

Dane County Enterprise GIS Migration Plan

The Dane County Land Information Office is committed to the development of GIS technology to aid in the delivery of information and services to county departments, communities, and the residents of our county. As part of our ongoing efforts to develop a robust and efficient GIS infrastructure, the Land Information Office has begun a project to migrate to a next generation geographic information system. Workplan activities include an upgrade of the technical infrastructure (hardware and software), implementation of new ESRI GIS products, a review and re-modeling of enterprise GIS datasets, workflow analysis and process changes to maximize service delivery and staff efficiencies. This plan summarizes migration activities to-date, as well as outlining a workplan to complete the remaining tasks.

ESRI's next generation product line revolves around three primary products: ArcGIS, ArcSDE and ArcIMS. ArcGIS and its related extensions and modules comprise the desktop GIS software suite. ArcSDE supports spatial and tabular database integration. ArcIMS supports the delivery of web-based geographic information and map services. The Dane County ArcGIS migration project includes converting current ArcInfo users to the ArcGIS product. The longer term goal will be to move the viewing, printing, and basic GIS operation users to ArcIMS applications that can be run from a browser or thin client. Current ArcView 3.2 users will be migrated to either thin client ArcIMS applications or ArcGIS 8.x software. All applications will utilize geographic information stored in ArcSDE. Training requirements will be focused on technical staff to build and maintain applications with user friendly tools to minimize intense end user training.

The migration of our GIS infrastructure to this new environment will improve data integrity and availability, reduce licensing costs, provide greater efficiency, and support further system integration of spatial and attribute information. Moving to thin-client based applications aid in making geographic information available to all county staff.

GIS Migration – Completed Projects

- ⇒ ArcInfo users were migrated to ArcGIS 8.x and its associated extensions in the first quarter of 2002.
- ⇒ ArcIMS was implemented in the second quarter of 2002.
- ⇒ *Surveyor's Office*, a commercially available ArcIMS application for survey data publication and management was implemented in the first quarter of 2003. Broad deployment is pending the new server configuration.
- ⇒ A dedicated environment to support enterprise GIS data, application and web servers is currently being implemented (third quarter of 2003).

GIS Migration – Scheduled projects (to be completed in 2003-2004)

- ⇒ **GIS/LIS Data Repository Creation**
The purpose of this project is to extend the current LIO GIS file serving environment (GIS Public) while also merging non-spatial data serving (LIS Public for Access Dane) into a

single GIS/LIS data repository environment. A more formal GIS/LIS data server repository will be established to reliably serve business users and software applications across the County Intranet. Its deployment will help the LIO better manage GIS/LIS data publication and also segregate data access traffic related to maintenance versus use activities.

The repository will be made up of GIS and non-GIS related data published from County and partner (e.g., the City of Madison) data systems. Spatial data will be stored and served up as both shape files and MS SQL Server-ArcSDE layers while non-spatial data will be stored as MS SQL Server tables. Formal procedures and mechanisms will be established to automate the publication of data from source systems and data structures into the repository. This will include creation of data custodian agreements that outline among other things, performance measure such as update schedules for each data layer to ensure currency of information in the repository.

⇒ **GIS Strategic Plan Enhancements**

The purpose of this project is to assist the LIO in revising its current strategic vision and plan for the County GIS program with an emphasis on enhancing program involvement, governance and operational management. The revised plan will focus on a number of specific topics, including:

- Future County GIS/LIS technical system vision
- Regional GIS/LIS opportunities including participation by municipal partners
- LIO Committee representation and functions
- Clarification of LIO and department GIS staff functions
- Creation of a formal Dane County GIS technical advisory group
- Clarification of GIS program customers and customer expectations
- Clarification of the LIO program relative to goals, customer service, and funding
- Review of funding model to better serve enterprise versus department GIS activities

⇒ **PV.Web (DCiMap) Intranet Deployment**

The purpose of this project is to implement PV.Web, a commercially available online GIS data browse, query, and reporting solution based on ESRI ArcIMS technology. The application will be deployed at Dane County as DCiMap. This solution will broaden access and use of GIS by general department staff across the County. It will utilize the current ArcIMS software license implemented by the County but also require an upgrade in hardware server performance. The solution will be deployed as an extension of the Access Dane website. Specifically, PV.Web will be made available to County staff as a standalone link on the Access Dane website and as an extension to the Access Dane parcel data search pages. In the latter case, users will also be provided a minimum parcel map display capability or the ability to launch the full PV.Web application.

⇒ **ArcView Technology Migration**

The purpose of this project is to officially migrate current County ArcView 3.x software licenses and applications to the ArcGIS ArcView 8.3 technology standard. ArcView licenses will be converted in a prescribed order that is to be defined as part of this project. Migration will involve a re-assessment of the purpose and architecture of certain Avenue applications to identify possible changes in strategy (e.g., application consolidation, switch to use of PV.Web to serve certain functions). Staff using ArcView in conjunction with custom Avenue applications will be converted in concert with the priority migration of application code. Finally, this project may also cover the creation of new, minor ArcView 8.3 applications (e.g.

street intersection finder) identified as part of the migration planning process. Current County Avenue applications of significance that will be prioritized for migration, include:

<ul style="list-style-type: none"> • Zoning Notification • Highway Notification • Mineral Extraction • Data Viewer • Density Study • Zoning Composite report • Parcel Locator • Address Locator • Acreage Finder • Zoning Download 	<ul style="list-style-type: none"> • Dane Index • Traffic Incident Mapper • Data Sales applications • Map series and plot routines (EMS Districts, Fire Districts, Fire/EMS address maps, Sheriff Precincts, Pier Numbering, Dane County Base Map) • Custom map templates
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⇒ **Geo-Framework Data Maintenance System**

This project involves the implementation of a formal ArcGIS-based system for the maintenance of all County geographic framework GIS data layers, and its integration with the current *Surveyor's Office* data management system. The purpose behind such a system is to provide a more structured environment for the management of base map and non-map data required by other custodian department GIS data maintenance systems. This migration includes reassessing the current framework data models and maintenance workflows, and developing ArcGIS compliant data structures and improved processes. Framework data layers that will be supported by this new system includes geodetic control, PLSS corners and boundaries, orthoimagery, elevation, and basemap themes including hydrography and topography.

ESRI's ArcGIS Survey Analyst software will be implemented as a key element of the system to facilitate control and survey data management and better support future County ArcGIS parcel mapping activities. Activities and outputs from the new system will be integrated into future County parcel mapping workflows, with clear guidelines for data and feature management. This project will be conducted in coordination between the LIO, County Surveyor, and County Planning Department.

⇒ **Parcel Data Maintenance System Migration**

The purpose of this project is to migrate the current workstation ArcInfo parcel data structure and parcel maintenance applications to ArcGIS ArcInfo 8.3. This migration includes reassessing the current parcel data model and maintenance workflow and developing ArcGIS compliant data structures and improved processes. Past lessons learned in parcel maintenance will be leveraged as well as new process opportunities and capabilities available under the ArcGIS technology environment. This project will be conducted in coordination between the LIO and County Planning Department.

⇒ **PV.Web (DCiMap) Extranet Deployment**

The purpose of this project activity is to broaden PV.Web solution access and use to County Extranet users. This requires making changes to the PV.Web Intranet deployment for extranet accessibility, technology enhancements, adding PV.Web login accounts, and providing new user orientation and training.

In addition, it involves deploying PV.Web Public for those Extranet users with lower bandwidth connections to the County network. PV.Web Public is a web-based GIS data browse, query, and reporting solution that is similar to PV.Web but simpler in function, for

access and use over low bandwidth connections. PV.Web solution functionality will remain the same, unless the LIO or the County Extranet community identifies required enhancements. PV.Web Public solution functionality will be based on the current product version, along with any identified enhancements deemed necessary.

⇒ **Master Address Data Management System**

The purpose of this project is to design and develop a first-generation master address database and data management system that serves County, and eventually, regional partner business needs. The project will also produce an organizational strategy for inter-jurisdictional address data maintenance since creation of a countywide address database requires inclusion of addresses assigned by municipal entities. County departments and select municipal partners will be inventoried to document their respective requirements.

This master address data management system, once complete, will provide for a single, definitive source of addresses across the County and facilitate better maintenance and use of this data. The system will be deployed in concert with training and any required data maintenance applications.

⇒ **Conservation Planning System**

The purpose of this project is to assist with migration of the current Land Conservation Department's cooperator tracking system to a new GIS-enabled data maintenance and reporting system. This migration includes reassessing the current technical environment, data model, and maintenance workflow and also developing new GIS and non-GIS data structures and custom applications. County GIS data layers that will be redesigned and converted under this project include Farm Tracts and Fields, Wetlands, Soils, and other related layers. Lessons learned in conversation planning and farm tract and field GIS data layer maintenance will be leveraged. Likewise, new process opportunities and capabilities available under the ArcGIS technology environment will be implemented. This includes utilizing the new GIS/LIS data repository and current ArcIMS application server. IM and LIO, with contractor assistance, will lead completion of this project in conjunction with the County Land Conservation Department.

⇒ **Master Street Centerline Data Management System**

The purpose of this project is to design and develop a master street centerline database and data management system that serves County and regional partner business needs. The project will also produce an organizational strategy for inter-jurisdictional street centerline and address range data maintenance. County, Municipal, and State DOT departments will be inventoried to document their respective requirements. These findings will be combined with County and municipal public safety agency requirements being inventoried as part of a separate project under this Work Plan (see Countywide Public Safety Incident Tracking System - TraCS project).

This master street centerline project, once complete, will facilitate better location referencing, sharing, and integration of transportation related data across County and municipal departments. The system will be deployed in concert with any required data maintenance applications.

⇒ **ArcGIS Geodatabase Design and Deployment**

The purpose of this project is to design and create production-ready ArcGIS geodatabases for all priority GIS data layers not addressed under separate 2003 Work Plan projects. At a minimum, critical layers to be migrated include:

- Zoning
- Land Use
- Environmental Corridors
- Hydrography
- Watershed Boundaries
- Special Districts (e.g., drainage)
- Legislative Districts (e.g., supervisory)
- Census Geography
- Minor Civil Divisions

This project will facilitate the migration of data layer maintenance from workstation ArcInfo GIS to the ArcGIS environment. Geodatabases will be designed and deployed in a prescribed order based on custodian department interest and support for conversion. Deployment will be done in concert with custodian training and associated data maintenance application deployment, if necessary.

⇒ **PV.Web (DCiMap) Public Internet Deployment**

The purpose of this project is to deploy PV.Web Public for Internet (public) use through the Access Dane website. The PV.Web Public license setup for Extranet user access will be utilized for this purposes unless more limited capabilities are intended for public use. In this case, a separate instance of PV.Web Public will be setup and linked to the public use section of the Access Dane website.

⇒ **Data Distribution Process Improvements**

The purpose of this project is to complete ongoing automation and process improvements related to data distribution and access to land information, and to investigate the viability of department revenue sharing associated with the sale of GIS data under the County GIS program. Examples of data distribution projects that are in progress or recently completed include a new data extraction application for GIS data requests, enhanced user documentation, product pricing review, and a standard map product line.