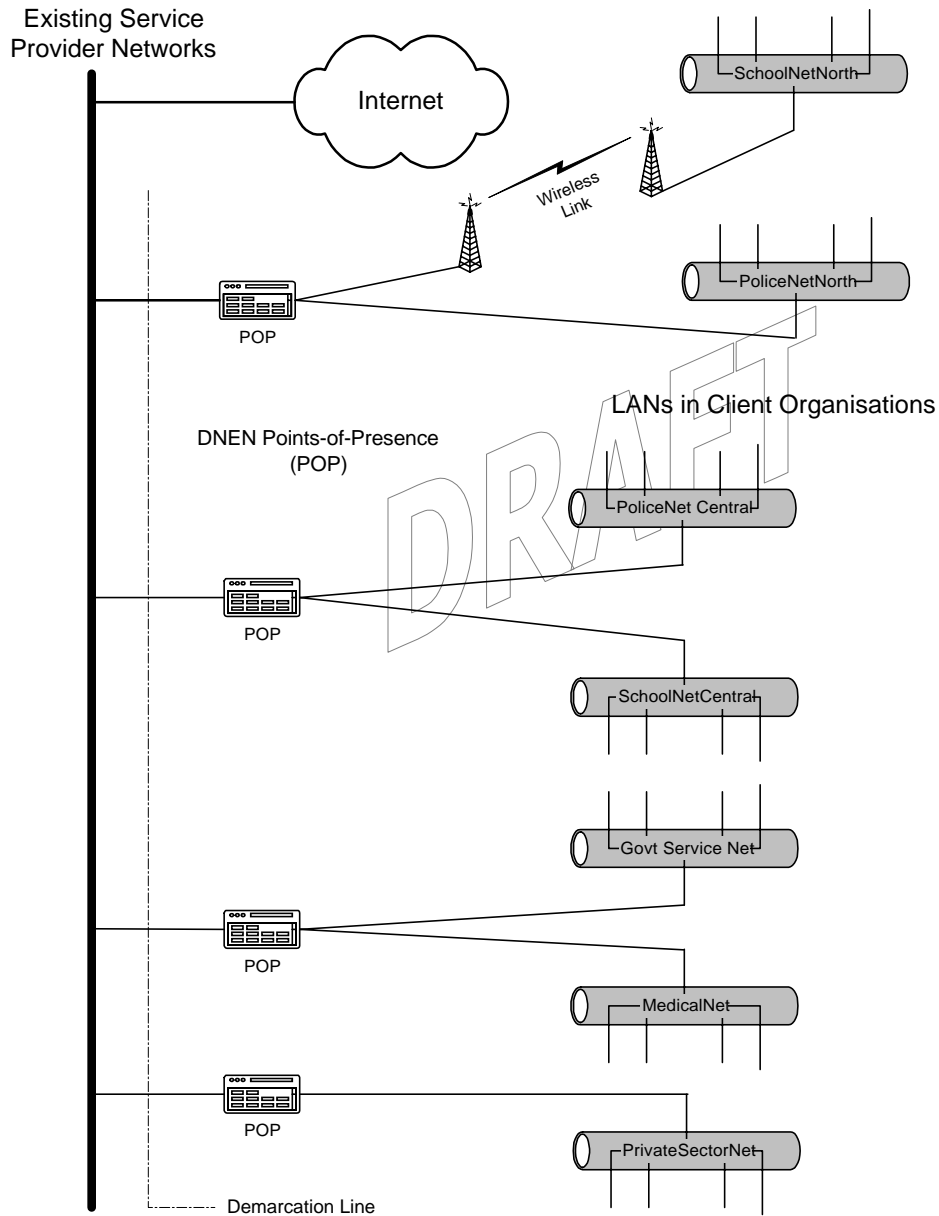
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Project Budget

Dominica National Enterprise Network - Provisional Budget				
Principal Task	Billable Time person-mos	Professional Fees	Sundry Expenses	Capital Cost
Program Management	24	\$720,000	\$150,000	
Documented IT Strategy	6	\$180,000	\$40,000	
Network Demarcation Plan	6	\$180,000	\$40,000	
Broadband Infrastructure	24	\$720,000		\$2,500,000
Procurement of Equipment/Training	15	\$450,000	\$40,000	\$500,000
Government Information Network	20	\$600,000	\$50,000	\$750,000
National Information Management System	15	\$450,000	\$50,000	\$50,000
Training Facilities Upgrade	12	\$360,000	\$60,000	\$250,000
Computer Literacy Program	24	\$720,000	\$75,000	\$500,000
On-Line Opportunities	6	\$180,000	\$40,000	\$50,000
Distance Education Opportunities	6	\$180,000	\$50,000	\$50,000
Economic Development Environment	12	\$360,000	\$70,000	\$100,000
Ross University Access	3	\$90,000	\$20,000	\$25,000
Subtotals	173	\$5,190,000	\$685,000	\$4,775,000
TOTALS(\$US)	173 person-mos	Prof. Fees \$5,190,000	Expenses \$685,000	Equipment \$4,775,000
			Project Total	\$10,650,000

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ENTERPRISE NETWORK TOPOLOGY



**Dominica National Broadband Infrastructure
(LAN names are fictitious)**