



SERENIC NAVIGATOR – DECENTRALIZED DEPLOYMENT TECHNICAL WHITE PAPER

Published: February 2007

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INTRODUCTION

This document provides a technical overview for deploying Serenic Navigator into multiple countries and locations using both localized functionality and multiple language sets. It describes the technical architecture of Serenic Navigator, powered by Microsoft Dynamics NAV, and identifies key components along with their purpose in the overall solution. It also describes the steps needed to implement and use Serenic Navigator. Most importantly, this document provides an overview of how to setup and maintain a decentralized solution so that it will evolve as network speed, stability and reliability become more consistent worldwide.

Please note: The solution described here is specifically designed to meet the needs of Not-For-Profit or Non-Government Organizations, hereinafter referred to as NGOs.

SERENIC NAVIGATOR

Serenic Navigator is a comprehensive financial and operational solution that provides rich business-line functionality for NGOs, including Grant Management, Fundraising, and Investment Management. Serenic Navigator is a comprehensive solution powered by Microsoft Dynamics NAV.

In order to realize the full benefit of a Serenic Navigator solution, it is important to demonstrate the software's key features:

- a fully integrated solution that allows user-specific setup and configuration
- flexible customization capabilities to meet the organization's current and growing needs and requirements
- strong Microsoft platform for reliability in years to come in a multitude of environments and languages

This document should provide an understanding of how to deploy Serenic Navigator around the world, what the possible languages there are for deployment, and how the application can be configured for specific localization. This document provides an architectural overview of Serenic Navigator, deployment scenarios, and some tips and tricks to benefit deployment and usage.

This White Paper is divided into six sections:

- Section One describes the architecture of Serenic Navigator, including a conceptual overview of a decentralized deployment.
- Section Two describes a sample deployment scenario to illustrate the capabilities provided by this architecture to provide both localization of country specific functionality and languages.
- Section Three focuses on an example of grant processing using Navigator to fully comply with the needs of grant and sub-grant awarding.
- Section Four is technically oriented, and provides information on how localization is achieved using the Navigator solution
- Section Five demonstrates how language support of the product is designed to occur in a working situation
- Section Six provides background information on the corporation responsible for implementation, client satisfaction and support: Serenic Corporation.

ARCHITECTURE OVERVIEW

Serenic Corporation is an embedded ISV, or Industry Solutions Vendor, with a contractual relationship between Microsoft and Serenic that grants Serenic developers access to 100% of the source code of Microsoft Dynamics NAV. Under this agreement Serenic has taken the underlying Dynamics NAV source code and written NGO functionality into the core of the application.

This unique Dynamics NAV architecture provides the mechanism that allows organizations to manage Serenic Navigator in a decentralized deployment while supporting it as a centralized solution.

The end-user solution consists of core Dynamics NAV components that are developed and delivered to Serenic by Microsoft, and core Serenic Navigator functionality specifically developed for NGOs. This section provides the details of these components and their purpose in the overall solution. Serenic Navigator consists of the following main parts:

Dynamics NAV – Components

1. Microsoft Windows Server 2003
2. Microsoft SQL server 2005 or Microsoft Dynamics NAV Server
3. Microsoft Dynamics NAV 4.0 SP3 executables
4. Data Backbone Replicator 4.21
5. Internet Information Services 6.0
6. SharePoint Services

Serenic Navigator – Components

1. Serenic Navigator 4.00 SP3 Database
2. Serenic Portal Services

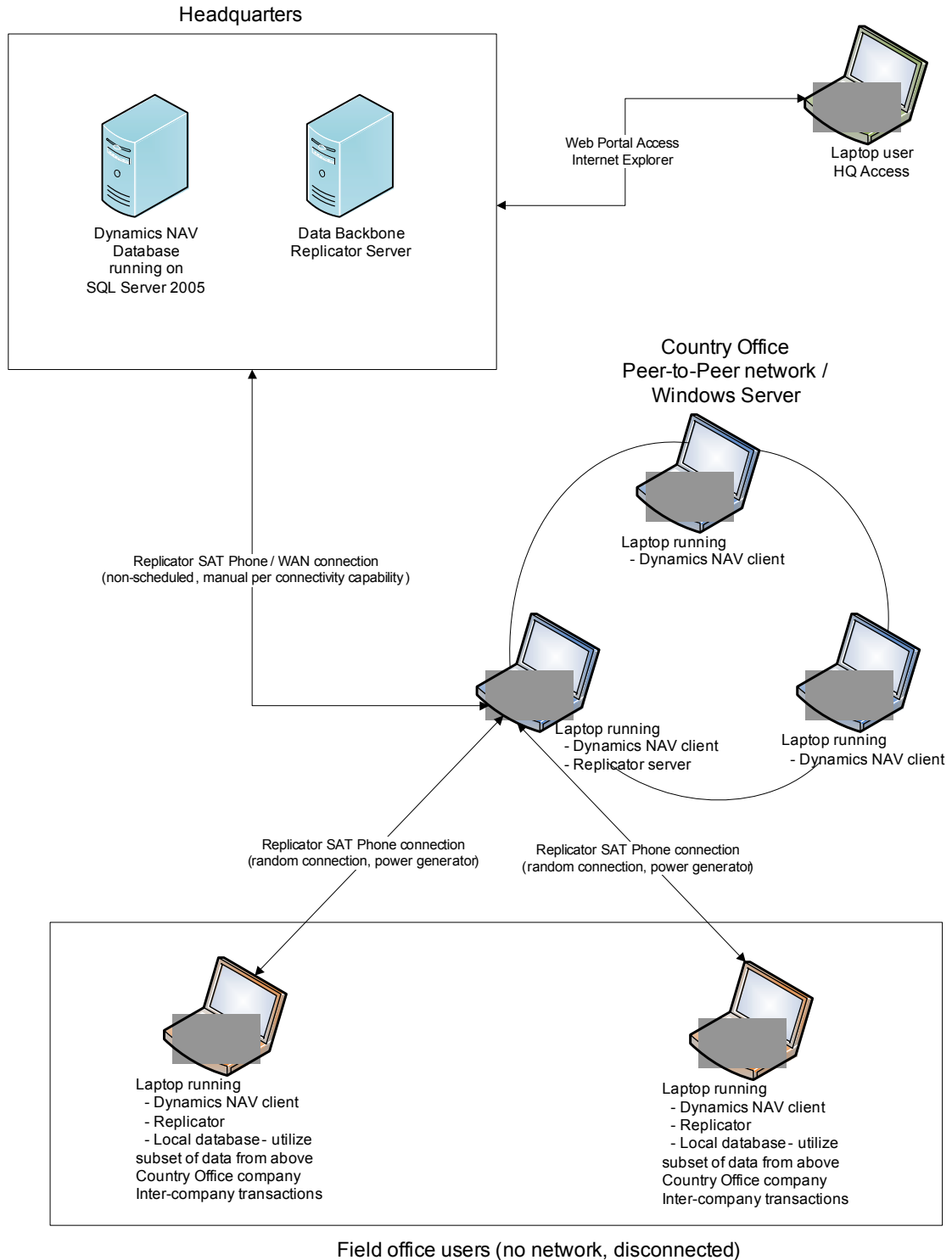
It is important to understand that the Microsoft Dynamics NAV architecture is fundamental to the Microsoft hub-and-spoke model which further supports a decentralized Serenic Navigator deployment. The majority of the technical components are developed, enhanced, supported and delivered by Microsoft developers (there are 800+ Microsoft employees directly associated with the Dynamics NAV product line). Serenic has a huge advantage in leveraging this architecture so that the necessary NGO specific functionality can be put in use world wide.

DECENTRALIZED DEPLOYMENT MODEL

Serenic Navigator can be deployed under various configurations, ranging from a centralized solution with remote access through terminal server or web portals providing a completely decentralized model. For organizations that operate in multiple countries where the network environment may not support high speed remote access, stability is unreliable, or the cost of the network is prohibitive, a decentralized model is the appropriate solution for this environment. A decentralized model provides three primary benefits:

- Independent operation – each country/region can operate independently. This guarantees that the operations of the country/region are able to continue regardless of external factors. Each country/region can utilize functionality that has been developed and maintained to support government regulations, statutory reporting, and local business processes. In addition, local languages can be provided to complete the user experience.
- Global business processes with centralized management – all business processes and setup can be managed based on a global perspective. Organizations are able to develop business processes that span the entire organization across the globe. Business rules enforce the type of data that is being monitored and tracked, while providing each country and region the flexibility to manage locally. This provides the organizations with consistent, timely, and accurate reporting on a global basis.
- Technology adoption – a decentralized model supports future growth as the network environment evolves across the world. Until network access is stabilized and bandwidth becomes affordable, a decentralized model provides the organization with a dynamic environment that allows it to adapt to the ever-changing technology landscape. This model incorporates the flexibility of changing dynamics within nations and regions. For example, two neighboring countries may have entirely different access and communication capabilities due to dissimilar governmental requirements and infrastructure. One may allow remote access using web portals, while the neighboring country may still be disconnected and require a replication link to the main database.

The following diagram provides an overview that highlights the use of Serenic Navigator in this decentralized deployment model.



- HQ database – The model provides for an unlimited number of companies to be stored within the Navigator database. Typically, the HQ database contains all corporate companies along with shell country/region companies that are used to support replication between HQ and country/region databases. All business objects are managed in this database and are pushed to the

country/region databases. The object overview below describes this in more detail.

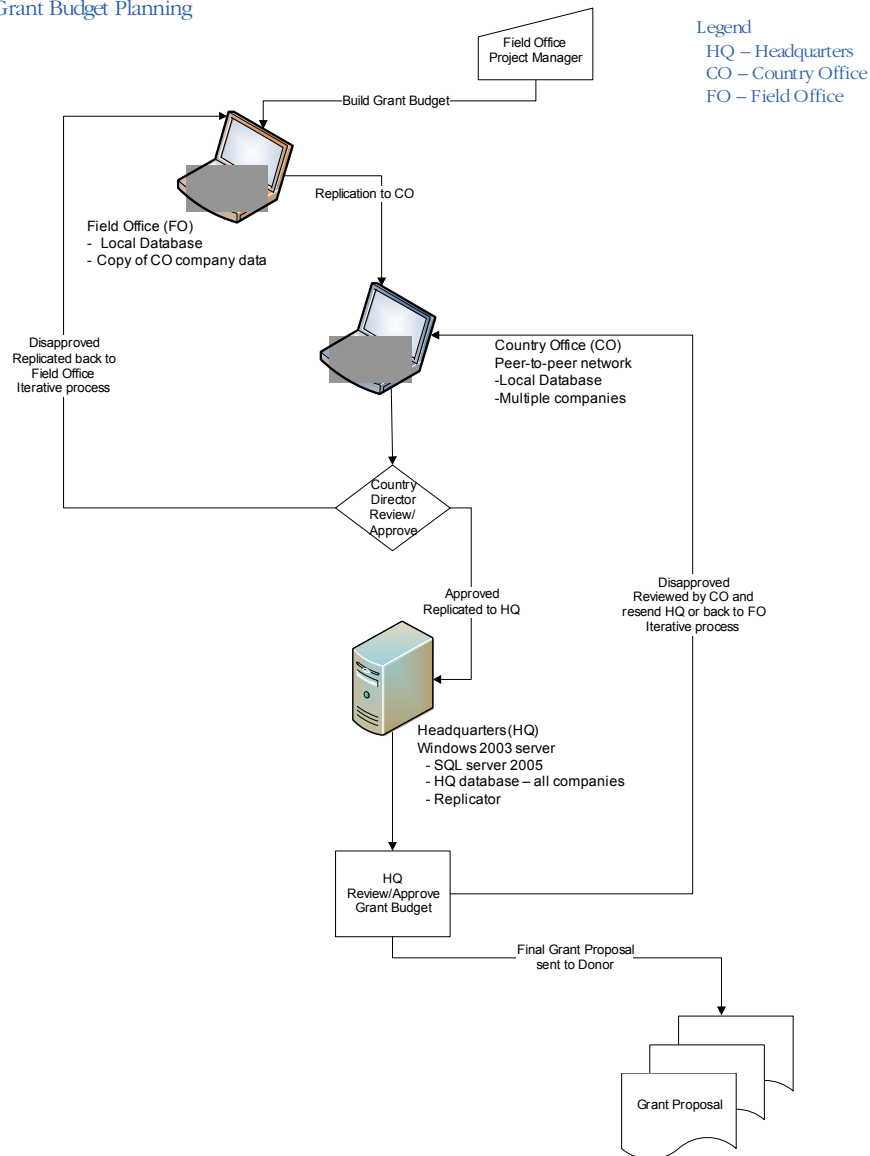
- Country Office – The country/region database contains all companies related to the country/region. All transactional data is processed in this database for each of the companies supported in the country/region. Data is posted to ledger tables, and supplemental tables are updated to support business processes in the country/region. Although there are global business rules to control the type of data processed, each country/region operates independently. Transactional data is replicated to HQ on a user-defined basis to support HQ global reporting.
- Field Office – Access to the country/region companies from the field office is largely dependent on network infrastructure. It ranges from terminal server or web portals to a completely disconnected laptop with only periodic replication. This is the most critical operation as most of the expenditure and control processes occur in the field.

Although the above diagram represents a regional model, changes can be made to allow for multiple configurations using the same architecture.

DETAILED GRANT PROCESS – HEADQUARTERS THROUGH FIELD OFFICE

The diagrams below provide a detailed overview of how a NGO can manage the lifecycle of a grant. It walks through the identification of a need from the field office, the initial interaction with the Donor, the award process controlled at HQ, the management of expenditures at the field office with oversight from the country office and finally, reporting back to the Donor and board of Directors of the NGO. The decentralized model relies heavily on a standardized and structured flow of data that is maintained without duplicate data entry. This is handled by Data Backbone Replicator.

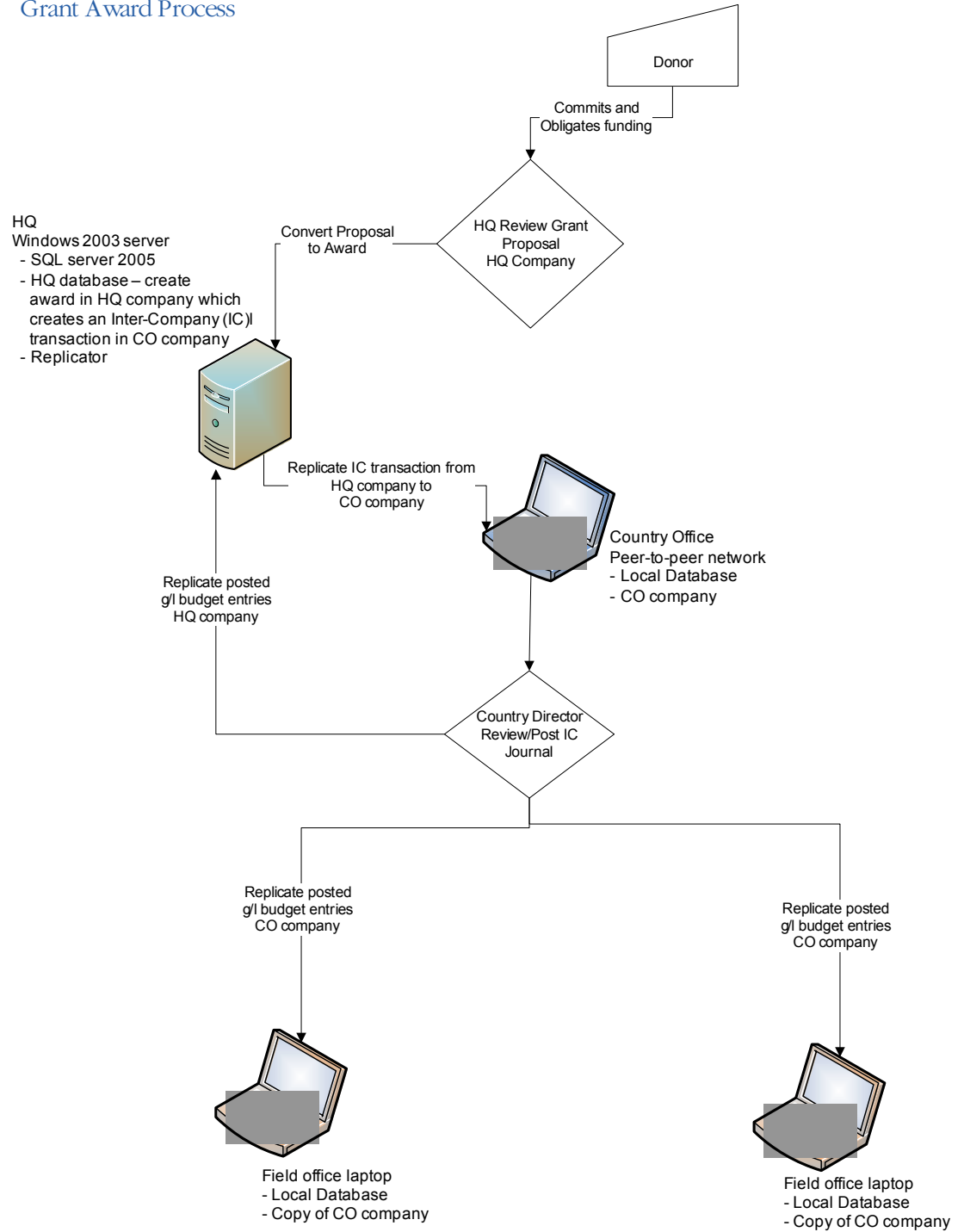
Grant Budget Planning



Once the Donor obligates funds to the NGO, the method of deploying those funds to the country and field office is critical so that the necessary services can be performed.

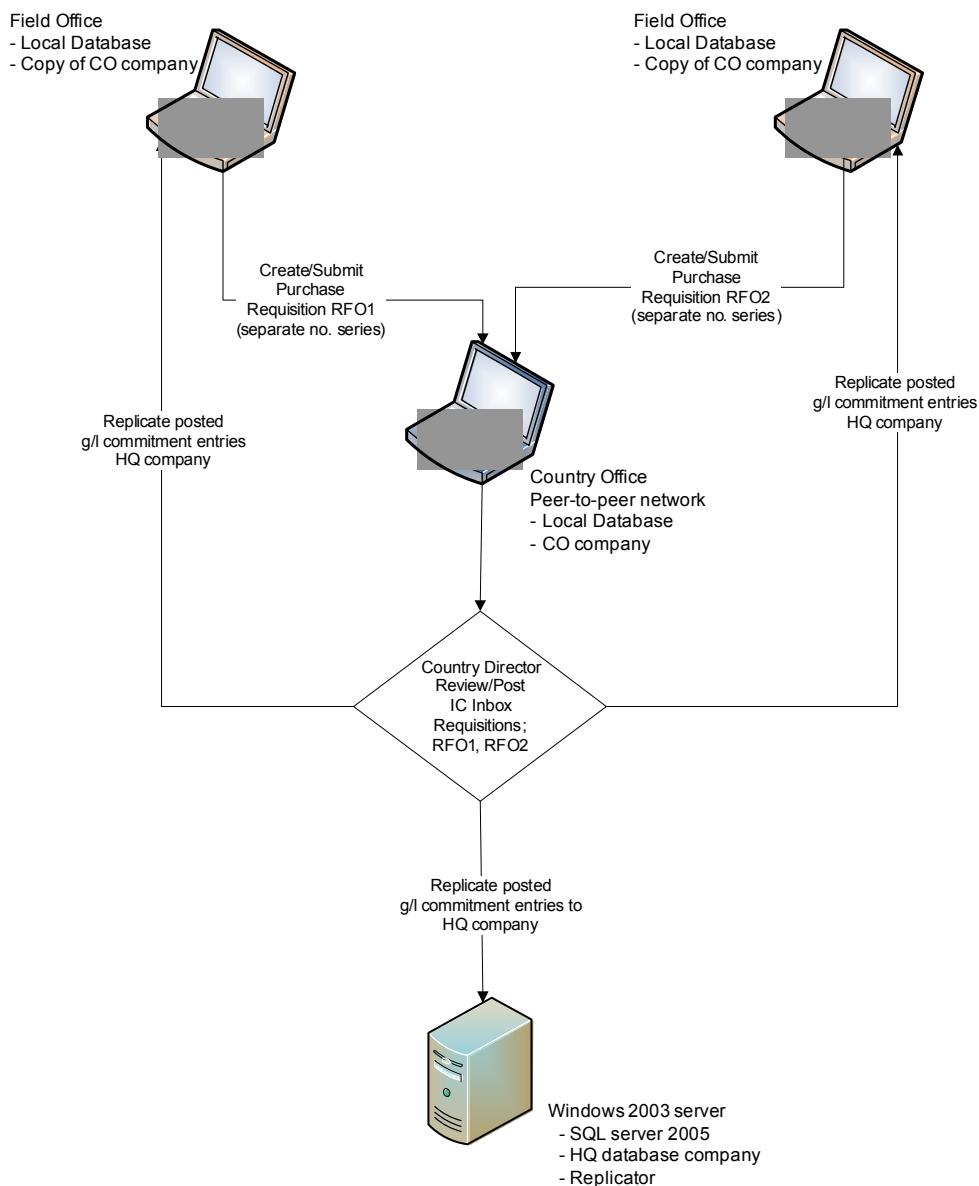
For example, power generators can be purchased, vaccine research can get underway, or field office personnel can be mobilized. HQ is responsible for managing the Grant Award process throughout the entire organization.

Grant Award Process



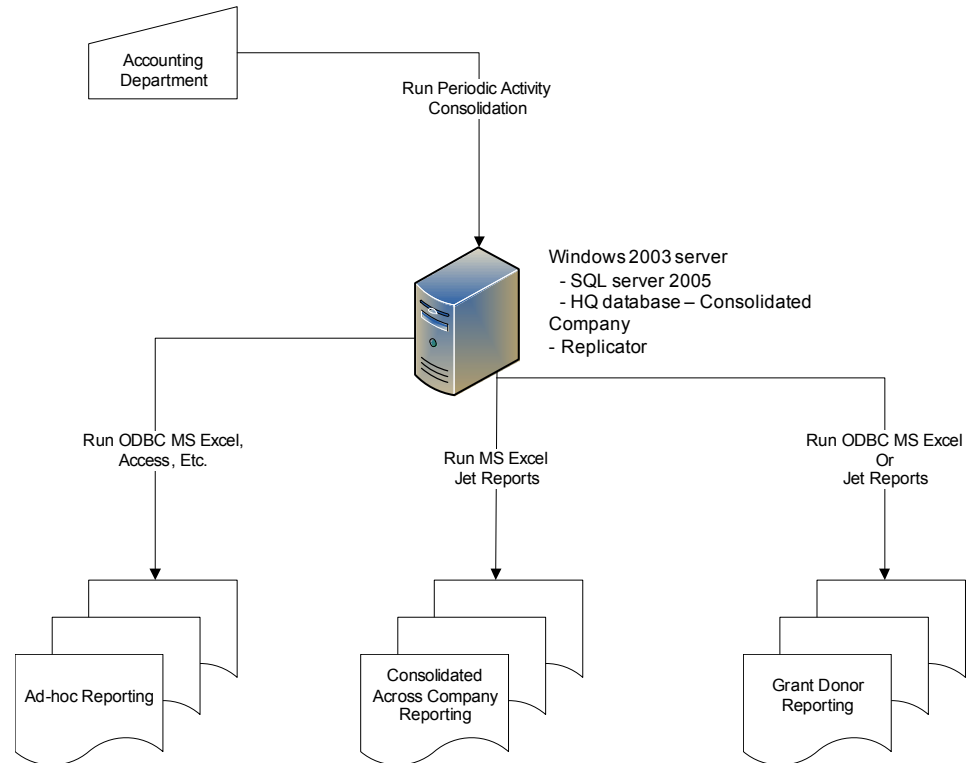
The true benefit of a decentralized Serenic Navigator solution becomes very apparent in the following diagram. It is at the field office level that most grant expenditures occur. In fact, the NGO spends a great deal of time coordinating through the hierarchy of its organizational model to ensure that original donor funding is spent where it is suppose to be spent, and then reporting back to the Donor this fact. With Serenic Navigator this process is streamlined by taking away the redundancy of data entry through the use of replication, and putting controls in place in the front-end, ensuring that the expenditure in the field matches the original intent.

Grant Expenditures



Finally, the lifecycle of the grant is complete once the task of reporting back to the donor is complete. Serenic Navigator provides NGOs the capability to report across the entire organization on a daily basis (dependent on the replication schedule). As donor and government requirements become more and more stringent, it is critical for NGOs to maintain consistency across the entire organization.

Consolidated Reporting



TECHNICAL DEPLOYMENT OF SERENIC NAVIGATOR

This section describes the steps that an organization would take in order to start using Serenic Navigator in a decentralized model. It, however, does not provide the details of installation steps. Specific installation instructions to install Serenic Navigator, are provided in the Microsoft Dynamics NAV Installation Guide.

Localization of Specific Country/Region Functionality

Dynamics NAV Object Overview

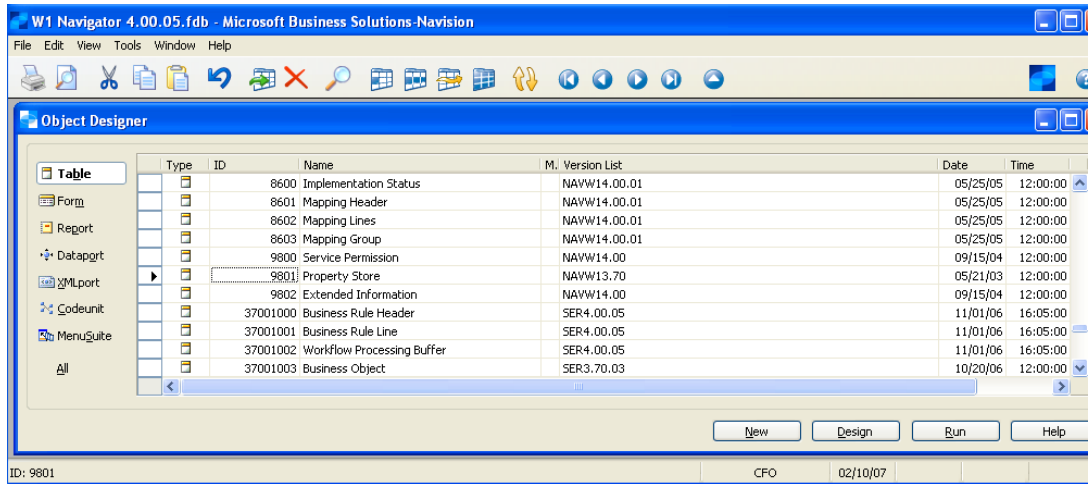
The first step in the setup and implementation of Serenic Navigator in a country/region is to understand the Dynamics NAV object model from a technical perspective. Microsoft Dynamics NAV is made up of seven object types: Tables, Forms, Reports, Dataports, XMLPorts, Codeunits, and MenuSuites. Within each of these object types, Microsoft has defined an object structure that is managed and controlled by Microsoft worldwide. The different object types are developed and maintained based on the following:

- 1 – 9,999; Dynamics NAV, Microsoft (Denmark)
- 10,000 – 49,999; Country/Region specific, Microsoft (regional localization team)
- 50,000 – 99,999; Customer specific, Customer or Vendor
- 3700000 – 3799999; ISV or Embedded, ISV or Microsoft Partner

Serenic Navigator is built on the worldwide version of Dynamics NAV (W1 NAV 4.00). This allows Navigator to incorporate any localization without changing the core structure of the software. This occurs in each country/region as Serenic Navigator is deployed. The following are the steps that occur to complete the delivery of Serenic Navigator with localized country/region functionality.

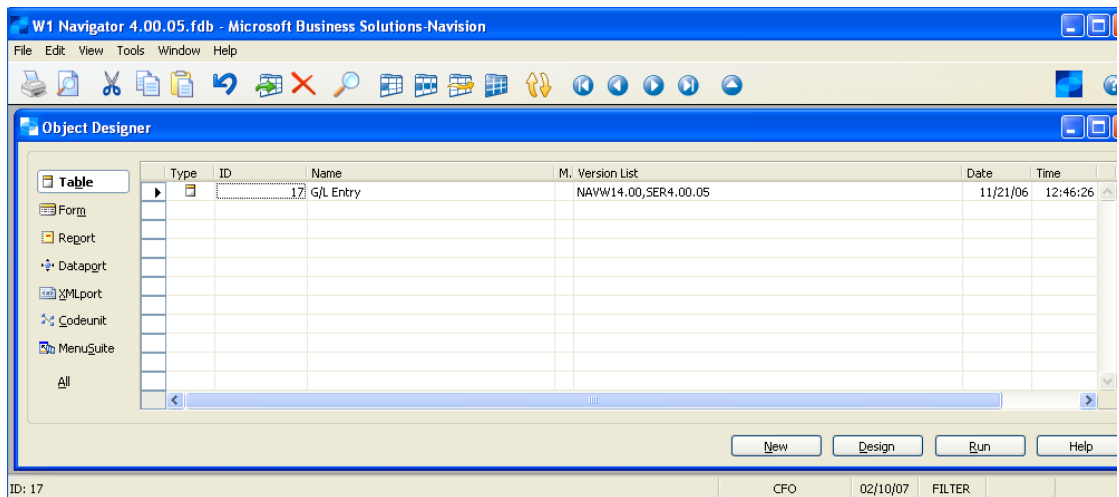
Worldwide Serenic Navigator

The following illustrates that in Core Navigator the object range 10000-49999 is available for country specific localizations.



Within the W1 version of Serenic Navigator it is important to highlight changes made by Serenic. The example below illustrates this by focusing on table 17 which is the g/l entry table. As can be seen, this object was created by Microsoft (within 1 – 9,999 range) as is evidenced by the version tag NAVW14.00. This indicates that Microsoft changed this object in the W1 version of Dynamics NAV for version 4.00. Serenic has then added functionality to this same object in W1 Serenic Navigator improvement 4.00.05.

W1 Serenic Navigator

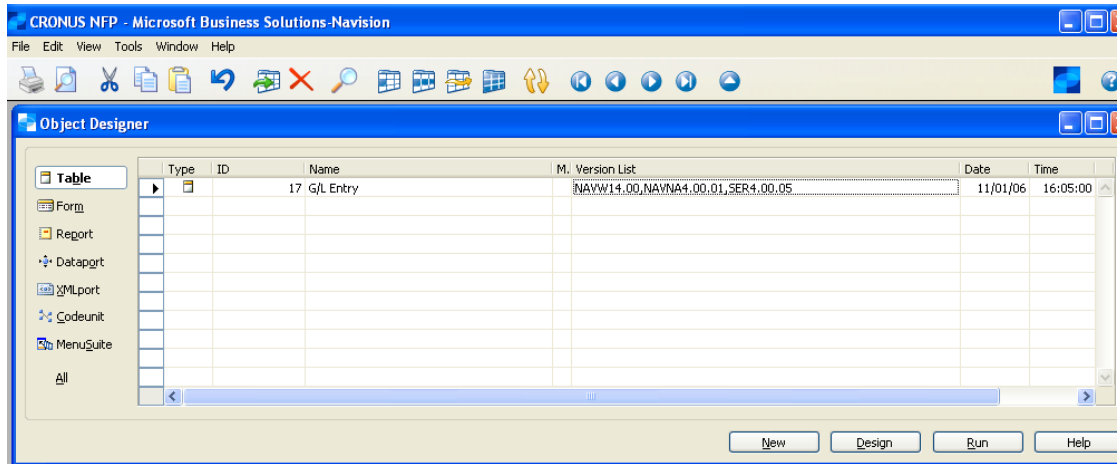


Localized Country/Region Functionality

As Serenic Navigator is deployed into specific country/regions, a country/region object set is created. Objects from the localized version of Dynamics NAV are imported and merged into the new Serenic Navigator object set. In order to learn how to merge objects, please refer to the Microsoft Dynamics NAV Developer Toolkit.

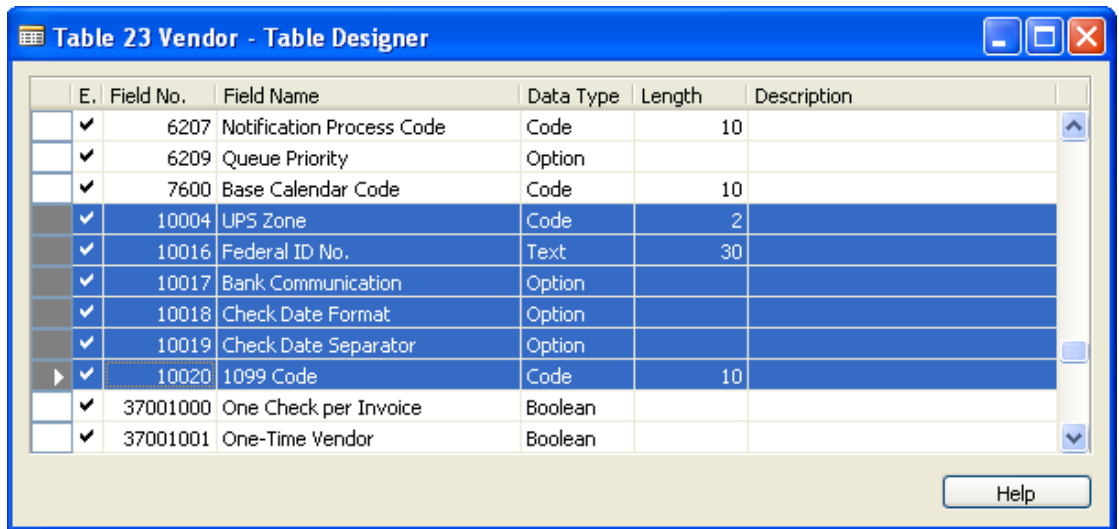
The following example illustrates a North American localized Serenic Navigator version of table 17. Notice that the object has now been changed by the Dynamics NAV North American localization team by reference to the version tag NAVNA4.00.01. This object now contains the W1 Dynamics NAV, NA Dynamics NAV, and Serenic Navigator

4.00.05 layers of changes and is specific to the North American region that includes all functionality for Canada, United States, and Mexico.



To further illustrate the unique architecture of Dynamics NAV, the following is a comparison of table 23, the vendor table, in both the North America and German localized versions. The field numbers (field no.) in the table are unique. Fields 10004 through 10020 are used to support North America functionality, while field 11000 is used to support German functionality. This allows localized functionality in country/region databases to be implemented easily by maintaining an object range that spans the globe.

NAVNA (North America)



NAVDA (Germany)

E.	Field No.	Field Name	Data Type	Length	Description
<input checked="" type="checkbox"/>	5700	Responsibility Center	Code	10	
<input checked="" type="checkbox"/>	5701	Location Code	Code	10	
<input checked="" type="checkbox"/>	5790	Lead Time Calculation	DateFor...		
<input checked="" type="checkbox"/>	6200	Reverse Auction Participant	Boolean		
<input checked="" type="checkbox"/>	6207	Notification Process Code	Code	10	
<input checked="" type="checkbox"/>	6209	Queue Priority	Option		
<input checked="" type="checkbox"/>	7600	Base Calendar Code	Code	10	
<input checked="" type="checkbox"/>	11000	Registration No.	Text	20	
<input checked="" type="checkbox"/>	5005270	Delivery Reminder Terms	Code	10	
<input checked="" type="checkbox"/>	5055250	Liq. Payment Terms Code	Code	10	

Global Object Replication

Data Backbone Replicator is an integral process which provides the organization with the ability to selectively identify which fields of information need to be transferred to the central database. The flexibility of Data Backbone Replicator further allows the user to transfer data to multiple databases while maintaining security and integrity for each individual database. The implementation of Data Backbone Replicator can be managed from one location and provides an organization with the ability to manage business logic worldwide. The following table shows how a specification can be setup to replicate all table objects to each of the separate country/region databases. In addition, the definition can be further refined to control what fields are replicated. Using the example for North American and German tables shown above, the following table depicts how an organization could select fields for replication. The Data Backbone Replicator processes this selection to fields in the 10,004 through 10,020 for the North America region database and field 11,000 for the German region database.

The screenshot shows the 'Specification List' window with a table of replication specifications. Below it, the 'NAVOBJ1 Navigation Table Objects %1 %2 - Specification Card' window is open, showing configuration details for a specific replication rule.

No.	Description	Replicat...	Seq. No.	Enabled	Source D...	Dest. Da...	Source Ta...	Dest. Ta...
GM01301	Grantee %1 %2	HQ_DOWN	0	<input checked="" type="checkbox"/>	%3	%4	37001301	37001301
GM01302	Grant Comment Line %1 %2	HQ_DOWN	0	<input checked="" type="checkbox"/>	%3	%4	37001302	37001302
GM01307	Grant Rule Header %1 %2	HQ_DOWN	0	<input checked="" type="checkbox"/>	%3	%4	37001307	37001307
GM01308	Grant Rule Line %1 %2	HQ_DOWN	0	<input checked="" type="checkbox"/>	%3	%4	37001308	37001308
GM01309	Grant Setup %1 %2	SETUP	0	<input checked="" type="checkbox"/>	%3	%4	37001309	37001309
GM01310	Grant Rate %1 %2	HQ_DOWN	0	<input checked="" type="checkbox"/>	%3	%4	37001310	37001310
GM01311	Sponsor %1 %2	HQ_DOWN	0	<input checked="" type="checkbox"/>	%3	%4	37001311	37001311
GM01312	Grant Line %1 %2	HQ_DOWN	0	<input checked="" type="checkbox"/>	%3	%4	37001312	37001312

Field	Value	Field	Value
No.	NAVOBJ1	Enabled	<input checked="" type="checkbox"/>
Description	Navigation Table Objects %1 %2	Transfer Type	Objects
Replicator Group Code	NAV_OBJECTS	WhatToDo	Update-Add
Seq. No.	0	Field List Type	All Fields
Source Database	%3	Sequential Read	Source only
Dest. Database	%4		
Source Table No.	200000001		
Source Table Name	Object		
Dest. Table No.	200000001		
Dest. Table Name	Object		

Centralized Management of Global Business Functionality

This deployment model has proved successful as Microsoft supports 55,000-plus customers with over 1 million concurrent users worldwide on the Dynamics NAV architecture. There are two significant benefits in the decentralized model.

- Organizations maintain a centralized repository of all business logic used worldwide. This ensures that organizational policies and data collected are consistent and reporting becomes automated without duplicate data entry.
- Localizations specific to a country/region are handled to support unique legislative requirements such as taxation, statutory reporting, country required processes such as electronic bank payments, or depository transactions. The data structure must support these localizations, and most importantly, need to be actively monitored as it continually changes and requires local expertise. Serenic is able to leverage the success of Microsoft for this piece.

LANGUAGE SUPPORT

Serenic Language Configuration

Another important aspect of Dynamics NAV in a decentralized deployment is the simplicity of incorporating multiple languages into the object model. The following describes the high-level steps necessary to deploy Serenic Navigator with multiple languages. Most of the process is inherent with core Dynamics NAV, with a few additional steps to accommodate Serenic Navigator unique fields. For detailed installation instructions, refer to the *Serenic Language Configuration Guide*.

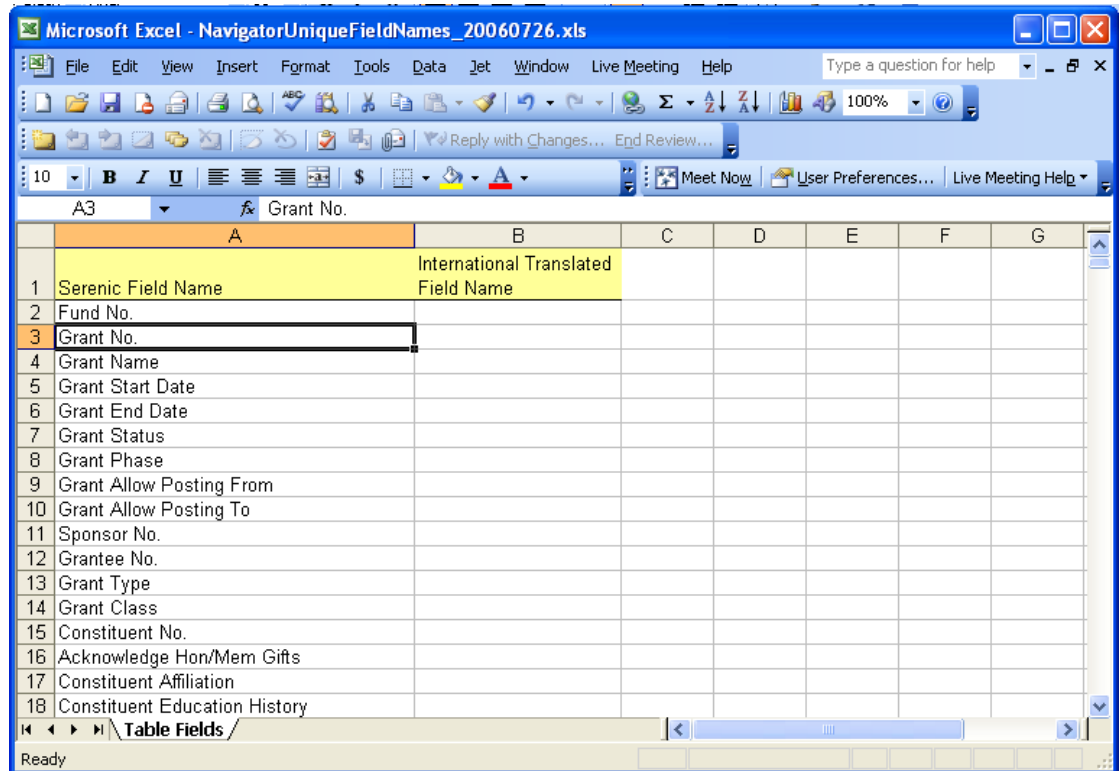
Adding a Language Module to Serenic Navigator

Microsoft supports the following language modules:

Australia (English)	Switzerland (French, German, Italian)
Austria (German)	Thailand (Thai)
Netherlands (Dutch)	Turkey (Turkish)
Belgium (French)	UK (English)
Bulgaria (Bulgarian)	United States (English)
Canada (English, French)	Netherlands (Dutch)
India (English)	New Zealand (English)
Croatia (Croatian)	Norway (Bokmal)
Czech Republic (Czech)	Philippines (English)
Denmark (Danish)	Poland (Polish)
Estonia (Estonian)	Portugal (Portuguese)
Finland (Finish)	Romania (Romanian)
France (French)	Russia (Russian)
Germany (German)	Serbia Montenegro (Serbian)
Greece (Greek)	Singapore (English)
Hungary (Hungarian)	Slovakia (Slovak)
Iceland (Icelandic)	Slovenia (Slovenian)
Ireland (English)	Spain (Spanish)
Indonesia (English)	Sweden (Swedish)
Italy (Italian)	
Latvia (Latvian)	
Lithuania (Lithuanian)	
Malaysia (English)	
Mexico (Spanish)	

The steps are as simple as the following to add the language module to Serenic Navigator.

1. Download and extract the Language module from the list above,
2. Import this language into the Serenic Navigator database and run the utilities provided by Serenic to generate unique names that must be translated,
3. Serenic provides a MS Excel sheet similar to the one below to the distributor, partner, or customer that requires the local language module,



	A	B	C	D	E	F	G
1	Serenic Field Name	International Translated Field Name					
2	Fund No.						
3	Grant No.						
4	Grant Name						
5	Grant Start Date						
6	Grant End Date						
7	Grant Status						
8	Grant Phase						
9	Grant Allow Posting From						
10	Grant Allow Posting To						
11	Sponsor No.						
12	Grantee No.						
13	Grant Type						
14	Grant Class						
15	Constituent No.						
16	Acknowledge Hon/Mem Gifts						
17	Constituent Affiliation						
18	Constituent Education History						

4. Once the translation has been completed, import the MS Excel sheet into Serenic Navigator and run the necessary utilities to build a local Serenic Navigator language module.

The Serenic Navigator objects now contain the local language layer. The entire process takes between 1-2 hours, excluding step 3. Once this process is complete, the language can be used system-wide and users are able to switch languages by selecting the **Application Languages** dialog box, selecting the new language and clicking **OK**. The application now switches to the new language.

ABOUT SERENIC CORPORATION

Serenic Corporation is an industry-leading publisher of mission-critical software products that satisfy the unique and sophisticated functionality requirements of nonprofit organizations, educational institutions, and government agencies.

Built on Microsoft Dynamics NAV, Serenic's products deliver the best in fully integrated solutions that meet the ever-expanding needs of most organizations.

A Microsoft Gold-certified Industry Solutions Vendor (ISV), Serenic distributes its products through a certified partner channel and its direct sales force. These products include the highly acclaimed Serenic Navigator*, Serenic DonorVision, Serenic MinistryView, Serenic CommunityCare and the human resources and payroll products for Microsoft Dynamics NAV horizontal-market users.

The company recently announced that it had joined the elite handful of ISVs worldwide that have earned the ability to embed the Dynamics NAV solution into their vertical solutions.

Serenic Corporation is a public company with offices in Edmonton, Alberta and Lakewood, Colorado. It trades under the symbol "SER" on the TSX Venture Exchange in Canada. Additional information about the Company is available at www.serenic.com.

This is a preliminary document and may be changed substantially prior to final commercial release of the software described herein.

The information contained in this document represents the current view of Serenic Corporation on the issues discussed as of the date of publication. Because Serenic must respond to changing market conditions, it should not be interpreted to be a commitment on the part of Serenic, and Serenic cannot guarantee the accuracy of any information presented after the date of publication.

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