Re-Engineering the Parcel Information Management Process

Prepared for

Scott County, Iowa

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Document Versions

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A Report in Support of
Re-Engineering the Parcel Information Management Process
For Scott County, Iowa

A. Executive Summary

1. Project Overview

This project is part of Scott County's effort to develop a multi-purpose, enterprise geographic information system (EGIS) to support county operations and the delivery of public information and services. As part of this effort, the County initiated and executed this project to review and redesign the parcel information maintenance and management processes. The scope of this project included a review and recommendations on workflow, staffing, data custodian policies, and parcel identifiers. Another dimension of the project, parcel geodatabase design review, will be completed when the parcel conversion process is further advanced.

2. Key Findings

Scott County is in the process of making a transition from a largely manual mapping system to an enterprise geographic information system. While there will be many benefits of the EGIS, this transition will affect many business systems and business practices throughout the County. Most notably among those affected workflows and business systems that touch parcel mapping and related parcel information. This transition also affords the County the opportunity to improve, if not reengineer, affected business processes and to integrate other business systems in ways that further automation and deliver more comprehensive information for decision making.

a. Parcel Maintenance Workflow

Parcel maintenance in Scott County is comprised of the following tasks: legal description review, plat book updates, existing parcel updates (ownership transfer only) and new parcel updates (splits/combines and subdivisions). These tasks are performed in a combination of manual and automated systems in the Scott County Auditor and Assessor's Offices.

For many technical, cultural, and traditional reasons, parcel maintenance in Scott County has evolved to be a very complex workflow. The division of responsibilities across departments, a lack of technology, and the methods used to organize and manage parcel information has caused this complexity. For example, because of manual processes and incompatible systems, there are a number of redundant activities and inefficiencies. (See Figure 1: Current Parcel Maintenance Workflow, on page 8, below for a visualization of the processes)

However in anticipation of greater automation, systemization, and the desire of County departments to find ways to refine and improve these business processes, much of the complexity can be removed from parcel management workflows.

b. Staffing Review

Two staff positions related to parcel maintenance and the enterprise GIS program were reviewed to identify required resources and position duties and qualifications. The first position is the GIS Analyst position in the Department of Information Technology, GIS Division and the Parcel Maintenance Technician position in the Auditor's Office. An extensive analysis of the current and future demands on GIS staff was conducted, including an assessment of skills, capacity, roles, and responsibilities.

The County's enterprise GIS implementation has evolved to a next stage: technology has been installed, data has been acquired, and applications have been deployed. This has placed new and evolving roles for the County's GIS Coordinator's time. It is clear, and County leadership has acknowledged, that additional staff resources are needed to maintain, customize and enhance what is already operational. The GIS Analyst position fills some of these emerging demands.

The Parcel Maintenance Technician position previously performed manual plat drafting, maintaining the plat book and developing parcel information related to subdivisions in the City of Davenport. At the same time, the Auditor's Office has the same (or increasing) volume of work whether data is maintained on paper maps or in computer databases. Their tools may change but the type and volume of work does not change because of the method used to perform the work. Thus, the Auditor Parcel Maintenance Technician remains critical to the day-to-day operations of that office.

c. Enterprise Data Maintenance Policies

Scott County has adopted two key strategies: First is to centralize enterprise system administration and management; Second is to decentralize operations, including relying on those data custodians with the mandates and responsibilities to build and maintain those enterprise data that are within their domains.

This kind of enterprise data management is facilitated by the establishment of policies that identify data custodians, and clarify maintenance responsibilities and performance measures. An enterprise data custodian policy serves as the guiding instrument for data maintenance agreements which are established for individual datasets.

To date, Scott County has not adopted explicit and specific policies to carry out these strategies. This part of the project provides an analysis of needs, forms and templates, and a set of recommendations.

d. Parcel Identifier Reconciliation

A parcel identifier (PID or PIN) acts as the primary relational key or linkage in databases and computer systems that manage real property information. Tax, appraisal, assessment, and other land records management systems use a PIN to uniquely identify parcels of land as divided by ownership, title interests and taxation districts. Simply, PIN's are an essential way people and systems name and, in turn, communicate and manage parcel related information. As part of the automation and

modernization process, parcel identification becomes even more critical to the integration of the County's business systems.

In this phase of the project the existing parcel numbering scheme of the County, its municipalities, the State, and other best practices were reviewed and documented. Key findings of the review of standards and best practice guidelines suggest that parcel identifiers should be unique, simple to use and easily understood, flexible and adaptable to the changing landscape and business need, permanent, accessible for use, and economic to implement and maintain.

3. Recommendations and County Action

Following review of each area, a set of recommendations were made and presented to the Scott County GIS Steering Committee. In turn the Committee approved the following recommendations and action items:

a. Parcel Maintenance and Workflow

After consideration, the Committee approved a new workflow process that has been graphically depicted in Figure 6 on page 29 below. Key features of the workflow redesign include the following.

- Maintain parcels by transaction rather than by location or type of update. In addition:
  - Strive for and establish expectation of currency of parcel changes within several days of recording
  - Establish separate maintenance and publication schedules
- Consolidate parcel maintenance duties in a single department to reduce or eliminate duplicate parcel maintenance effort. In addition, to:
  - Reduce or eliminate separate map and non-map maintenance tasks; and
  - Automate plat book production
- Improve system integration and management by maintaining parcel information once and, in turn, publishing that information to multiple systems. To achieve this objective, the County will move towards implementation of data repository as envisioned in the original strategic plan.
- Encourage online access to recorded document images by county staff to reduce document copying, eliminate documenting routing
- Acquire large-format scanner for recording and, in turn, scan large documents (e.g., survey plats) at full size for improved legibility. In addition, the County will:
  - Investigate (and where appropriate acquire) county office needs for large-format printing/plotting; and
  - Investigate and work toward future digital plat submission and recording option
- Maximize resources across Scott County region by encouraging the cities of Davenport and Bettendorf to use County-maintained parcel maps and databases. In addition, the County will provide online access to data for municipalities (parcel maps, aerial photography, imaged surveys and plats, etc).

b. Staffing Review

It was recommended that both the Parcel Maintenance Technician and GIS Analyst positions be filled at a full-time equivalent level. The County has already moved forward with these positions.

c. Enterprise Data Maintenance Policies

It was recommended that the County identify custodians for key enterprise datasets, and that maintenance, or service level agreements, be implemented when multiple stakeholders are dependent on the quality and timeliness of the data. Such policies should be documented and applied consistently to GIS and non-GIS data and across all county departments. Appendix D provides background information on policies including several examples of custodial and maintenance agreements.

The Scott County Iowa GIS Steering Committee supports the concept of data custodianship, in particular to aid in the management of enterprise-level datasets such as parcel information. The Committee is undertaking the following activities:

- Determine the scope and level of formality required to support effective enterprise data management, including which datasets would be included and the terms of agreements?
- Establish a process for approving and maintaining custodian agreements. It was recommended that the County use digital orthophotography to establish and test process proposed agreements and to then apply those lessons to parcel or other datasets.

d. Parcel Identifier Reconciliation

It was recommended to and approved by the Committee that an enhanced version of the existing Scott County parcel identifier be adopted for countywide use. Enhancements include using fully expressed township, range and section values, and support a county code prefix for external data sharing purposes. The new parcel numbering standard shall, at a minimum, conform to the following:

ttrrssqqxxx where:

tt = township
rr = range
ss = section number
qq = quarter-quarter section
xxx = lot number or unique parcel number

Example:
T77N R2E S6 SW1/4 NE1/4, parcel 104

Internal county use: 77020631104

External use: 8277020631104

Subsequent to review and discussion of project findings and recommendations, the Scott County Iowa GIS Steering Committee approved the following additional parcel identifier recommendations and action items:

- Develop new countywide parcel identifier based on PLSS-referencing
  - Maintain PLSS-referencing
    - use fully expressed (two digit) townships and ranges
    - develop new ¼ ¼ section coding
  - Investigate and where appropriate adopt subd/blk/lot (subdivision, block, lot) referencing
  - Investigate and where appropriate adopt standard parent-child referencing
  - Support new state requirement for DOR code and FIPS code
- Maintain cross-reference to legacy PIN information
  - Manage multiple PIN requirements via crosswalk table

e. Enterprise Data Repository

As identified in the Scott County *EGIS Strategic Plan*, a central component of the EGIS system will be a formal Enterprise Data Repository (EDR). The repository provides a warehouse of all critical County GIS and other enterprise information in an environment that can be readily accessed and used by a wide variety of decision-support systems. The repository does not represent a single database, but a conceptual container where spatial and non-spatial data can be stored.

It was recommended and the Committee reaffirmed and approved further development of an EDR for the County. The EDR would automate a number of processes and simplify the publication of GIS and non-GIS data from department systems to the EDR. As part of this, the County will work with its other business system vendors to maximize system integration and data sharing.

B. Introduction

1. Project Overview

Scott County is in the process of developing a multi-purpose, enterprise geographic information system (GIS) to support county operations and the delivery of public information and services. *A Strategic and Tactical Plan for the Development of an Enterprise Geographic Information System* (*EGIS Strategic Plan*) outlines a series of projects and initiatives that support the development and maintenance of the County's enterprise GIS system. Property (parcel) information is a key component of an enterprise GIS system. As part of the migration from a manual parcel mapping process to a digital mapping process, the County secured professional services to review and redesign of the parcel information management process. Specifically, the parcel management re-engineering project includes a review and recommendations on workflow, staffing, data custodian policies, and parcel identifiers. A separate report will address recommendations related to the parcel geodatabase design.

2. Approach

This report was developed based on project workshops and staff interviews, investigation of regional and industry best practices, discussions with Scott County information system vendors, and other independent research. Review comments on preliminary findings were used to refine project materials and recommendations.

C. Parcel Maintenance Workflow Redesign

A review of the parcel information management workflow was conducted to identify opportunities for process improvements and support the County's migration from manual parcel mapping to GIS-based parcel mapping. Parcel maintenance in Scott County is comprised of the following tasks: legal description review, plat book updates, existing parcel updates (ownership transfer only) and new parcel updates (splits/combines and subdivisions). These tasks are performed in a combination of manual and automated systems in the Scott County Auditor and Assessor's Offices.

1. Current Parcel Maintenance Workflow

Figure 1 illustrates the current parcel maintenance workflow. The workflow is grouped into four primary county activities: document recording, document distribution, legal description review, and parcel data maintenance. Relationships to parcel maintenance activities in the Cities of Davenport and Bettendorf are also depicted. Figure 2 shows the core parcel maintenance processes in the County Assessor and Auditor Offices.

Figure 1: Current Parcel Maintenance Workflow

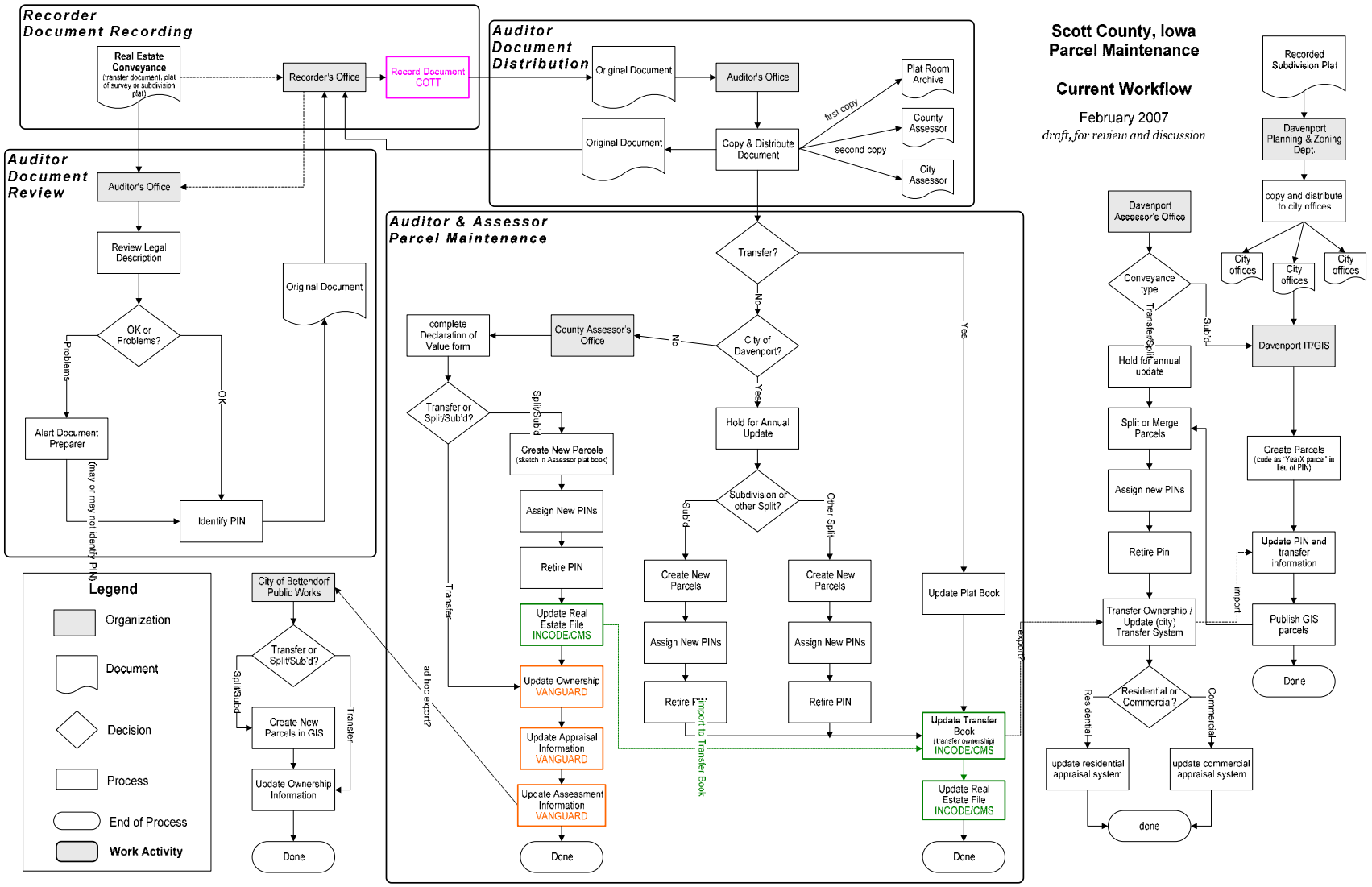
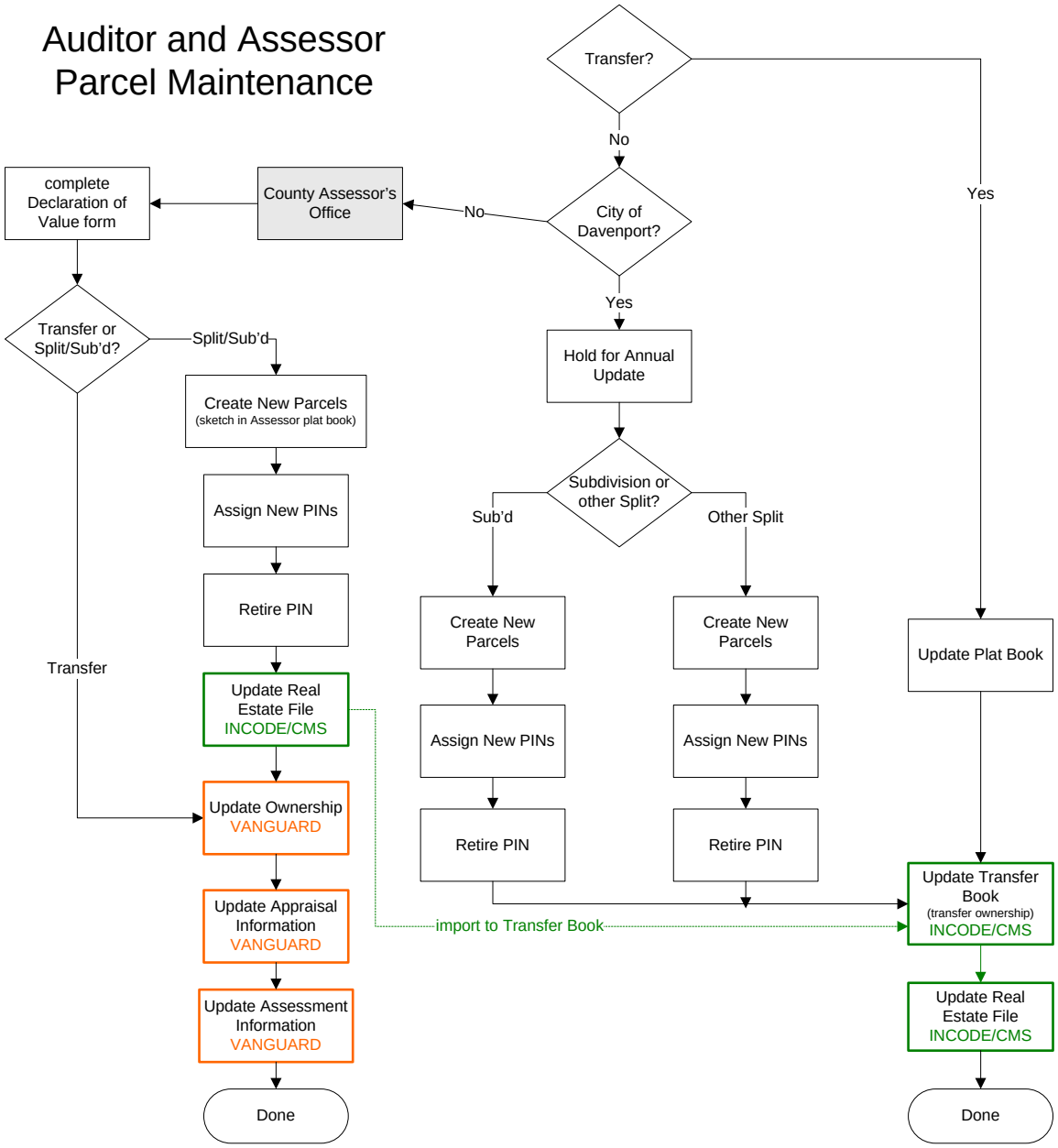


Figure 2: Current Auditor and Assessor Parcel Maintenance Workflow



The current parcel maintenance process is generally described as follows:

- Real property transactions begin at the Auditor's Office where legal descriptions are reviewed for accuracy prior to recording. Subdivision plat legal descriptions are reviewed by the Planning and Development Department and are not rechecked by the Auditor's Office.
- Approved legal descriptions are forwarded to the Recorder's Office for imaging and recording.

- Original documents are routed to the Auditor's Office where copies are made and distributed to the County Assessor and the City of Davenport Assessor. A set of copied documents is also required for Auditor staff use.
- All property transfers are updated in the Auditor's Plat Book.
- Transfers of existing properties (ownership change only) are updated in the county tax system.
- New property transactions (subdivisions, splits/combines) within the City of Davenport are updated annually in the tax system and mapped in plat books.
- New property transactions for the remainder of the county are processed in the County Assessor's Office, where ownership information is entered into the assessment system and re-entered into the tax system. The Assessor also maintains a set of plat books.

Table 1 captures the current parcel maintenance workload in Scott County. Scott County maintains property information for approximately 75,000 parcels, half in the City of Davenport and half in the remainder of the county. Approximately 8500 transfer documents are recorded annually, resulting in updates to 12,000 parcels in various county records and databases. Each parcel is handled an average of 2 ½ times. This is primarily due to the separate processes used for manual parcel mapping and the automated transfer system. Other maintenance duplication is apparent in the processing of existing parcel updates, which is done in two offices and in two different information systems (tax/transfer and assessment).

Table 1: Current Parcel Maintenance Workload

		Auditor (countywide unless noted)		Assessor (non-Davenport)	Scott County (all depts)
Type of Maintenance	**System**	**Annual Volume**	**System**	**Annual Volume**	
legal description review	---	~8100 records	---	4200 records	
Plat Book update	Auditor plat book	~11175 parcels	Assessor plat book	4875 parcels (150 split/combine; 50 sub'ds; 4000 existing)	
existing parcel (ownership change)	transfer book & real estate file	~8000 parcels	tax system & assessment system	4000 parcels	
parcel split/combine (excludes sub'ds)	transfer book & real estate file	~175 parcels (70 splits) *Davenport only*	real estate file	375 parcels (150 split/combine)	
subdivision parcels	transfer book & real estate file	~3000 parcels (30 sub'ds) *Davenport only*	real estate file	500 parcels (50 sub'ds)	
# Parcels updated		~11175		4875	**~11175**
# (unique) Parcels updated		~11175		875	**~12050**
# Parcel Records processed		~8100		4200	**~12300**
# (unique) Records processed		~8100		200	**~8300**
# Parcel Transactions (touches)		~22350		9750	**~32100**

2. Process Improvement Opportunities

A review of the current parcel maintenance workflow reveals the following opportunities for process improvement:

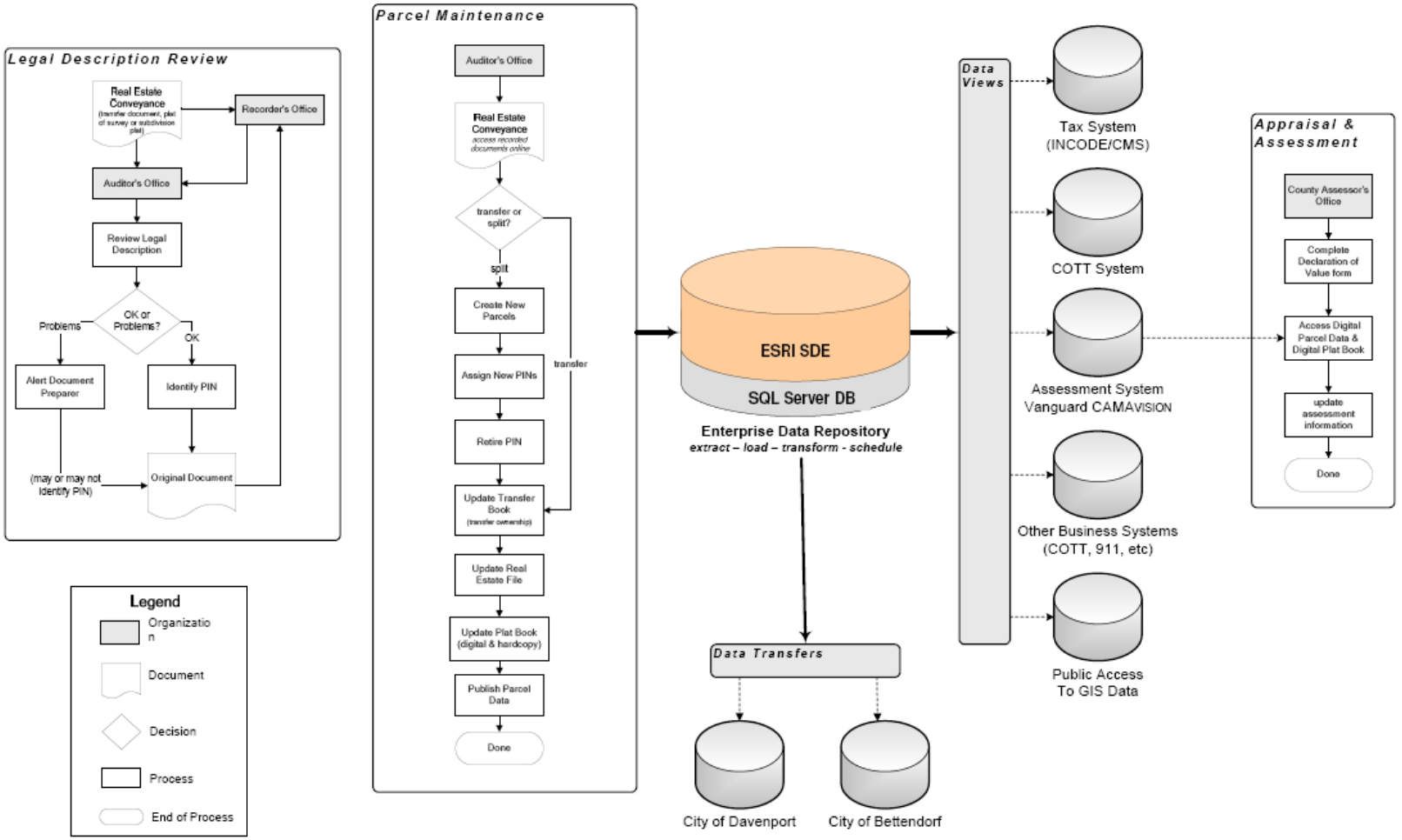
- Consolidate parcel maintenance duties in one office
- Maintain parcels by transaction rather than by location or type of update
- Integrate parcel mapping and non-mapping work processes to the extent possible; cross-train staff

- Consolidate new parcel creation maintenance duties (subdivisions, splits/combines)
- Provide parcel maintenance staff with access to online document images
- Automate plat book production
- Minimize interruptions to parcel maintenance by public counter requests to the extent possible
- Improve information system integration and management by establishing a data repository
- Automate updates to ownership information in the appraisal system
- Scan large documents (ex: survey plats) at full size for improved readability
- Consider implementing a digital plat submission and recording option

3. Proposed Parcel Maintenance Workflow

Figure 3 illustrates the proposed redesigned parcel maintenance workflow. This workflow incorporates the suggestions above, consolidating and streamlining parcel maintenance, and reducing document copies and routing. Legal description review and general parcel maintenance remain somewhat separate processes because the former occurs prior to document recording while the remaining tasks are performed after the document is recorded.

Figure 3: Proposed Parcel Maintenance Workflow



D. Staffing Review

Two staff positions related to parcel maintenance and the enterprise GIS program were reviewed to identify required resources and position duties and qualifications. The first position is the GIS Analyst position in the Department of Information Technology, GIS Division. This staff position will provide enterprise level technical support and services to county departments. Scott County has made considerable progress in recent years in developing a GIS system to serve Scott County citizens, businesses, and staff. As investments are made in this system, it is important to provide the resources to maintain and manage the system, as well as to support county departments as they use GIS applications in daily office operations.

A second position under review at Scott County is a Parcel Maintenance Technician position in the Auditor's Office. This position previously performed manual plat drafting, maintaining the plat book and developing parcel information related to subdivisions in the City of Davenport. Under the proposed redesigned work process, this position will take on additional parcel maintenance and Auditor GIS duties.

The GIS Analyst position was reviewed based on the Scott County *EGIS Strategic Plan* and annual work plans. The Parcel Maintenance Technician position was reviewed based on the Auditor's Office mission and program, current and projected workloads, and the Parcel Management Re-Engineering project.

1. GIS Analyst Position Review

a. GIS Activities and Skill Sets Requirements

Key GIS skill sets were determined based on industry standards and activities performed by staff in the Department of Information Technology. Table 2 shows GIS skill sets, along with the required knowledge and competencies for the GIS Analyst position. A more comprehensive list of skill sets, applicable to the Scott County enterprise GIS program is found in Appendix A.

Table 2: GIS Analyst Skill Set Details

Skill	Description / Responsibilities	Knowledge / Competencies
Application Developer	Key role in the system development life cycle; designs and develops the application based on system requirements and technology architecture constraints.	IS design and development methodologies; languages relevant to the targeted architecture: Java or VB; objects and APIs for COTT system.
Business Analyst (requirements)	Key role in the information system development life cycle; gathers and documents system requirements.	Spatial data concepts and principals. Requirement gathering practices and related artifacts required.
Cartographer	Key role in the design and implementation of virtual or hard copy map products or map series; formal or ad hoc.	Cartographic concepts and principles: generalization, projections and coordinate systems, data classification & presentation.
Data Analyst	Processes data for particular data requirements.	Spatial data concepts. Requirements gathering, problem solving.

Skill	Description / Responsibilities	Knowledge / Competencies
Technical Lead	Provide leadership in the various aspects of the business, either business or IT perspectives.	Leadership, facilitation, project management, and competence in the targeted technical area.
Tester	Key role in the system development life cycle; tests and assesses developed software based on test scripts and metrics.	Software benchmarking, script development, experience with the enterprise tools preferred.
Trainer	Train staff on specific technologies, methods or procedures related to GIS.	Presentation, adult learning; experience with the enterprise tools.

Current, completed, ongoing and planned Scott County GIS activities identified in the *EGIS Strategic Plan* are contained in Appendix B. Dates for these activities are based on Fiscal Years identified in the *EGIS Strategic Plan.* While these dates are not completely reflective of current activities, the overall order and progression of activities remains similar.

Based on the work plan and projected skill set requirements, Table 3 lists required skill sets in descending order by amount of estimated need. The table also illustrates the rise in required GIS technical support skill sets as Scott County's portions of enterprise GIS system are completed and become operational. As system components are developed, the skill sets that come into existence will be required on an ongoing basis for continued system operation and maintenance.

Table 3: GIS Activities and Skill Sets Requirements

Skill Sets used for the EGIS Strategic Plan	Individual Skill Set Activity Total	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Ongoing
EGIS Committee Support	6	1	1	1	1	1	1
Application Developer	5		1	1	1	1	1
Business Analyst	5		1	1	1	1	1
Business Expert – Address	5		1	1	1	1	1
Business Expert - Parcel Maintenance/Land Divisions	5		1	1	1	1	1
Data Analyst	5		1	1	1	1	1
GIS Technician	5		1	1	1	1	1
System Administrator	5		1	1	1	1	1
Technical Lead (dept)	5		1	1	1	1	1
Tester	5		1	1	1	1	1
Trainer	5		1	1	1	1	1
Data Coordinator	5		1	1	1	1	1
EGIS Program Manager	5		1	1	1	1	1
Business Expert - Elections/Wards/Districts	4			1	1	1	1
Cartographer	4		1	1	1		1
Skill Sets per Fiscal Year		1	14	15	15	14	15

b. GIS Resource Roles and Activity Assignments

Results of the GIS skill set and activities analysis were then compared to identifiable staff resource roles, whether existing, planned or anticipated to be required. Appendix C provides a summary of GIS activities by fiscal year, a description of each activity, and identifies the resources and roles required for the activity. Summary results of the GIS resource roles and activity assignments are shown below in Table 4.

Table 4: GIS Resource Roles and Activity Assignments

	Total Roles Required		GIS Coordinator	IT/GIS Analyst	Auditor GIS Tech	Other Dept GIS Tech
	Active	Planned				
Resource Roles per Activity	**43**	**38**				
Activities per Resource Role			**43**	**25**	**4**	**9**

The GIS resource roles and activity analysis projects resource needs for current projects, ongoing operations, and planned projects. As many projects are planned for the next 3 years as are completed or currently underway. Results of this analysis show that the GIS Coordinator is fully occupied by current and upcoming GIS system development projects. It also shows an increasing need for the GIS Analyst position to assist the GIS Coordinator in developing and managing the GIS system.

Finally, this table illustrates that as projects are completed and portions of the enterprise GIS system become operational, ongoing technical support resources must be made available to manage the technical infrastructure. As GIS technology and applications become part of day-to-day business operations, department requirements for GIS technical support services increase.

The amount of technical support resources required for enterprise GIS system support is dependent on the pace of projects and work plan completion. However, based on current and upcoming resource projections, it is estimated that 1.0 – 2.0 FTE GIS Analyst resources will be required to assist with ongoing operations and system development projects. The need for a second position becomes more critical as the GIS Coordinator role evolves from GIS system developer to enterprise GIS program manager, as the technology is woven into daily operational tasks, and as the GIS user base increases across county departments.

c. GIS Analyst Duties and Qualifications

This section summarizes the duties and qualifications of a GIS Analyst providing enterprise technical support. A GIS Analyst is generally responsible for planning, designing, and implementing department or county-specific GIS applications and projects. It provides technical support and coordination for department staff. More specifically, the Scott County GIS Analyst position will support ongoing development

and management of the County's enterprise GIS program through the following types of duties:

- Database and geodatabase modeling, data validation and quality control, version management, data loads and index tuning
- ArcSDE software, geodatabase schema, and services administration
- ArcIMS/ArcServer software and services administration
- Application development, maintenance, and tuning
- Data and systems documentation, technical and user procedures documentation
- Custom analysis, maps, scripts and programs
- GIS training and assistance

The GIS Analyst is a trouble-shooting, problem-solving staff position, managing numerous and varied projects. The position requires an extensive background in GIS and information technology. The position requires knowledge of specific softwares, programming languages, and database and network systems. The analyst uses this knowledge to provide continuous support and enhancements for the enterprise GIS system. At the current time, this position is needed to support and maintain completed enterprise GIS projects, as well as to support department GIS users as the enterprise GIS system grows and is used in additional business processes and services. For example, as the GIS user base increases, providing customized tools to simplify the use of, and access to, GIS data becomes increasingly critical.

2. Parcel Maintenance Technician Position Review

a. Auditor Duties related to Parcel Maintenance

Real estate-related transactions are among the most dynamic activities at the local government level. Whether due to rapid growth and development or the natural course of individual home ownership and sales, a large volume of property transactions are conducted on a daily basis. The Auditor's Office is charged with maintaining a public picture and record of this ever-changing landscape. Customers of the office are dependent on accurate and timely real property information.

The Auditor acts as a neutral agent for the county in developing and maintaining an index of land ownership, assessed values, and tax rates for the county. This begins with "transfer and platting duties". For purposes of real estate transfer, the Auditor maintains a countywide plat book depicting ownership parcels, a grantor/grantee index book, and a transfer book which record all transfers of ownership relating to each property. The County Assessor and City of Davenport Assessor use these plat books to classify property, assess values, and determine applicable taxation districts. The Auditor is the record custodian for the completed assessment rolls. After the County Board sets the tax levy, the Auditor assigns the tax rate for each taxation district in the tax rate book and then assigns taxes due to individual properties.

With respect to parcel data management, Scott County maintains public information for approximately 75,000 parcels of land. Half (37,500) of these parcels are in the City

of Davenport; the remainder, including 14,500 in Bettendorf, are in other areas of the county. Based on recording transactions from 2004-2006, there are approximately 8500 real estate transfers each year that require updates in various county databases and map products. Other Auditor duties that would benefit from the use of GIS-based data and technology include:

- The development and management of ward and election district information;
- Roadway information developed from platting and other land divisions; and
- Approval of subdivision names.

b. Parcel Maintenance Resource Requirements

Parcel maintenance resource requirements were determined based on known resource requirements from current work processes and estimates of projected needs based on a proposed redesigned workflow, application and product experience, and a review of other agency parcel maintenance resources. Table 5 shows estimated resource requirements for parcel maintenance using the proposed redesigned workflow.

The proposed redesign offers an opportunity to realign staff activities and duties to gain efficiency and support improved work processes. One of the goals of the redesigned workflow is to more tightly integrate map and non-map maintenance duties and cross-train staff. This means that the Parcel Maintenance Technician will have GIS and non-GIS duties beyond the mapping duties of the previous position. The new position should be crafted to:

- take on additional parcel mapping duties (ex: all types of new parcel creations rather than only certain types, digital map book production and maintenance)
- be responsible for other parcel maintenance (ex: existing parcel updates)
- develop and manage other GIS products and services for the Auditor's Office related to elections or other office activities.

In addition, the position can serve as a peer resource for other county departments and act as the Auditor's Office liaison with the enterprise GIS program and workgroup.

To take on these additional duties, and to strengthen and make the position more attractive to qualified applicants, the Parcel Maintenance Technician should be established as a full-time staff position.

Table 5: Estimated Parcel Maintenance Resource Requirements

Parcel Maintenance Task	New Process Auditor - (Countywide) System	FTE
legal description review	---	1.0 FTE
Plat Book update	ArcGIS/geo●gear	0.1 FTE
existing parcel (ownership change)	INCODE/CMS? ArcGIS/geo●gear?	1.0 FTE
new parcels (splits/combines including sub'ds)	ArcGIS/geo●gear	0.65 FTE
Estimated parcel resource requirements		*2.75 FTE*

c. Parcel Maintenance Technician Duties and Qualifications

The GIS Parcel Maintenance Technician supports the day-to-day operations of the Auditor's Office by performing routine production tasks related to real estate transactions. The vacant (GIS) Parcel Technician position is responsible for the mapping and integration of real property data in the Auditor's Office. This position will create and maintain GIS parcel data, update office databases to generate maps and reports, maintain data and procedural documentation, assist other department staff with access to parcel information and map products, and assist with inquiries from the public related to land ownership and division.

A GIS Technician generally performs the same tasks on a daily basis and must remain focused and detail-oriented while performing repetitive tasks. The position requires a strong background in land records, real estate law and surveying, with sufficient knowledge of GIS to use the technology to conduct daily data maintenance duties such as:

- Maintain GIS and tabular parcel databases
- Maintain and publish plat book information
- Develop department analyses, maps and reports
- Investigate and implement GIS solutions for other Auditor responsibilities, such as subdivision name approval and election support
- Represent department on GIS committees and user groups
- Assist with public inquiries related to real estate transfers and property information

3. Position Roles and Relationships

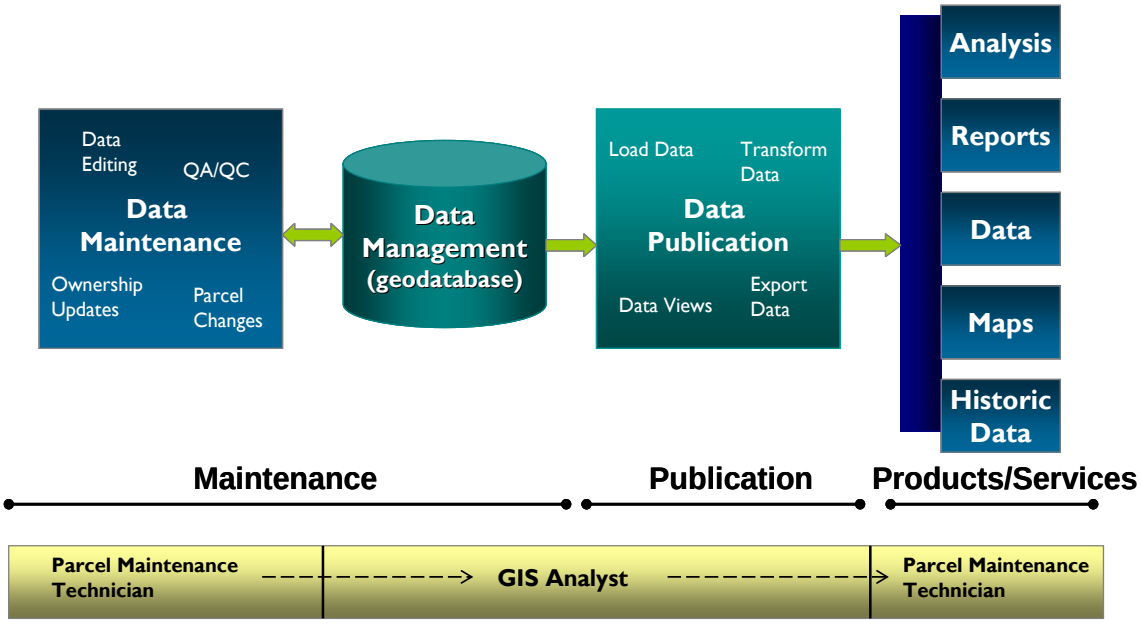
In the broadest terms, enterprise GIS roles within an organization can be categorized based on operational use of the technology. These roles - GIS Viewers, GIS Analysts, GIS Editors, and GIS Developers - span the organization, from staff who access and use GIS browser applications to central technology support staff. The roles are described in the table below. The Scott County positions under review in this report translate into GIS Editor (Parcel Maintenance Technician) and GIS Developer (GIS Analyst).

Table 6: GIS Organizational Roles and Relationships

GIS Role	Scott County Position Name	Description
Viewer		Staff who view and query, but do not create, GIS maps and information. Primary job description is not GIS.
Analyst		Staff who require additional tools for GIS analysis and cartographic production. Typically create data for project-level, rather than enterprise, use. Primary job description may or may not be GIS.
Editor	Parcel Maintenance Technician	Staff who are responsible for developing and maintaining GIS databases, including data validation and quality control. Primary job description is GIS.
Developer	GIS Analyst	Staff who are responsible for developing and maintaining geodatabases, scripts and applications. Familiar with a variety of GIS software products and programming languages. Primary job description Is GIS.

Long term development of a successful enterprise GIS system and program in Scott County requires the right resources with the right skills for the task at hand. Proper resourcing also requires a partnership between department and centralized technology support. The following figure illustrates how the Parcel Maintenance Technician and GIS Analyst work together to support the parcel data management process in Scott County.

Figure 4: Parcel Maintenance Resource Roles and Relationships



The County's enterprise GIS implementation has evolved to a next stage……technology has been installed, data has been acquired, and applications have been deployed. These beginnings must be maintained with an investment of staff resources. As the GIS Coordinator's time becomes occupied with new projects and continued system development, additional staff resources are needed to maintain, customize and enhance

what is already operational. As departments increase the use of GIS in daily operations, they place greater demand on GIS Division staff to support what has been installed, to customize and enhance technology for department use, and to develop new products and services. The GIS Analyst position serves this growing need.

At the same time, department mandates and duties do not change drastically with technology. The Auditor's Office has the same (or increasing) volume of work whether data is maintained on paper maps or in computer databases. Their tools may change but the type and volume of work does not change because of the method used to perform the work. Thus the Auditor Parcel Maintenance Technician remains as critical to the day-to-day operations of the office as the vacant (manual) parcel maintenance position.

The staffing review reveals that the two positions under consideration have different roles in the organization, require different knowledge and skill sets, and are generally different types of people and personalities.

E. Enterprise Data Maintenance Policies

Enterprise data management is facilitated by the establishment of policies that identify data custodians, and clarify maintenance responsibilities and performance measures. An enterprise data custodian policy serves as the guiding instrument for data maintenance agreements which are established for individual datasets.

1. Enterprise Data Custodian Policy

The development and maintenance of enterprise data is a significant investment and a valuable resource for Scott County. To fully realize the benefits of this investment and resource, data that serves enterprise-level county interests should be particularly well managed, reliable in terms of content, quality and currency, and be openly shared and accessible. One means to manage the quality and availability of enterprise data is through the identification of data custodians and the establishment of data maintenance agreements.

A data custodian represents the County by acting as a trustee of public records and information. The custodian is generally the publicly known authoritative source of the information, responding to public inquiries about the data. A data custodian has the following responsibilities with respect to enterprise datasets:

- Accountable for data collection, development, and maintenance.
- Maintain and manage the data, including assuring data quality, standards compliance, error/problem resolution, metadata and public access.
- Provide guidance and subject expertise; develop data standards.
- Provide access to the data in accordance with policies.
- Maintain adequate financial and staff resources to support an ongoing commitment to data maintenance.

The data custodian policy contained in Appendix D sets forth guidelines to foster improved and coordinated management of enterprise data sets. The policy applies to the maintenance, management, and distribution of enterprise data used across multiple Scott

County departments. The policy does not apply to data used within a single department for non-enterprise purposes.

1. Enterprise Data Maintenance Agreement

An enterprise data maintenance agreement is used to administer the data custodian policy. Agreements are customized to meet the needs of that particular data custodian, data sets and business requirements. Maintenance agreements clarify service expectations and identify performance measures to monitor data maintenance. At a minimum, data maintenance agreements should address the following items:

- Purpose, scope, and authority
- Description of data content, accuracy, completeness, limitations, quality requirements, and use privileges
- Expected maintenance and publication schedules, data publication formats, metadata
- Error notification, resolution, escalation processes
- Performance measures, monitoring, reporting processes

Appendix D contains a template data maintenance agreement, along with a sample agreement applied to a relatively simple-to-manage enterprise dataset, orthoimagery. A proposed parcel data maintenance agreement is also included in Appendix D.

2. Managing Enterprise Data Maintenance Agreements

Policies such as the data custodian policy and data maintenance agreements need to be established by an authoritative body, for example, the GIS Steering Committee. Policies and agreements should be administered and monitored on a regular basis to determine whether new agreements are needed and whether existing agreements are effective. Maintenance agreements should be periodically reviewed to determine if performance measures are being met, and if not, to identify and address impediments to success. Performance monitoring can also be used to aid budget requests and county reporting requirements.

F. Parcel Identifier Reconciliation

1. Parcel Identifiers

A parcel identifier (PID or PIN) acts as the primary relational key or linkage in databases and computer systems that manage real property information. Tax, appraisal, assessment, and other land records management systems use a PIN to uniquely identify parcels of land as divided by ownership, title interests and taxation districts. A major point of confusion and an impediment to efficiency in information systems is the lack of clear definition – what exactly the parcel represents and which business functions the parcel identifier will support. Ideally, a parcel identifier is independent of one business function or computer system, and supports the broadest range of needs. Supporting multiple parcel identifiers,

with cross-reference to others, is easily accomplished with today's information systems and automated processing.

The critical elements of a parcel identifier have been outlined by the International Association of Assessing Officers and other real estate professionals in industry standards and guidelines for best practices. These standards and best practice guidelines suggest that ***parcel identifiers should be unique***, *simple to use* and ***easily understood***, ***flexible*** *and adaptable* to the changing landscape and business need, ***permanent, accessible*** for use, ***and economic*** to implement and maintain. Types of parcel identifiers include:

- Location identifiers
  - Map-based identifiers – referenced to a map book, map page or portion of a map page
  - Geographic coordinate identifiers – contain the concatenated latitude and longitude coordinate values of the parcel centroid
  - Public Land Survey System identifiers – referenced to townships and ranges, sections, and often to the quarter, quarter-quarter, and/or government lot level
- Name identifiers – reference the name of the property owner or name code in a grantor-grantee index
- Alphanumeric identifiers – arbitrary sequential numbering system

2. Scott County Parcel Identifiers

Historically, two different parcel identifiers have been used in the Scott County region, one for City of Davenport properties and one for all other Scott County properties. Reconciling or standardizing these identifiers is a complex undertaking, however, supporting business processes and information systems requires that the local identifiers be cross-referenced, if not reconciled to a single standard. Reconciling and standardizing the use of parcel identifiers will help the County gain staff efficiency, improve the quality of and access to information, support departments in delivering public services, and simplify the use of parcel identifiers by the public and professionals working from outside the local area.

Iowa Code of Administration 441.29 authorizes the County Auditor and the County Board of Supervisors to establish a "real estate index number" for purposes of tax administration purposes. This authority provides a basis for reconciling Scott County parcel identifiers in a manner that maintains a relationship with historic or legacy PIN schemes, while improving the identifier and its use in today's legal and computing environments.

There is strong regional support for the development of a single standard PIN for use by Scott County government agencies, staff and their customer community (attorneys, surveyors, title companies, and other real estate professionals).

a. Existing Parcel Identifier – Scott County

Scott County uses a Public Land Survey System location PIN that was developed by a former County Auditor based on state and IAAO guidelines and neighboring county practices. This PIN is used for all properties in Scott County, except those in the City

of Davenport. The Scott County parcel identifier is a unique nine-digit number conforming to the following schema depicted below.

trssqqxxx where:

- t = township (tens digit suppressed; all townships north of 5th P.M.)
- r = range (tens digit suppressed; all ranges east of 5th P.M.)
- ss = section number
- qq = quarter quarter section
- xxx = lot number or unique parcel number

Current practice is to retire – not re-use – parcel identifiers. There is no consistent method for assigning parent-child parcel identifiers.

b. Existing Parcel Identifier – City of Davenport

The City of Davenport uses a map-based location PIN that is cross-referenced to hard copy map books kept by the office. This identifier is used for all properties in the City of Davenport, regardless of the agency assigning or retiring identifiers. The geographic coverage of Davenport plat books varies and does not correspond uniformly to Public Land Survey System sections, townships and ranges. A plat book may contain portions of several sections, a complete section, or only a portion of a section. The plat book page number and part generally correspond to quarter sections, quarter-quarter sections, or quarter-quarter-quarter sections. The Davenport PIN schema is depicted below.

vsspptxx where:

- v = plat book volume
- ss = section number (00 is used when section number is not required)
- pp = page number
- t = part (portion of page) number
- xx = lot number or unique parcel number

c. State Requirements

As a result of a legislative advisory committee review of electronic filing, recording and indexing of instruments affecting real property, Iowa recently updated requirements related to "real estate index systems". The statute identifies the scope of application as "all real estate tax administration purposes, including the assessment, levy and collection of taxes", and that the authority for the establishment of a real estate index system, cross-indices, and "index number tax maps" lies with the County Auditor or Auditor's designee. In addition, the statute update requires that the new index system include the use of the Iowa Dept. of Revenue two-digit county code as the prefix, and that parcel numbers be retired rather than re-used.

> Iowa Code of Administration 441.29 Plat book--index system.
> The auditor, or the auditor's designee, of any county shall establish a permanent real estate index number system with related tax maps for all real

estate tax administration purposes, including the assessment, levy, and collection of such taxes. Wherever in real property tax administration the legal description of tax parcels is required, such permanent number system shall be adopted in addition thereto. The permanent real estate index numbers shall begin with the two-digit county number and be a unique identifying number for each parcel within the county. These numbers shall follow the property, not the owner, and can be an alphanumeric system. In the event of a division of an existing parcel, the original permanent parcel index number shall be retired and new numbers assigned. The auditor shall prepare and maintain permanent real estate index number tax maps, which shall carry such numbers. The auditor shall prepare and maintain cross indexes of the numbers assigned under this system, with legal descriptions of the real estate to which such numbers relate. Indexes and tax maps established as provided herein shall be open to public inspection.

d. Staff Considerations

Staff feedback was gathered through an educational presentation and discussion with the Parcel Management Re-Engineering Project Team, as well as through interviews with individual staff and offices. These events included Scott County, Davenport, and Bettendorf staff members.

There is strong consensus for a single parcel identification system in the Scott County region. Which particular system is adopted as a standard was not considered as critical as that the identifier:

- Be unique and not re-used;
- Retain a geo-coded reference;
- Support cross-referencing to parcel numbers in the old schema; and
- Be implemented with sensitivity to staff workloads and business calendars.

There was general agreement that the choice for a standard parcel identifier should be thoughtful and based on workflow, cost, and staff and computer system impacts. The City of Davenport uses a routing number to support assessment duties; this number would also need to be cross-referenced.

e. Information Systems Considerations

Reconciling, standardizing or cross-referencing parcel identifiers may be limited by information system requirements or costs associated with implementing a non-proprietary solution. To determine impacts and potential costs related to PIN standardization, county computer systems and applications were reviewed with respect to the following:

1. Database support for parcel identifier
2. Identifier definition and format
3. Implementation/conversion costs
4. Ability to support cross-referencing or multiple identifiers

Indexing/Imaging (COTT Systems) -

1. Client-customized PIN definition and format (no current definition or format for Scott County)
2. No cost for first time implementation; conversion costs apply thereafter
3. No
4. One PIN field per index (ex: Land Records)

Tax & Real Estate Transfer (Tyler/INCODE CMS) -

1. One PIN field plus one alternate PIN field
2. User-defined PIN definition and format
3. (dependent on services request)
4. Could convert unused data field to support other PIN field requirements

Appraisal & Assessment (Vanguard UNIVERS) –
(vendor contacted)

Parcel Mapping (ArcGIS/geo•gear) -

1. ArcGIS supports multiple PIN fields (geogear?)
2. User-defined PIN definition and format
3. (dependent on services request)
4. ArcGIS customizable *(geogear?)*

City of Davenport -
The City of Davenport uses parcel identifiers in two appraisal applications and in ArcGIS parcel mapping. While these systems were not directly investigated, it is expected that the in-house developed residential appraisal and GIS mapping applications would have low conversion costs.

Legacy Parcel Identifiers
A cross reference to legacy parcel identifiers will need to be established and maintained so that historic information can be retrieved when needed. This data does not need to be instantly retrievable, but does need to be available on a permanent basis in the event the County requires access to records of past actions and transactions.

3. Parcel Identifier Reconciliation

Due to the County role in administering parcel identifiers and regional parcel data maintenance, it is recommended that an enhanced version of the Scott County parcel identifier be adopted for countywide use. These enhancements would remove some of the current difficulties in using the existing identifier, and modernize its format. The proposed identifier format uses fully expressed township, range and section values and supports current state requirements for incorporation of county code.

ttrrssqqxxx where:

- tt = township
- rr = range
- ss = section number
- qq = quarter quarter section
- xxx = lot number or unique parcel number

Example:
(internal county use) 77020631104 (external use) 8277020631104
T77N R2E S6 SW1/4 NE1/4, parcel 104

Other enhancement considerations for the reconciled parcel identifier include:

- Streamlined ¼ & ¼ ¼ section coding, using numbers 1-4 applied in a clockwise or PLSS-based format
- Support for urban block/lot referencing

The enhanced Scott County parcel identifier supported by crosswalk tables and an enterprise data repository offers Scott County the greatest long term benefits with minimal operational impact and implementation costs. The proposed identifier modernizes the current county identifier, simplifying its use for staff, the general public, and occasional or remote users of Scott County parcel information.

G. Other Findings

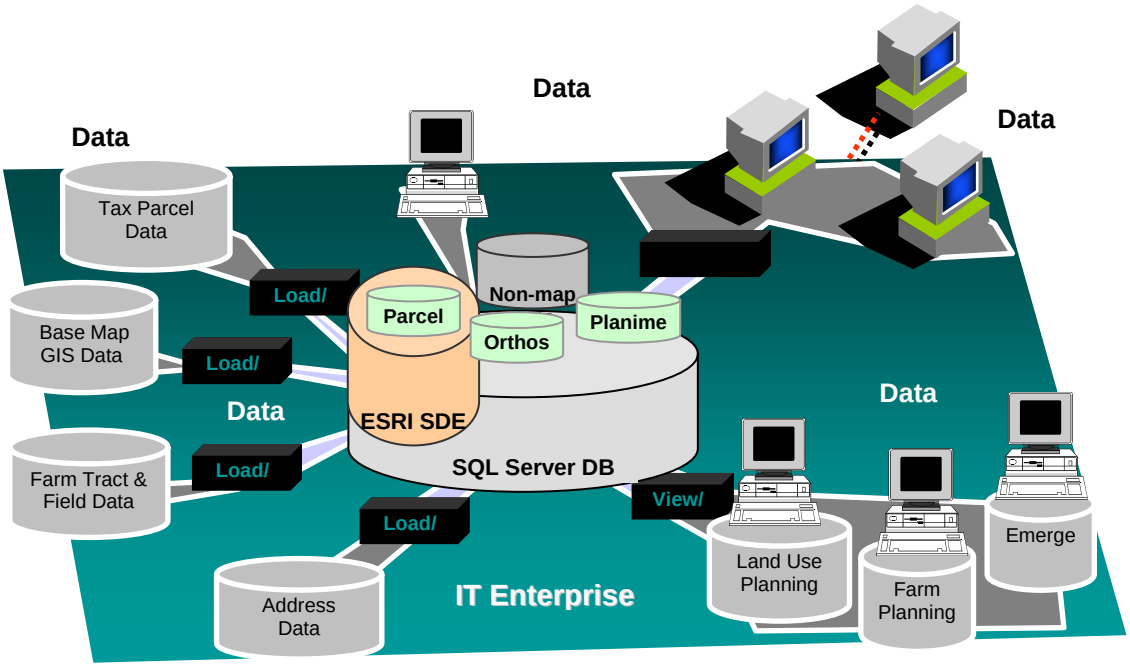
1. Enterprise Data Repository

As identified in the Scott County *EGIS Strategic Plan*, a central component of the GIS system will be a formal Enterprise Data Repository (EDR). The repository provides a warehouse of all critical county GIS and other enterprise information in an environment that can be readily accessed and used by a wide variety of decision-support systems. The repository does not represent a single database, but a conceptual container where spatial and non-spatial data can be stored. The capabilities of the repository can be expanded to include any data source within the county that has a need to be served to multiple clients.

Formal automated processes simplify the publication of GIS and non-GIS data from department systems to the EDR. These processes gain efficiency by publishing, for example, parcel or address data to a central data repository where a broad range of ETL services and processes can be run, preparing and publishing parcel data once, and making it available for "pick up and use" by multiple information systems. A parcel identifier crosswalk table is a critical component of the enterprise data repository, parcel data exchange and system interoperability.

The repository houses only GIS and non-GIS related data that serves multiple county departments and external partner needs and thus provide enterprise value. An illustration of this concept is visible in Figure 5.

Figure 5: Enterprise Data Repository



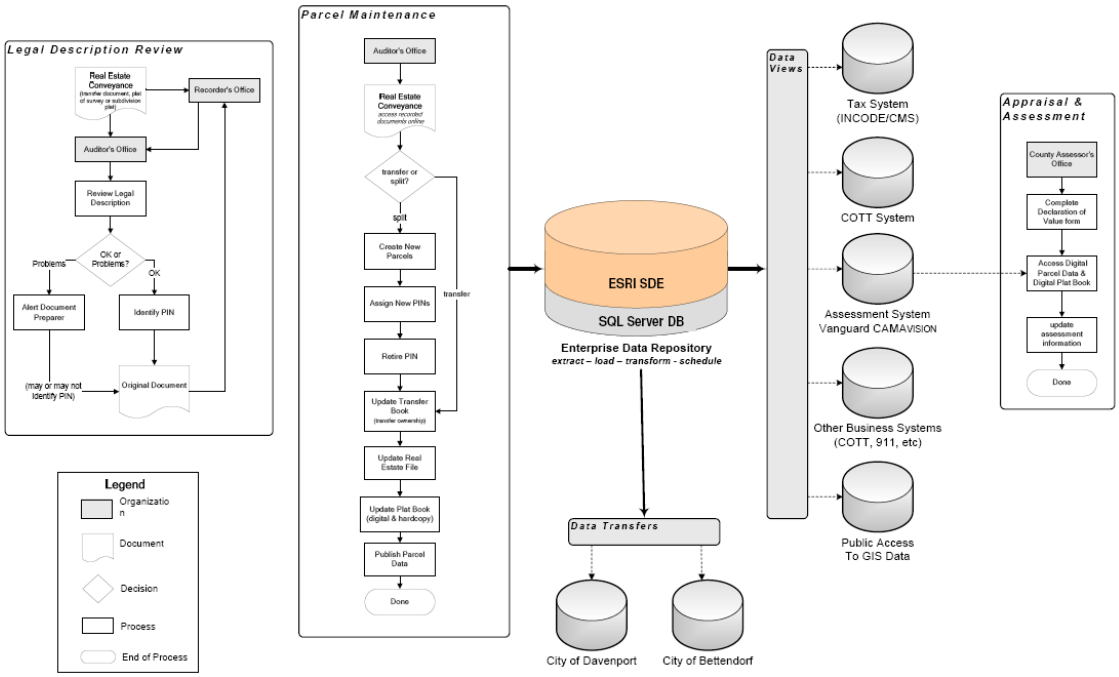
H. Recommendations / County Action

1. Parcel Workflow Redesign

It is recommended that the parcel workflow be redesigned to take advantage of the following opportunities for process improvement (proposed workflow depicted in Figure 6).

- Consolidate parcel maintenance duties in one office
- Maintain parcels by transaction rather than by location or type of update
- Automate plat book production
- Consolidate new parcel creation maintenance duties (subdivisions, splits/combines)
- Minimize interruptions to parcel maintenance by public counter requests
- Improve system integration/management by establishing a data repository
- Automate updates to ownership information in the appraisal system
- Provide parcel maintenance staff with access to online document images
- Scan large documents (e.g., survey plats) at full size for improved legibility
- Consider implementing a digital plat submission and recording option

Figure 6: Proposed Parcel Maintenance Workflow



County Action:

Subsequent to review and discussion of project findings and recommendations, the Scott County Iowa GIS Steering Committee approved the following parcel workflow recommendations and action items:

- Maintain parcels by transaction rather than by location or type of update
  - Strive for and establish expectation of currency within several days of recording
  - establish separate maintenance and publication schedules
- Consolidate parcel maintenance duties
  - Reduce/eliminate duplicate parcel maintenance
  - Reduce/eliminate separate map and non-map maintenance tasks
  - Automate plat book production
- Improve system integration and management
  - Maintain parcel information once, publish to multiple systems
  - Move towards data repository implementation
- Encourage online access to recorded document images by county staff
  - Reduce document copying, eliminate documenting routing
- Scan large documents (ex: survey plats) at full size for improved legibility
  - Investigate and acquire large-format scanner for recording
  - Investigate (and where appropriate acquire) county office needs for large-format printing/plotting

- Investigate and work toward future digital plat submission and recording option

- Maximize resources across Scott County region
  - Encourage Davenport and Bettendorf use of county-maintained parcel maps and databases
  - Provide online access to data for municipalities (parcel maps, aerial photography, imaged surveys and plats, etc)

2. Staffing Review

It is recommended that both the Parcel Maintenance Technician and GIS Analyst positions be filled at a full-time equivalent level.

County Action:

County has moved forward with the recruitment of a full-time parcel maintenance technician in the Auditor's Office; the position was filled.. The GIS Analyst position has received budget authorization and is expected to be filled in the fall of 2007.

3. Enterprise Data Maintenance Policies

It is recommended that the County identify custodians for key enterprise datasets, and that maintenance, or service level agreements, be implemented when multiple stakeholders are dependent on the quality and timeliness of the data. Such policies should be documented and applied consistently to GIS and non-GIS data and across all county departments.

County Action:

The Scott County Iowa GIS Steering Committee supports the concept of data custodianship, in particular to aid in the management of enterprise-level datasets such as parcel information. The Committee is undertaking the following activities:

- Determine the scope and level of formality required to support effective enterprise data management
  - which datasets?
  - detailed or general agreements?
- Establish a process for approving and maintaining custodian agreements
  - use digital orthophotography to establish and test process/agreements
  - apply to parcel or other datasets

4. Parcel Identifier Reconciliation

It is recommended that an enhanced version of the existing Scott County parcel identifier be adopted for countywide use. Enhancements include using fully expressed township, range and section values, and support a county code prefix for external data sharing purposes. It is also recommended that the county investigated and standardize parent-child parcel identifiers. Other possible enhancements include a more streamlined ¼ and ¼ ¼ section coding schema, and cross-referencing to urban subdivisions, blocks, and lots. Legacy parcel

identifier information should be cross-referenced and made permanently available for staff use and information system integration.

ttrrssqqxxx where:

- tt = township
- rr = range
- ss = section number
- qq = quarter-quarter section
- xxx = lot number or unique parcel number

Example:
T77N R2E S6 SW1/4 NE1/4, parcel 104

Internal county use: 77020631104

External use: 8277020631104

County Action:

Subsequent to review and discussion of project findings and recommendations, the Scott County Iowa GIS Steering Committee approved the following parcel identifier recommendations and action items:

- Develop new countywide parcel identifier based on PLSS-referencing
  - maintain PLSS-referencing
    - use fully expressed (two digit) townships and ranges
    - develop new ¼ ¼ section coding
  - investigate and where appropriate adopt subd/blk/lot (subdivision, block, lot) referencing
  - investigate and where appropriate adopt standard parent-child referencing
  - support new state requirement for DOR code and FIPS code
- Maintain cross-reference to legacy PIN information
  - manage multiple PIN requirements via crosswalk table

5. Enterprise Data Repository

It is recommended that Scott County investigate the need and timeliness of an enterprise data repository to better support enterprise GIS system development, the parcel management re-engineering project, the parcel mapping conversion project, and parcel identifier crosswalk tables and data sharing. The repository would enable the County to develop vendor-independent system integration solutions and maintain greater internal control over changes to enterprise databases and systems.

County Action:

Subsequent to review and discussion of project findings and recommendations, the Scott County Iowa GIS Steering Committee approved the following data repository recommendations and action items (see parcel workflow redesign):

- Move toward data repository implementation
- Work with county vendors to maximize system integration and data sharing

Appendix A: GIS Skill Sets

Key GIS skill sets were determined by GeoAnalytics based on industry standards and activities performed by staff in the Department of Information Technology and GIS Division. The following table shows GIS skill sets, along with required knowledge and competencies, applicable to current and upcoming work activities in the Scott County enterprise GIS program. In large organizations, these skill sets may be specialized in individual staff positions. In small and mid-size organizations, a single staff person may contribute several skills.

There is a clear role distinction between business operational roles and operational support roles…i.e., business department staff focus on daily production or transactional tasks, while IT department staff support the technology used to perform those tasks. One does the transactions, the other manages the technology and supports the system when operational duties are interrupted. Business departments offer specialized knowledge and expertise related to the duties of the office, and represent customer expectations for products and services. In this role, department staff contribute Business Expert, Tester, and other skills to the development and maintenance of the county's enterprise GIS system. Technical support staff develop and manage the enterprise GIS system by contributing skills such as Analyst, Developer, System Administrator, and Trainer.

Skill	Description / Responsibilities	Knowledge / Competencies
Application Developer	Key role in the information system development life cycle; designs and develops the application based on system requirements and technology architecture constraints.	IS design and development methodologies; languages relevant to the targeted architecture: Java or VB; objects and APIs for the COTS software (ESRI, Oracle).
Business Analyst (requirements)	Key role in the information system development life cycle; gathers and documents system requirements.	Spatial data concepts and principals. Requirement gathering practices and related artifacts required.
Business Expert – Address		Business Skills and Knowledge
Business Expert – Elections/Ward & District Maintenance		Business Skills and Knowledge
Business Expert - Land Records/Parcel Maintenance, Land Divisions		Business Skills and Knowledge
Cartographer	Key role in the design and implementation of virtual or hard copy map products or map series; formal or ad hoc.	Cartographic concepts and principles: generalization, projections and coordinate systems, data classification, data visualization / presentation.
Data Analyst	Processes data for particular data requirements.	Spatial data concepts and principals. Informal requirement gathering, problem identification and solving.
Data Coordinator	Key role in the development and application of policies,	Leadership, facilitation, management, planning. Data administration, data

Skill	Description / Responsibilities	Knowledge / Competencies
	standards, quality, supply, storage, and access of data holdings.	production, data development; data quality.
GIS Committee Support	Staff to GIS oversight committees. Support oversight committee in policy and budget development, work plan management, and enterprise coordination.	Leadership, facilitation, negotiation, management, experience in the technical aspects of the business.
GIS Program Manager	Ensures enterprise GIS is developed and maintained to meet user needs and agency goals.	Leadership, advocacy, facilitation, operational management and reporting, intra and inter-governmental coordination, strategic and tactical planning.
GIS Technician	Applies specific GIS technology to the given task; this is not development but the use of developed functionality.	Applied skill and knowledge of ArcGIS, ArcMap, ArcIMS, etc and any custom code or programming.
System Administrator	Key role in the information system development life cycle; determines overall technology architecture and deployment model. Ensures desktop and server computing meets user needs and department security requirements.	IS design and development methodologies; data and system architecture design and management methodologies; security administration; experience in systems design, deployment, and integration.
Technical Lead	A general term for the role that provides leadership in the various aspects of the business, either business or IT perspectives.	Leadership, facilitation, project management, and competence in the targeted technical area.
Tester	Key role in the information system development life cycle; tests and assesses developed software based on test scripts and metrics.	Software benchmarking, script development, experience with the enterprise tools preferred.
Trainer	Train staff on the use of specific technologies, methods or procedures related to the application of or assessed value of GIS.	Presentation, adult learning; experience with the enterprise tools.

Appendix B: Strategic EGIS Plan Activities Details

The table below summarized current, completed, ongoing and planned Scott County GIS activities identified in the *EGIS Strategic Plan*. Dates for these activities are based on Fiscal Years identified in the *Enterprise GIS Strategic Plan.* While these dates are not completely reflective of current activities, the overall order and progression of activities remains similar.

Core GIS business components include Process, Data, Technology, Organization, and Application. Scott County EGIS activities and tasks are categorized below into these components.

- Process- the business functions, tasks, and operational mechanisms of an enterprise, such as data creation, maintenance, or management; and decision support and analysis.
- Data- information needs, custodianship, access, and publication that includes creation, use, and integration. Data is processed by type, format, accuracy, resolutions, etc.
- Technology- Hardware, software, network communications, and integration of disparate systems such as IT architectures or GIS architectures.
- Organization- resources, which can be referred to personnel or systems such as data, technology, or applications. Organization also refers to governance mechanisms or operational management which includes work and data flows as well as process improvement.
- Application- tailored tools to serve business process and business needs.

Core Name / Work Year	Activity Name	Activity Description
Application		
FY2004	Develop/Acquire/Maintain Web-Based Browser for Public Data	Provide technical support, monitoring, and enhancements over time.
FY2005	Develop/Maintain GIS Map Creation/Plotting Application	Provide ability for non-technical staff to create and print standard county maps needed by multiple departments.
FY2006	Integrate GIS with Tax and Assessment Systems	Promote and assist system integration
FY2006	Integrate GIS with Emergency Dispatching System	Promote and assist system integration
FY2006	Integrate GIS with Highway Asset Management System	Promote and assist system integration
FY2007	Develop and Implement Custom GIS Tools and Applications	Provide technical support, monitoring, and enhancements over time.
ongoing	Maintain EGIS Applications	Provide technical support and monitoring, including supporting middleware such as ArcIMS. Provide enhancements over time.
Data		
FY2004	Initial Public Domain Data Acquisition	Acquire, publish, and support agency use of external GIS datasets.
FY2004	Develop Data Quality Standards	

Core Name / Work Year	Activity Name	Activity Description
FY2004	Establish Data Custodianship	Develop an EGIS data custodian policy and establish agreements with individual custodians as datasets are made part of EGIS.
FY2004	Test and Validate Existing Base Map Data	Acquire and evaluate municipal GIS parcel data for use in EGIS.
FY2004	Procure Survey Control and Orthophotography Services	Acquire, publish, and support agency use of updated survey and orthophotography data.
FY2005	Develop Street Centerline Layer with Address Ranges	Implement a comprehensive master address system.
FY2005	Procure Parcel Map Conversion Services	As stated.
FY2006	Create Other/Supplemental GIS Layers	As stated.
ongoing	Develop and Manage Enterprise (spatial and non-spatial) Data Repository	Promote and assist system integration via access to the SDR and related tools.
ongoing	Archive Data Holdings	Provide proper archival mechanisms for EGIS operations and SDR data stores.
ongoing	Produce Standard Map Products	Produce and maintain standard map products (other than parcel maps): county street maps, county-wide maps (election districts, parks, etc).
ongoing	Provide Custom Data Analysis and Reporting	Provide services to depts. upon request (e.g., voting, sex offenders, homeland security)
Organization		
FY2003	Establish GIS Program Governance Structure	As stated.
FY2003	Create GIS Division and Recruit GIS Coordinator	As stated.
FY2004	Develop GIS Business Plan	As stated.
ongoing	Establish GIS Information Policy	Establish policies prior to data development and technology implementation (e.g., data content and quality standards, access rights and restrictions, internet privacy policy, fees and cost recovery).
ongoing	Retain GIS Consulting Assistance	
ongoing	Acquire GIS Training	Provide formal staff skill development and training.
FY2005	Create and Recruit GIS Technician/Analyst Position	As stated.
ongoing	Advance Agency Access to and Use of the EGIS	Additional enhancements to EGIS.
ongoing	Facilitate GIS Steering Committee, GIS Technical Committee, and project sub-committees.	Provide leadership and staff support: establish agendas, schedule meetings, record minutes, lead committees to meet established goals and to accomplish tasks.

Core Name / Work Year	Activity Name	Activity Description
ongoing	Support GIS Users Group	Provide mechanism for staff to share ideas, data, methods, and tools; provide technology demonstrations and educational presentations on a periodic basis.; organize and administer user group meetings.
ongoing	Develop and Maintain GIS Division Website.	As stated.
Process		
FY2004	Parcel Management Re-Engineering	Change and create a more automated parcel maintenance and workflow
FY2005	Develop Countywide Master Address Database/System	
ongoing	Advocate for EGIS	Formal and informal program advocacy at management, staff, and inter-agency levels.
ongoing	Manage EGIS Performance	Identify, implement, monitor, and assess feedback from customers.
ongoing	Manage EGIS Projects	Establish project guidelines and procedures: risk, scope, and communications management and methodologies; clarify deliverables, establish work plan and schedule; review deliverables; close out.
ongoing	Perform Research and Development	Investigate best practices in business processes, governance, performance management, skill sets, etc.
ongoing	Provide EGIS “helpdesk” Support	Respond to ad hoc inquiries for help by enterprise GIS users.
Technology		
FY2004	Initial Technology Acquisition	Acquire GIS workstation, database server, application, and related software and licenses.
FY2006	Acquire GPS Technology and Integrate with GIS	Acquire engineering grade GPS technology and integrate with secondary roads and other dept program operations.
ongoing	Manage ESRI Licenses	Inventory number of and access to ESRI licenses for UG; identify and acquire additional based on need and budget decisions.
ongoing	Manage EGIS Technology	Maintain EGIS policies and standards; ensure proper technology architecture over time; improve over time; perform quality assurance checks.
ongoing	Administer EGIS web-services	Acquire and maintain GIS technology to support web-based applications and services (e.g.: ArcIMS, ArcServer).
ongoing	Manage EGIS SDR	

Core Name / Work Year	Activity Name	Activity Description
ongoing	Administer EGIS SDR	Manage the data warehouse and related scripts. This includes providing technical support and monitoring for supporting RDBMS and related services.
ongoing	Coordinate GIS-related System Administration	Identify Hardware and Software specifications based on vendor changes, inventory existing specifications, and recommend updates for GIS Users and GSS.

Appendix C: GIS Resource and Activity Assignments

The following table compares GIS skill sets and activities to identifiable staff resource roles, whether existing, planned or anticipated to be required. Each activity is grouped according to its core component and sorted by decreasing number of roles needed per activity, for both active and planned activities. The column headed Role Total per Activity is a count of total roles needed for each Activity. At the bottom of the table is the Total of Activities per Role which gives the sum count of activities for each staff role.

GIS System Component	Activity Name	Role Total per Activity		Ray Wieser	IT/GIS Analyst	Auditor GIS Tech	Other Dept GIS Tech
		active	planned				
Application							
	Integrate GIS with Tax & Assessment Systems	3		1	1	1	
	Acquire/Maintain Web-Browser for Public Data	2		1	1		
	Integrate GIS with Emergency Dispatching System		3	1	1		1
	Integrate GIS with Highway Asset Management System		3	1	1		1
	Develop/Maintain GIS Map Plotting Application		2	1	1		
	Develop/Implement Custom GIS Tools & Applications		1	1			
	Maintain EGIS Applications		1	1			
Data							
	Develop Data Quality Standards	2		1			1
	Establish Data Custodianship	2		1			1
	Procure Survey Control & Ortho Services	2		1			1
	Procure Parcel Map Conversion Services	2		1		1	
	Initial Public Domain Data Acquisition	1		1			
	Test/Validate Existing Base Map Data	1		1			
	Develop Street Centerline Layer/Address Ranges		3	1	1		1
	Create Supplemental GIS Layers		2	1	1		
	Develop/Manage Enterprise Data Repository		2	1	1		
	Produce Standard Map Products		2	1	1		
	Provide Custom Data Analysis & Reporting		2	1	1		
	Archive Data Holdings		1		1		
Organization							
	Advance Agency Access/Use of EGIS	3		1	1		1
	Develop/Maintain GIS Division Website	2		1	1		
	Develop GIS Business Plan	2		1	1		
	Acquire GIS Training	2		1	1		
	Retain GIS Consulting Assistance	1		1			

GIS System Component	Activity Name	Role Total per Activity		Ray Wieser	IT/GIS Analyst	Auditor GIS Tech	Other Dept GIS Tech
		active	planned				
	Facilitate GIS Steering Committee, GIS Technical Committee, & project sub-committees	1		1			
	Establish GIS Program Governance Structure	1		1			
	Establish GIS Information Policy	1		1			
	Create GIS Division/Recruit GIS Coordinator	1		1			
	Support GIS Users Group		2	1	1		
	Create/Recruit GIS Technician/Analyst Position		1	1			
Process							
	Parcel Management Re-Engineering	3		1	1	1	
	Perform Research and Development	2		1	1		
	Manage EGIS Projects	1		1			
	Manage EGIS Performance	1		1			
	Advocate for EGIS	1		1			
	Develop Countywide Master Address System		4	1	1	1	1
	Provide EGIS “helpdesk” Support		2	1	1		
Technology							
	Manage EGIS Technology	2		1	1		
	Coordinate GIS-related System Administration	2		1	1		
	Initial Technology Acquisition	1		1			
	Manage ESRI Licenses	1		1			
	Acquire GPS Technology & Integrate with GIS		3	1	1		1
	Administer EGIS web-services		2	1	1		
	Administer EGIS SDR		2	1	1		
Resource Total per Activity		43	38				
Total Activities per Resource				43	25	4	9

Appendix D: Enterprise Data Policies

Enterprise Data Custodian Policy
Data Maintenance Agreement (template)
Orthoimagery Data Maintenance Agreement (sample)
Parcel Data Maintenance Agreement (proposed)

Enterprise data management is facilitated by the establishment of policies that identify the responsible data custodian and clarify maintenance responsibilities and performance measures. An enterprise data custodian policy serves as the guiding instrument for data maintenance agreements which are established for individual datasets. This set of policy documents is designed to support the management of enterprise datasets with particular application to parcel data maintenance.

Enterprise Data Custodian Policy
GIS Steering Committee
Scott County, Iowa
March 2007 – *draft*

Purpose
Enterprise geographic and tabular information is created, assembled, maintained, and used by a broad spectrum of Scott County departments, citizens, public agencies and private businesses. The development and maintenance of this information represents both a valuable resource and a significant investment on the part of the county and its partner agencies. To fully realize the benefits of this investment and resource, data that serves enterprise-level county interests should be particularly well managed, reliable in terms of content, quality and currency, and be openly shared and accessible.

Scott County has adopted the custodian principle as a means of assuring quality and accountability for the public information held in trust by the county. Custodianship does not imply ownership. Public information is owned by the county; county departments act as trustees of the information on behalf of the county. The custodian represents the county by acting as a trustee of the data, establishing standards, performing maintenance, providing authoritative knowledge, and maintaining public access and accountability.

This policy document sets forth guidelines to foster improved and coordinated management of enterprise data sets. Guidelines will be implemented through established data custodian agreements. These agreements will identify data custodian department responsibilities and help assure known and predictable data content, quality, currency, accuracy, and availability. The agreements serve as a measurement and management tool to support the effective use of data across the Scott County enterprise.

Scope
This policy applies to the maintenance, management, and distribution of enterprise data used across multiple Scott County departments. To the extent possible, county information policies are applied consistently to enterprise data whether in GIS, tabular or other formats. This policy does not apply to data used within a single department for non-enterprise purposes.

Authority
The Scott County GIS Steering Committee, established by the Scott County Board of Supervisors, provides cross-departmental and regional oversight to the Scott County enterprise GIS program, including program oversight, project coordination, budget development and information policy formulation. The GIS Steering Committee works together with the Information Technology Department, the GIS Division and County managers to establish policies for Scott County enterprise GIS and other information holdings, including enterprise data custodian policies.

Enterprise Data Management
Managing enterprise data in the context of the overall organization reduces duplicative efforts, saves staff and fiscal resources, makes staff more efficient, and helps improve the delivery of programs and services. Sound data management requires an understanding of management roles and the data lifecycle, as well as a commitment to organizational standards and guidelines.

Benefits

A coordinated enterprise data management culture among County departments, and external partners where appropriate, provides discrete benefits to Scott County:

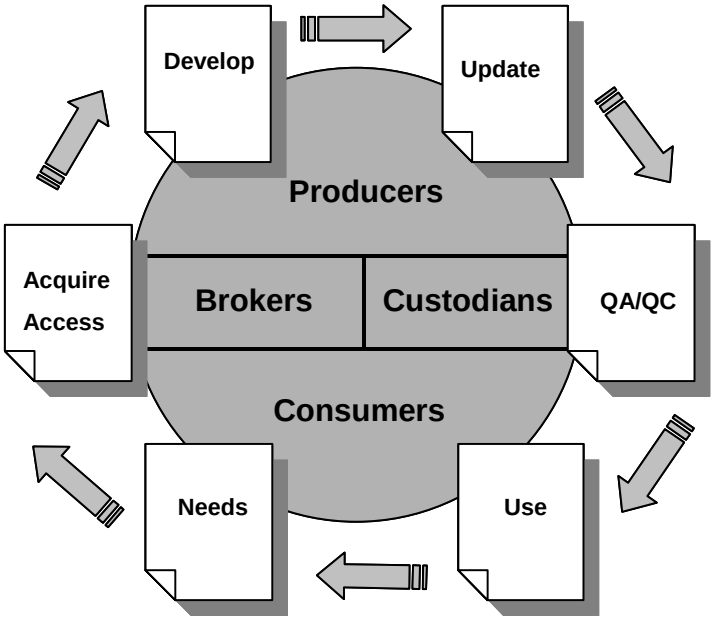
- Reduces costly duplication of effort and redundancies
- Encourages the establishment and use of data standards and best practices
- Promotes improved data content and quality
- Provides for predictable and scheduled data updates
- Ensures that data is available for use by other applications and information systems
- Ensures easier and more timely access to data
- Facilitates communication among county staff regarding data quality and availability
- Supports the delivery of county programs and services

Data Lifecycle & Staff Roles

Maximizing the use and investment in enterprise data development requires an organization to efficiently manage data throughout its entire lifecycle, including:

- Determining data needs
- Acquiring the needed data
- Converting or modifying the data to meet an intended use
- Maintaining and updating the data as changes occur
- Using the data to support business processes
- Assuring data quality before sharing with others
- Making the data available for broad access and use
- Retiring, deleting or archiving data no longer required

A number of staff roles are required to efficiently manage data at an enterprise level. A department may play one or many data management roles depending on organizational responsibilities and available resources. Roles are often shared across departments for maximum coordination and efficiency. Key data management roles include data consumers, data brokers, and data custodians.



Determination of Data Custodians

The GIS Steering Committee, in coordination with the Information Technology Department and County managers, will identify and approve custodians for the maintenance and management of

individual enterprise data sets. Assignments will be based on the ability of a department to meet its responsibilities relative to agreed upon custodian guidelines. This will be driven by the business demands associated with an individual data set, along with the department's technical capabilities and fiscal and staff resources. Service expectations and responsibilities for data custodians will be established by the GIS Steering Committee. A current list of data custodians is included in this document.

Data Custodian Selection Criteria
The following items should be considered when selecting a data custodian:

- Has legal authority or mandate for collection or processing of the data
- Greatest operational need for the data
- First to receive/record changes to the data
- Most competent and knowledgeable about the data
- Requires the highest quality version of the data
- Has financial link to the collection or maintenance of data (ex: fees)

Data Custodian Qualifications
Successful exercise of custodial responsibilities requires the following:

- Authority for the collection, development, and maintenance of the GIS/LIS data.
- Adequate financial and staff resources to support an ongoing commitment to data maintenance.
- Staff with the professional expertise and qualifications to carry out custodial responsibilities.

Data Custodian Responsibilities
Each Data Custodian's responsibilities will be acknowledged in a separate agreement to this policy. In general, data custodian responsibilities include:

- Providing guidance and subject matter expertise for the GIS/LIS data set, including standards development, appropriate use of the data and legal considerations.
- Maintaining and managing the data, including assuring data quality, standards compliance, error/problem resolution, scheduled publication and metadata.
- Providing access to the data in accordance with county policies.
- Providing input to enterprise level standards and policy development.
- Providing adequate resources for maintenance activities.
- Responding to public inquiries about data availability, content, quality and maintenance.

Technical Support Requirements and Responsibilities
Successful development and use of key information holdings across the enterprise requires a well-managed technical infrastructure of computing and telecommunication resources. The Information Technology Department/GIS Division will provide centralized network and data management services for enterprise data sets, as well as supporting the development or acquisition of additional enterprise datasets. Responsibilities include:

- Providing an enterprise repository to transform and house enterprise data.
- Providing network and data management expertise and resources.
- Maintaining data load procedures and schedules that support data accessibility and use.

Data Maintenance Agreements
Data maintenance agreements will describe enterprise data management responsibilities, including:

- Data content, accuracy, completeness, and quality requirements as well as use privileges and restrictions;
- Methods for delivering data sets to the Enterprise Data Repository or publication environments;

- Expected maintenance and publication schedules, data publication formats, and relevant metadata;
- Problem notification, resolution and escalation process; and
- Performance measures, monitoring and reporting mechanisms and schedules.

Agreement Review and Evaluation
Custodian agreements should be monitored for performance and reviewed and adjusted as required to meet the needs of the county and information stakeholders. Performance metrics should be established with a clear definition of the performance metric, a measurable indicator, and a regular reporting schedule. Performance measures for enterprise data may include:

- Number of records maintained
- Information or feature content
- Currency
- Loss of information
- Legal requirements (ex: assessment calendar)
- Time to respond to public inquiries (questions) or requests for data (copies)
- Processing time (data collection to public availability)
- Problem resolution
- Apparent benefits (ex: reduction in phone calls/counter traffic implies convenient off-site access and staff savings)

Performance reports should be part of an annual county review of enterprise data custodians by the GIS Steering Committee, the Information Technology Department, and other county managers as appropriate. This county review could also include periodic customer satisfaction surveys to assure that data content, quality and availability meet public expectations for service and products. This ongoing review helps justify resources needed to perform statutory duties and maintain public service levels.

Definition of Terms

Access/Use Constraints
Restrictions or legal requirements for accessing or using the data, including constraints applied to assure the protection of privacy, intellectual property, or other concerns and interests of the county.

Confidentiality Constraints
Any restrictions placed on the use of data by law or by its data custodian. These restrictions may deal with security, privacy, or other concerns.

Data Broker
This role is responsible for providing information about, or access to, enterprise data. Data brokers obtain data sets from external custodians for distribution to internal data consumers, including performing tasks such as converting and preparing data for enterprise-wide access and use. Data brokers also provide the reverse activity, providing centralized data distribution services to requestors outside the organization.

Data Consumer
The data consumer determines the need and "fitness for use" of the data, representing the business requirements that drive the creation and maintenance of data.

Data Custodian
Custodians are responsible for the management and/or maintenance of a particular record or data set, through mandate, legislation or business area and programs. Custodians may or may not directly create or maintain the data, relying on other data roles or staff, but they are responsible for managing work processes and establishing guidelines and procedures that assure the data is properly managed. Each data set has only *one* data custodian.

Data Custodian Agreement
An agreement outlining the maintenance and/or management responsibilities of department data producers. These agreements help data custodians and technical support staff provide coordinated data management and efficient access to enterprise data for county staff and external partners.

Data Lifecycle
The data lifecycle refers to stages or processes data passes through as it is used within an organization. In broad terms, the lifecycle spans the creation, maintenance, use and disposal of data.

Data Management
The technical and institutional policies, standards, procedures and people to support data through its entire lifecycle: assessment of and planning to meet business needs, creation/collection, storage, use, maintenance, documentation, and retention or disposal.

Data Producer
Data Producers collect, develop and maintain data for a specific business purpose. The producer may or may not have custodial responsibilities for the data set.

Enterprise Data
Any digital database, geodatabase, or file used by more than one county department.

Enterprise Data Repository

A centrally managed environment that supports enterprise data management and publication for decision-making and the delivery of county programs and services. The data repository operates on a "develop once; use many" philosophy allowing data to be published and managed in an open non-proprietary environment where it can be used by many applications and information systems within Scott County.

Metadata
Descriptive information about the data set and its development, maintenance, and appropriate use. FGDC-compliant metadata should be maintained for all enterprise GIS data sets, be made available online to aid data discovery, and be distributed with copies of the data.

Standards and Policies
Documented criteria, expectations and work processes relating to the content, accuracy, completeness and processes for developing, using or maintaining data.

Spatial Data
Data that describes the locations and shapes of geographic features and the relationships between them, usually stored as coordinates and topology.

Tabular Data
Descriptive information, usually alphanumeric, that is stored in rows and columns in a database and can be linked to map features.

Scott County Enterprise Data Custodians

This table represents enterprise data sets as identified in the Scott County *Enterprise GIS Strategic Plan*. The list will evolve along with the county's data holdings.

. Department	Enterprise Data Set
Auditor	Real Estate Transfers Tax Parcels Taxation Districts Tax Rates Assessment Roll Wards Supervisory and Legislative Districts Polling Places School Districts Subdivision Names
Conservation	Soils Wetlands Hydrography
County Assessor	Appraisal Information Assessment Information
County Treasurer	Tax Information
Health Department	Health Inspections Well/Septic Location Permits Environmental Data (LUST, etc)
Information Technology/GIS Division	Orthophotography (county-produced) Jurisdictional Boundaries (municipal, county) Census Information Enterprise Address Information
Planning and Zoning	Current Land Use Zoning Floodplains Addresses Permits
Recorder	Real Estate Records (recorded deeds and plats)
Secondary Roads	Roadways County Assets (fixed, bridges, culverts, signs) Snowplow Routing Geodetic Control PLSS and Corner Certificates Base Mapping/Topography
Sheriff	Precincts and Stations Fire Districts and Stations EMS Districts and Stations Siren Locations Streets, Addresses, and Address Ranges CODY System

The GIS Division, in coordination with county departments, acts as the county's GIS data broker for external data sets such as those listed in the table below.

External Agency	Partnering Dept	Enterprise Data Set
Bi-State Regional		Census Geography
FEMA	Planning & Zoning	FIRM Maps
FSA	Conservation	Orthoimagery

NRCS	Conservation, Assessor	Soils Wetlands
USGS/NGA	Sheriff	Orthoimagery

(Theme) Data Maintenance Agreement

March 2007 – draft

Purpose

Enterprise information is created, assembled, maintained, and used by a broad spectrum of Scott County departments, citizens, public agencies and private businesses. The development and maintenance of this information represents both a valuable resource and a significant investment on the part of the county and its partner agencies. This policy document outlines an agreement among county information and technology managers to foster improved and coordinated management of enterprise data sets. The agreement serves as a measurement and management tool to support the effective use of data across the Scott County enterprise.

Scope

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Authority

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Data Custodian Responsibilities

- Provide guidance and subject matter expertise for the GIS/LIS data set, including standards development, appropriate use of the data and legal considerations.
- Maintain and manages the data, including assuring data quality, standards compliance, error/problem resolution, scheduled publication and metadata.
- Provide access to the data in accordance with county policies.
- Provide input to enterprise level standards and policy development.
- Provide adequate resources for maintenance activities.
- Respond to public inquiries about data availability, content, quality and maintenance.

Problem Notification and Resolution

- **Interruptions in update schedule** (maintenance, publication, archival) – Custodian will notify IT Dept 24-48 hours in advance of a one-time problem with data updates; custodian will post web notice and otherwise notify public information users when update schedule is interrupted for more than one maintenance cycle.
- **Service Outages/System Upgrades** – Custodian will notify public information customers of any service outage during business hours.
- **Data Content or Quality Modifications** – Custodian will work with other stakeholders groups in advance of major dataset changes to identify impacts on the end user community, impacts on related information systems and databases, and communicate and educate regarding required modifications.
- **Data Errors** – Custodian will resolve individual data errors within one week. If error cannot be resolved in one week, reporter will be notified as to the status of the problem resolution and estimated resolution time frame.

- **Data Load Failures** – Custodian and technical support staff will correct system load failures within one regularly scheduled load cycle.
- **Data Design or Definition Problems** – Custodian will review reported data design problems with impacted stakeholders and resolve problems within 30 days. Problem resolution and/or required education will be communicated to user community.

Custodian Performance Measures and Performance Reporting

- **Annual Review and Reporting** – Custodian will prepare annual report on performance measures, year-end metrics, problem reports and resolution, completed and planned data and data maintenance improvements and projects. GIS Steering Committee will evaluate custodian management of enterprise data, including performance, responsiveness to problems, responsiveness to stakeholder and enterprise needs, and resources for data maintenance. Annual reports will be used to guide enterprise data resources, projects and project prioritization.
- **Performance Measures** – Custodian and GIS Steering Committee will establish performance measures to evaluate data maintenance activities. Each measure must be described and include a measurable and reportable performance indicator. Automated system reporting should be leveraged to the extent possible.

Enterprise Data Maintenance Agreement

(* Standard county policies apply unless otherwise noted and approved)

	Scott County *(theme)* (brief description of data set)
Publication Date	
Custodian (department, name/contact)	
Update Schedule (maintenance schedule; publication schedule; archival schedule if required)	
Data Extent (county, state, other)	
Spatial Reference (coordinate system, horizontal datum and vertical datum)	
Spatial Data Format (vector, raster, terrain, annotation)	
File Format (tabular database, geodatabase, shapefile)	
Metadata: ▪ Spatial Accuracy (horizontal and vertical) ▪ Data Content (note attributes, domains and descriptions, relationships (objects, topology), accuracy) ▪ Completeness (identify data gaps, omissions, generalizations) ▪ Quality (source, lineage, processing or other quality notes)	(provide Internet link)
Applicable Standards* (county standards, legislated mandates, formal standards)	
Related Tables and Databases	
Major Application or Data dependencies	
Access/Use Constraints* (ex: copyright, license, privacy policy)	
Required Disclaimers or Statements*	
Other Notes or Comments (ex: originating agency)	

Approved by:

_____

Department Head Date

_____

Chair, GIS Steering Committee Date

Orthoimagery Data Maintenance Agreement

March 2007 – draft

Purpose

Enterprise information is created, assembled, maintained, and used by a broad spectrum of Scott County departments, citizens, public agencies and private businesses. The development and maintenance of this information represents both a valuable resource and a significant investment on the part of the county and its partner agencies. This policy document outlines an agreement among county information and technology managers to foster improved and coordinated management of enterprise data sets. The agreement serves as a measurement and management tool to support the effective use of data across the Scott County enterprise.

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Data Custodian Responsibilities

- Provide guidance and subject matter expertise for the GIS/LIS data set, including standards development, appropriate use of the data and legal considerations.
- Maintain and manages the data, including assuring data quality, standards compliance, error/problem resolution, scheduled publication and metadata.
- Provide access to the data in accordance with county policies.
- Provide input to enterprise level standards and policy development.
- Provide adequate resources for maintenance activities.
- Respond to public inquiries about data availability, content, quality and maintenance.

Problem Notification and Resolution

- **Interruptions in update schedule** (maintenance, publication, archival) – Custodian will notify IT Dept 24-48 hours in advance of a one-time problem with data updates; custodian will post web notice and otherwise notify public information users when update schedule is interrupted for more than one maintenance cycle.
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Problem Notification and Resolution

- **Data Errors** – Custodian will resolve individual data errors within one week. If error cannot be resolved in one week, reporter will be notified as to the status of the problem resolution and estimated resolution time frame.
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- **Performance Measures** – Custodian and GIS Steering Committee will establish performance measures to evaluate data maintenance activities. Each measure must be described and include a measurable and reportable performance indicator. Automated system reporting should be leveraged to the extent possible.

- **Orthoimagery Performance Measures**
    - Deliverables meet the enterprise business needs of the county
    - Contracted products delivered on schedule
    - Data reviewed and corrected within 30 days of delivery
    - Data loaded onto system and made available to users within 45 days of delivery
    - FGDC-compliant metadata available and accompanying data delivery at time of data load onto county system
    - Correct spatial reference and definition
    - Meets or exceeds county and FGDC geopositioning standards
    - Blemish free imagery – no clouds, shadows, dust specks, film scratches or building warps
    - Seamless imagery – edgematched images, countywide tone balance
    - System tuning for efficient raster data access
    - Available products – natural color (general purpose) and black/white (engineering) imagery; distributable formats: project/local files and countywide mosaic

Enterprise Data Maintenance Agreement

(* Standard county policies apply unless otherwise noted and approved)

	Scott County Orthophotography Color (natural color) leaf-off orthoimagery collected in Spring 2005 at 1″=400′ scale (2′ pixel resolution) and 1″=100′ scale (0.5′ pixel resolution).
Publication Date	Spring 2005
Custodian	Information Technology Department/GIS Division Ray Wieser, GIS Coordinator, dwieser@scottcountyiowa.org, (563) 328-4137
Update Schedule	No regularly scheduled updates
Spatial Extent	Scott County, Iowa
Spatial Reference	State Plane Coordinate System, South Zone NAD83 (1996) and NAVD88
Spatial Data Format	raster
File Format	geodatabase
Metadata: ▪ Spatial Accuracy (horizontal and vertical) ▪ Data Content (note attributes, domains and descriptions, relationships (objects, topology), accuracy) ▪ Completeness (identify data gaps, omissions, generalizations) ▪ Quality (source, lineage, processing or other quality notes)	*(provide Internet link to metadata)*
Applicable Standards* (county standards, legislated mandates, formal standards)	*?*
Related Tables and Databases	4' countywide contours; countywide DEM; *other?*
Major Application or Data dependencies	4' countywide contours; countywide DEM; *other?;* parcels, hydrography, roadways
Access/Use Constraints* (ex: copyright, license, privacy policy)	*None?*
Required Disclaimers or Statements*	*None?*
Other Notes or Comments	

Approved by:

_____

Department Head Date

_____

Chair, GIS Steering Committee Date

Parcel Data Maintenance Agreement

April 2007 – draft

Purpose

Enterprise information is created, assembled, maintained, and used by a broad spectrum of Scott County departments, citizens, public agencies and private businesses. The development and maintenance of this information represents both a valuable resource and a significant investment on the part of the county and its partner agencies. This policy document outlines an agreement among county information and technology managers to foster improved and coordinated management of enterprise data sets. The agreement serves as a measurement and management tool to support the effective use of data across the Scott County enterprise.

Scope

This policy applies to the maintenance, management, and distribution of enterprise data used across multiple Scott County departments. To the extent possible, county information policies are applied consistently to enterprise data whether in GIS, tabular or other formats. This policy does not apply to data used within a single department for non-enterprise purposes.

Authority

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Data Custodian Responsibilities

- Provide guidance and subject matter expertise for the GIS/LIS data set, including standards development, appropriate use of the data and legal considerations.
- Maintain and manages the data, including assuring data quality, standards compliance, error/problem resolution, scheduled publication and metadata.
- Provide access to the data in accordance with county policies.
- Provide input to enterprise level standards and policy development.
- Provide adequate resources for maintenance activities.
- Respond to public inquiries about data availability, content, quality and maintenance.

Problem Notification and Resolution

- **Interruptions in update schedule** (maintenance, publication, archival) – Custodian will notify IT Dept 24-48 hours in advance of a one-time problem with data updates; custodian will post web notice and otherwise notify public information users when update schedule is interrupted for more than one maintenance cycle.
- **Service Outages/System Upgrades** – Custodian will notify public information customers of any service outage during business hours.
- **Data Content or Quality Modifications** – Custodian will work with other stakeholders groups in advance of major dataset changes to identify impacts on the end user community, impacts on related information systems and databases, and communicate and educate regarding required modifications.

Problem Notification and Resolution

- **Data Errors –** Custodian will resolve individual data errors within one week. If error cannot be resolved in one week, reporter will be notified as to the status of the problem resolution and estimated resolution time frame.
- **Data Load Failures –** Custodian and technical support staff will correct system load failures within one regularly scheduled load cycle.
- **Data Design or Definition Problems –** Custodian will review reported data design problems with impacted stakeholders and resolve problems within 30 days. Problem resolution and/or required education will be communicated to user community.

Custodian Performance Measures and Performance Reporting

- **Annual Review and Reporting –** Custodian will prepare annual report on performance measures, year-end metrics, problem reports and resolution, completed and planned data and data maintenance improvements and projects. GIS Steering Committee will evaluate custodian management of enterprise data, including performance, responsiveness to problems, responsiveness to stakeholder and enterprise needs, and resources for data maintenance. Annual reports will be used to guide enterprise data resources, projects and project prioritization.
- **Performance Measures –** Custodian and GIS Steering Committee will establish performance measures to evaluate data maintenance activities. Each measure must be described and include a measurable and reportable performance indicator. Automated system reporting should be leveraged to the extent possible.
- **Parcel Maintenance Performance Measures**
    - Deliverables meet the enterprise business needs of the county
    - Data maintained countywide on a transaction-based schedule
    - Data maintained daily
    - Data published weekly for enterprise use
    - Respond to public inquiries within 3 business days
    - Data reviewed and corrected within 30 days of error report
    - FGDC-compliant metadata documentation
    - Meets or exceeds county quality and accuracy standards
    - Meets legal requirements for public access
    - Support assessment and taxation calendar activities

Parcel Data Maintenance Agreement

(* Standard county policies apply unless otherwise noted and approved)

	Scott County Parcel Data Property (size/extent), location, and ownership information for all Scott County parcels. Feature content includes parcel/easement boundaries, lot dimensions, plat/survey information, owner name, parce/owner/billing addresses, road rights-of-way, and hydrography.
Publication Date	*(beginning fall 2007?)*
Custodian	Auditor's Office Kurt Ullrich, Operations Manager, kullrich@scottcountyiowa.com, (563) 326-8631
Update Schedule	weekly
Spatial Extent	Scott County, Iowa
Spatial Reference	State Plane Coordinate System, South Zone NAD83 (1996) and NAVD88
Spatial Data Format	vector
File Format	geodatabase
Metadata: ▪ Spatial Accuracy (horizontal and vertical) ▪ Data Content (note attributes, domains and descriptions, relationships (objects, topology), accuracy) ▪ Completeness (identify data gaps, omissions, generalizations) ▪ Quality (source, lineage, processing or other quality notes)	(provide Internet link to metadata)
Applicable Standards* (county standards, legislated mandates, formal standards)	?
Related Tables and Databases	tax and assessment databases; orthoimagery; other?
Major Application or Data dependencies	tax and assessment system updates; data repository?; other?
Access/Use Constraints* (ex: copyright, license, privacy policy)	None?
Required Disclaimers or Statements*	None?
Other Notes or Comments	

Approved by:

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Department Head Date

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Chair, GIS Steering Committee Date