

March 20, 2007

## ***URISA 2007 ESIG Award Application***

*Prince William County  
Office of Information Technology  
Geographic Information Systems Division  
5 County Complex Court, Suite 140  
Prince William, Virginia 22192-5308*

### **A. SYSTEM**

1. Name of the System and ESIG category for which you are applying

**Prince William County Parcel Maintenance Process, ESIG Category Single Process System**

2. A letter from the executive administrator authorizing submission of the system application

**Please reference Appendix B in this document**

3. In one page, or less, summary of what the system accomplishes and why it is exemplary.

**Please reference Appendix A in this document**

4. Three 'User Testimonials'

**Please reference Appendix C in this document**

### **B. JURISDICTION**

1. Name of Jurisdiction

**Prince William County, Virginia**

2. Population served by the organization/agency

**The current estimated population of Prince William County is 378,455 with an average growth rate of 4.45% a year. It is the third most populous jurisdiction in the state of Virginia.**

Annual Total Budget for jurisdiction

**The annual total budget for Prince William County is \$1.7 billion**

3. Name, Title and address of Chief Elected and/or appointed official

**Chairman At-Large Corey A. Stewart  
1 County Complex Court  
Prince William, Virginia 22192**

4. Name, Title, address, telephone, FAX, and email for contact person for system

**Angela Mills, GISP, GIS Database Administrator  
5 County Complex Court, Suite 140  
Prince William, Virginia 22192  
Tel:(703)792-6868  
Fax:(703)792-7192  
Email: amills@pwcgov.org**

### **C. SYSTEM DESIGN**

1. What motivated the system development?

**The largest motivating factors for the development of the new Prince William County Parcel Maintenance System were increased pressure from the residential and commercial development community for more timely edits and the demands for increased data infrastructure from the County.**

**As the annual growth of population and number of development projects increased each year, the Prince William County (PWC) Office of Information Technology's Geographic Information Systems Division (GIS) was having difficulty keeping up with the number of edits to their parcel database. The need to adopt new procedures that take advantage of the latest GIS technology and thereby streamline processes was clearly evident. With the legacy procedures, every boundary change request cost Prince William County an hour of labor on average to update the associated GIS layers. Due to a growing backlog of requests in the system, the entire parcel editing process - from recording a deed to having the appropriate information to obtain a building permit - was estimated to take up to 82 days. This lag time negatively impacted customer satisfaction for those needing to obtain building permits, approvals and other land development functions. It also impacted other critical datasets and applications within the areas of public safety, E-911 and emergency management.**

**Additionally, the data structure for the parcel maintenance process was built on ArcInfo Coverage and Arc Macro Language (AML), both of which had been used since the inception of the Prince William County GIS in 1987. Over 156 processes, standard operating procedures, applications and tools were built on this technology that was nearing the end of its life cycle and becoming unsupported by the vendor. This older**

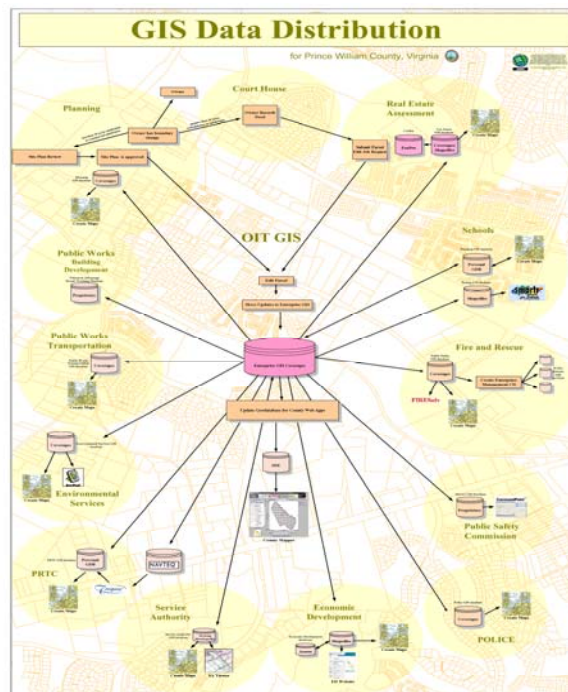
technology proved very challenging for new hires in the GIS department since their skill sets were built on newer ESRI technology.

Lastly, the data infrastructure did not address the increased demands for data sharing and interoperability. The GIS data was not directly integrated with other applications. Data sharing required staff to convert the data into different formats and filter data layers through a series of AML scripts on a nightly basis. As requests became more frequent, this became a tedious and intricate process, requiring enormous amounts of high level technical staff time to keep these scripts maintained and operational.

2. What specific service or services was the system intended to improve?

Prince William County's goal in developing this system was to:

- **Streamline process efficiency** while providing greater accuracy in Prince William County's parcel-maintenance activities thus positively impacting the development community and the internal users in the Prince William County Government. This would lead to improved responses for data creation and updates.
- **Avoid duplication of data and efforts** between County agencies or departments with GIS staff. Often staff was unaware that specific data existed or that specific tasks were underway and they created new layers for their own purposes; using inconsistent source material and leading to inaccurate or incomplete data. Data has often been generated on the fly to support an immediate need without consideration of standards or maintenance.
- **Ensure data quality and consistency** by making its origin in the enterprise geodatabase the 'sole source' ensuring that all users and applications have access to the most current and accurate data features.



- **Provide documentation to meet industry standards** by taking advantage of metadata and documenting GIS procedures, workflows and spatial standards for data collection, creation, submission and storage.
  - **Make GIS data available to all users (data distribution)** from one centrally-managed repository that is easily accessible to all users, custom tools and applications.
  - **Optimize resources**, both human and technical, within Prince William County by implementing a structured workflow process that would not allow for deviation from the standard procedure.
  - **Clearly define roles and responsibilities** by assigning overall data responsibility to one professionally-designed and managed GIS workgroup and to establish a Configuration Control Board, comprised of representatives from all agency stakeholders, to enforce compliance with the enterprise model.
3. What, if any, unexpected benefits did you achieve?
- **Identification of inconsistencies** - Although one major goal was to establish data accuracy, it was very surprising how easily errors in the database became more apparent. With the database rules and custom applications that were written, database inconsistencies were brought to light that, due to limited quality control staff resources, may have been left undiscovered for several years.
  - **Skill improvement** – The migration to this new process forced GIS staff to abandon work habits that relied on older technology. With the new workflow management and custom tools, staff increased their knowledge of the data and the tools used in their daily assignments. They also gained a better understanding of the underlying process and why a particular tool or procedure was used to complete the task.

4. What system design problems were encountered?

Several issues were encountered during the design process:

- **Data Quality versus Structure** - Through the pilot process, the inconsistencies within the existing GIS data became painfully obvious. During the database design, it was decided that this project was a good opportunity to restructure the attribute tables of many layers, creating additional fields that would be beneficial to the GIS users. Although it was determined that these changes in the attribute structure were possible, once the pilot migration began, staff realized the difficult and labor intensive work it would take to create new data or modify the existing features to fit the structure and some ideas had

to be abandoned. Nevertheless, this was an opportunity for Prince William County to correct as many data inconsistencies as possible and to provide cleaner datasets for the final data load.

- **Documenting the *WHY* and *HOW* when determining the *WHAT*.** During many of the workshops, decisions were made about schema changes, applying topology rules and relationships. Staff took copious notes about WHAT decisions were made but did not clarify WHY the decisions were made or the impacts of time and resources on completing the task. When new design team members were inserted into the project, questions were raised about previous decisions and many hours were spent researching why and how decisions were made to provide clarification.
- **System Architecture Review –** Due to funding, Prince William County chose not to use outside resources to perform a full System Architecture Review which made it extremely difficult to gauge if the current production server would support the new process. Instead the contractor worked with PWC to identify tasks and to develop a recommended implementation plan. The current server supported web applications that were heavily used by internal and external customers, and also economic development and public safety. Because the GIS production database was running ArcSDE 8.2, the contractor identified potential issues with libraries and binaries in upgrading directly to ArcSDE version 9.1. They also pointed out that the test server would require frequent rebooting and might be offline at times during testing. Since the machine slated for testing was also the production server, any interruption in its availability would impact parcel work and/or access to GIS applications resulting in a reduced service level. Faced with these issues, the County purchased a new server for the project. The GIS Division received a scalable HPrp4440 server with 4GB memory, two 1GHz processors with nearly a Terabyte of storage space. The Prince William County IT group made the decision to purchase and load Oracle 10g Release 1 even though most of the County’s databases systems were on Oracle 9i. This decision eliminated the need to upgrade the Oracle database within a year of implementation.

5. What differentiates this system from other similar systems?

- **Service Availability –** Common practices during database migrations are to “freeze” data and service for the implementation period. One success that Prince William County is very proud of is that County services relying on the GIS were not interrupted during the testing or implementation processes. GIS staff in other agencies was prepped months in advance to coordinate their processes for the migration. With careful planning, documentation and constant communication, all applications that used GIS, accessed GIS or relied on GIS in any way were uninterrupted and the conversion appeared seamless to our

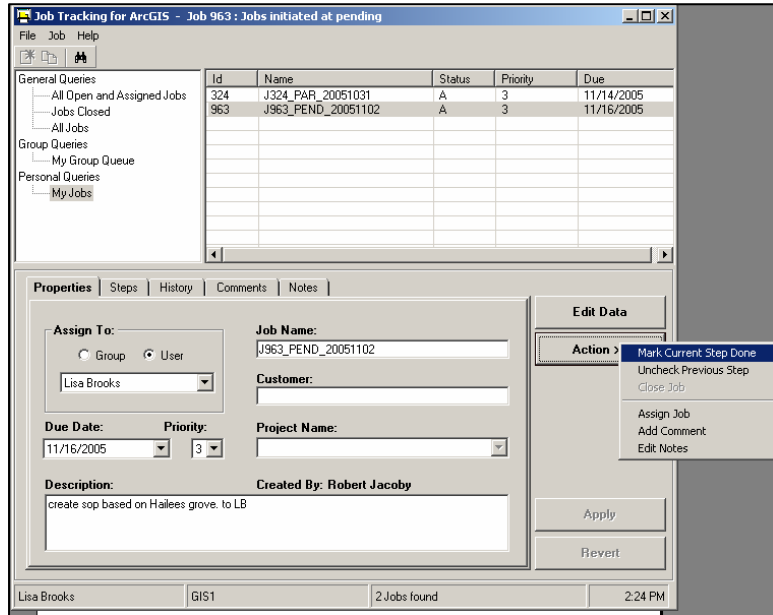
customers.

- **Using Versioning and Job Tracking Extension (JTX) workflow management software.** Prince William County is one of the few jurisdictions nationally who are fully using versioning for parcel maintenance with workflow management. Versioning is a functionality in ArcGIS that involves the recording and management of changes to a multi-user geodatabase through long and short

transactions. GIS

Analysts make their edits in a snapshot of the database which allows for concurrent editing.

A designated “Editor” then reconciles and posts all of the analysts’ edits to the enterprise geodatabase. JTX is an enterprise workflow management



extension to ArcGIS and simplifies many aspects of job management and tracking including managing - a version’s lifecycle, areas of interest, editing procedures, analyst’s editing environment, job history and status. These features allow for a streamlined workflow which results in a significant time savings.

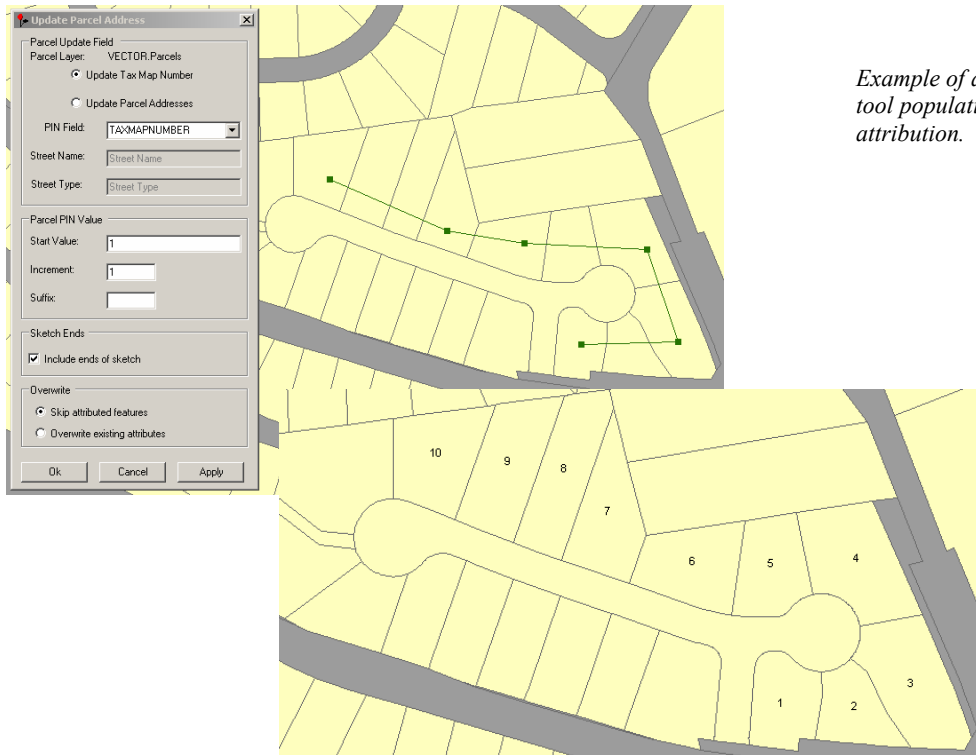
- **Brought a legacy system to the latest technology without a “bridge”.** This system was brought on line in a single migration rather than using a technology bridge. Prince William County did not use the intermediary technology, released by ESRI, to bridge the gap between the old data format and programming technology to the relational database format. Since the County’s GIS was established in 1987, data had been stored as coverages in a tiled 10K (10,000 foot by 10,000 foot) format. In 18 years the County created and maintained over 139 data layers in the enterprise database and developed over 156 AML scripts and applications to automate the parcel maintenance process. These include ArcIMS applications, custom desktop applications, and custom tools for workflow processing and generating standard map products for distribution. With so many layers and applications, migrating the data and custom tools to each new technology release every couple of years would have been a treacherous feat to perform. The GIS Staff felt that a phased migration over a period of time would not be efficient and they would be forced to maintain dual systems, data and applications with huge cost repercussions. Staff made a conscious decision to spend the

appropriate time in designing, developing and testing a single migration rather than taking a gradual approach.

**Custom tool sets.** The gap analysis and the re-engineering of standard operating procedures, helped identify fifteen different processes that did not have corresponding functionality within ArcGIS 9.1 and required development of custom tools. These tools ranged from creating feature linked annotation, creating parcel identification numbers and parcel attribution, developing work processes in the pending stage and after recordation, creating and maintaining premise address points, maintaining parcel history features, generating centerline ids and attribution and creating files for post



processing distribution to the default database. The fifteen tools required for development were prioritized based on mission criticality and the development tasks were split up between the Contractor and Prince William County staff. The County's GIS application development staff assumed responsibility for migrating the six tools that performed processes they were most familiar with. The Contractor developed the more time intensive and automated processes for posting updates to the enterprise geodatabase with an archive feature, as well as, generating batch files to load data into the County's land permitting systems through an existing interface. Approximately six hundred hours of programming time were completed between both organizations.



*Example of a custom tool populating parcel attribution.*

## **D. IMPLEMENTATION**

1. What phases did you go through in developing the system?

### **Phase 1 – User Assessments, Definition Study, Gap Analysis, and Technology Recommendations**

The goal of this phase was to gather information through end user interviews. This was used to outline the current parcel maintenance process and develop recommendations on how to best migrate and implement this new technology while meeting all users needs for parcel data. Simply put, this phase dealt mostly with information gathering, reviews and recommendations of the current state of the GIS, the desired goal and the roadmap of how to get there.

The first part of this phase, the project Contractor and GIS staff meet with each user agency to fully understand the parcel maintenance process and clearly document how that process impacted others within the County government. Higher level staff was brought in during the interviews along with the front line technical staff in order to obtain the management perspective. The results were used to develop the Users Definition Study. This study also included an extensive document review of the existing standard operating procedures for the parcel maintenance process and information to support the integration of the Land Development Permitting System, *Tidemark Advantage*, the E911 Computer Aided Dispatch, and the County's Computer Aided Mass Appraisal System (*CAMA*). This task proved to be challenging since the current processes left room for interpretation on the part of the analyst and included custom desktop applications that were developed in-house.

The second part of this phase focused on the development of a gap analysis. Once the definitions study was completed, the existing parcel maintenance process was modeled and analyzed. This analysis was used to help design the new process and determine how to bridge the gap between the two. It took five months to complete the Gap Analysis. Concurrently, the project team worked with the Contractor to develop Use Case Scenarios for each of the routines that took place within the parcel maintenance process. Along with those scenarios, the contractor proposed business changes that would eliminate duplicate efforts such as working with versions to eliminate locked out tiles during update. Proposed processes were compared against the functionality that was available within the ArcGIS 9.1 product suite. Where functionality was not available, the contractor recommended that custom tools be developed to merge several of the existing process specific applications into a single tool that would mimic existing functionality.

### **Phase 2 – Logical Geodatabase Design, Pilot Migration, Conversion of Editing Applications and Customized Editing Tools**

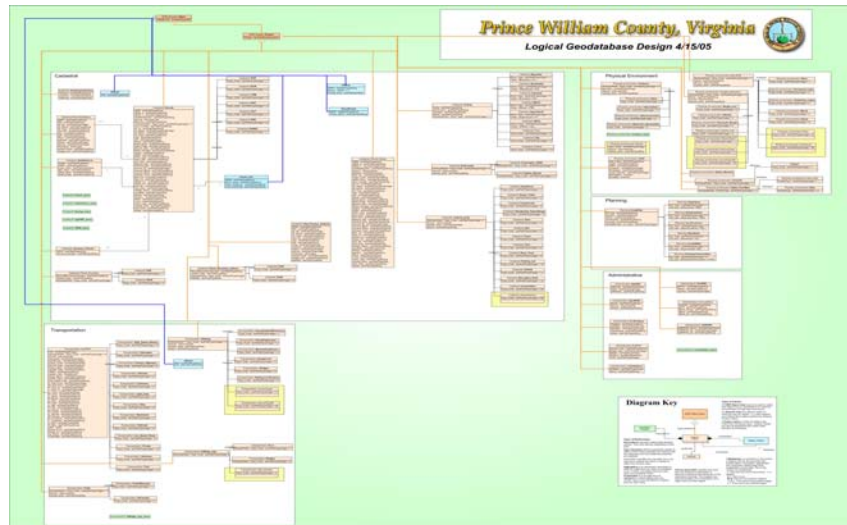
The goal of this phase was to design a data model that supported the migration of priority data layers into a geodatabase and the development of a data maintenance system. The project team developed a pilot database to review and test the geodatabase design and data migration to ensure all requirements were met prior to full countywide migration.

Without a doubt, Phase 2 is where most of the project time was spent. It included the conceptual and logical database design, determining relationships, topology rules, attributes, and domains. GIS reviewed in detail the current maintenance processes and identified steps that did not add value and

could potentially be removed. GIS also analyzed their integration support, and decided which AML script driven tools should be migrated and the best technology to use.

Development of the Geodatabase

model was the single most challenging aspect of this project. Several workshops were held with the Contractor over a six month period to develop a logical model and its associated design document. Through the previous tasks, thirty data layers were identified as critical to parcel production and/or to support critical applications such as the E-911 Computer Aided Dispatch System (CAD). These layers were divided into five different feature datasets:



- Cadastral – contains premise address, parcels, cultural polygons, history layers and subdivisions.
- Transportation – contains road centerlines, road edge, road poly, and trails
- Administrative – contains zip codes, jurisdictional boundaries, fire first due boundaries, census blocks, and election district boundaries.
- Planning – contains zoning and comprehensive plan layers
- Physical Environment – contains contours, hydrology, soils, woods and culverts.

Designing the database was only half of this important phase. Standard operating procedures needed to be redeveloped under the new technology. The Contractor began this process by holding a two day workshop with GIS staff to develop the new standard operating procedures. During these workshops, the team transformed the recommended steps into a series of tasks which became the outline for the new standard operating procedure. These tasks had a similar logic to the current process but flowed in a more streamlined and logical manner.

The final pilot migration was not completed until nine months after the start of Phase 2. There were many concurrent tasks within the project such as database structure changes, process changes, custom tool debugging and modifications to the design which ultimately lead to three migration efforts to prepare for testing.

**Phase 3 – Final Migration, Technology Training and Knowledge Transfer**  
**Finalize the functionality and migration of the production geodatabase, customized editing tools and other required applications. Provide training in new workflow and provide ad hoc GIS support.**

Phase 3 included the final migration after all refinements were completed with the pilot project. As much as possible, clean data was migrated; staff was trained in the new workflow management process and tools, a general knowledge transfer took place between the Contractor and Prince William County's GIS staff. The project implementation plan called for three days of testing the custom toolsets with the Contractor onsite followed by ten days of testing by four PWC GIS staff who would continue to test procedures and tools independently. The actual process took more than sixty days to complete due to the need for changes where functionality of procedures and tools were not fully met. All testing took place with real parcel jobs and included as many different scenarios as possible. Preparation for rollout took approximately one week when parcel data was accessible for viewing only which allowed users to create maps and access GIS information through web applications. Full migration to the new server took place over a three day weekend. Six staff members and two contractors, worked more than 160 hours in that three day period.

2. Were there any modifications to the original design? Why? What?

The practice of maintaining pending jobs as versions was abandoned early in the implementation process. Pending versions could "age" anywhere from a few weeks to several years before they would become active. Staff discovered that stale or "old" versions degrade database performance and the process of reconciling and posting these versions became too labor intensive. Staff developed an alternative procedure that utilized personal geodatabase.

**The topological relationship stating subdivisions must be coincident with parcels was included in the initial design, but after testing in the pilot database it was removed. This rule appeared to be a logical addition to the Cadastral topology rule set but unfortunately the current data cannot support it. Over time many subdivisions have shifted from their parcels primarily because adjustments in the parcel boundary were not implemented on the associated subdivision feature. This remains a future consideration once the data layers can be scrubbed.**

**The Area of Interest (AOI)/Version creation procedure was modified and Right of Way (ROW) polygons were split into smaller sections. In the first weeks after the migration a huge number of conflicts were encountered when attempting to reconcile and post versions. This was due to large ROW polygons extending into multiple AOIs and edits from multiple versions on that common ROW coming into conflict. The ROW parcel polygons captured by GIS had been maintained as a single polygon clipped to the extent of the 10K tiles held over from the legacy data structure. To correct this problem, ROW polygons were split into more manageable 2.5K tile sections and the procedure for creating an area of interest/version was updated - an area of interest now includes any polygons adjacent to the edit parcels and the version is created only when there are no active versions in that same AOI.**

## **E. ORGANIZATIONAL IMPACT**

1. What user community does the system serve and how?

**The Prince William County Geodatabase serves all citizens and County agencies through the Internet Mapping applications, however, the parcel maintenance process directly serves the Data Management Team (DMT) within the GIS division. This team is responsible for the creation and maintenance of all geo-spatial data. The new process has allowed the DMT to streamline the data update/creation production process. The process has also improved workload tracking and management through the use of the Job Tracking Extension (JTX). Indirectly the new system serves all of the users of GIS data, and specifically the development community in Prince William County. The new process allows for a smooth, timely and accurate update process that provides current land data in the GIS. Prince William County land development procedures require that new parcel and address information be available before any permitting can occur. This process has shortened the length of time between recordation and permit creation.**

2. What are the ultimate decisions/services being affected?

**The services that are most affected are GIS Data availability to the community through web applications and availability to the development community through updated information in Prince William County's land development/permitting system and real estate assessment database. GIS data availability to other county agencies at an earlier stage allows**

**them to provide the most current and accurate data for public assistance, land development facilitation and general land analysis.**

3. What were the quantitative and qualitative impacts of the system?

**Quantitative – The GIS Data Management Team has an established performance measure of completing 85% of parcel updates within fifteen days of receipt. Under the previous parcel update system the team had difficulty meeting the established target. In the last year, under the "old" process, staff completed 84% of parcel updates within fifteen days of receipt. This required the efforts of the entire data management team, consisting of one GIS Supervisor, one GIS Analyst II and six GIS Analyst I. No resources remained for other data layer maintenance or data quality improvement projects outside of emergencies. Under the new parcel update process staff is completing 90% of parcel updates within fifteen days of receipt. Along with this improvement the number of staff resources has been reduced to the one GIS Analyst II and three GIS Analyst I full time and one .5 time. The additional 2.5 GIS Analyst I are available to assist with other data layer maintenance and data improvement projects.**

**Qualitative – The new tools identified data inconsistencies within the historical GIS data. The previous system required maintenance of GIS data be performed in a tile coverage format. This did not allow for regular evaluation/review of data on a county-wide level. The standardized workflow established in the new parcel update process implemented consistent procedures and tools to be used by all of the GIS Analysts completing updates.**

4. What effect has the system had on productivity?

**The new parcel update system, after the initial implementation, has improved productivity. The amount of time to update the GIS database with parcel information has been reduced close to 50%. The ability to meet or exceed performance measures with reduced resources allows staff to develop new GIS data with the same level of resources and also to perform data quality improvement.**

5. What, if any, other impacts has the system had?

**Other impacts of the system include improved skills for GIS Analyst's after the initial learning curve period. Staff morale also improved as the constant pressure of missing deadlines and performance measures have been reduced with the implementation of the new parcel maintenance system. Finally, the tools and techniques developed for the parcel update process are "open" and can be used to update other GIS data layers that are not part of the parcel update process.**

6. How did the system change the way business is conducted with and/or service delivered to clients? Give specific examples comparing the old way to the new.

**In the old parcel maintenance system, a citizen or developer recorded a land change at the County Courthouse and it would be picked up by the County Real Estate Assessments Office and reviewed. If the land changes impacted the parcel data the Assessment Office staff passed the work on to GIS for update. The Data Management Team received the deed and associated plat and then recreated the plat by COGO-ing the location, bearing and distance into the associated 10k tile coverages to generate the new parcel GPINs and associated addresses. The new GPIN/address parcel information was exported from the GIS and loaded into the county's land permitting system. This process from recordation could take several months to complete, with the GIS portion taking up to two weeks based on our performance measures.**

**The new system automates and streamlines the process. A delay in notification and receipt of newly recorded deeds and plats still exists, but the impact of the delay has been noticeably reduced. The new system allows parcel update work to be created with final approved plans and to be held in a pending state until recordation. There are provisions and methodology to allow the use of digital files submitted by the engineering/development community (AutoCAD) thus eliminating the need to re-create the recorded plats by COGO-ing. The pending and digital files have reduced the data production time and improved the County's ability to provide more timely and accurate information to our customers.**

## **F. SYSTEM RESOURCES**

1. What are the systems primary hardware components? Give a brief list or description of the hardware configuration supporting the system.

**The primary system hardware is maintained by The County's IT system engineer. The system configuration for this implementation is a Hewlett Packard 9000/rp4440 Server, running HP-UX 11.i 64-Bit Operating System, on a Dual 1 GHz core PA8900 processor module, 4GB DDR Memory Quad, and nearly a Terabyte of storage. This server was accessed over a 45MB ATM LINK to the Prince William County Data Center physically located less than one mile away from the GIS staff. The clients connecting to the hardware were Dell Desktop Workstations running Windows 2000 and Windows XP and a Windows 2000 server running ArcIMS 9.1.**

2. What are the systems primary software components? Describe the primary software and, if a commercial package, any customizations required for the system.

**Software package and programming languages that were used for this implementation are:**

- **Oracle 10g Release 1**
- **ESRI ArcGIS version 9.1 – ArcInfo Product Level**
- **ESRI ArcSDE version 9.1 SP 1**
- **ESRI JTX Job Tracking Software version 2.1**
- **ESRI ArcIMS version 9.1**
- **ESRI ArcObjects**
- **Visual Basic .NET version 7 (compiled on 1.0 .NET framework)**
- **Microsoft Visual Basic version 6.0**

3. What data does the system work with? List and briefly describe the database(s).

**Our Geodatabase as designed with ESRI consists of the following Feature Datasets and stand alone tables.**

**Cadastral Feature Dataset contains information for the following feature classes: premise address, parcels, cultural polygons (buildings, structures, etc.), parcel and point history layers, subdivisions, easements, assessor\_parcels (combined on assessors account number) and zoning inspection areas. It also includes independent tables for the creation of unique parcel identifiers (GPIN), GPIN genealogy and premise address unique identifiers. The CONDO\_INFO table is joined to parcels via relationship classes.**

**Transportation Feature Dataset contains information for the following feature classes: road centerlines, road edge, road poly, and trails. It also includes independent tables for the creation of unique centerline identifiers and associated census id.**

**Administrative Feature Dataset contains information for the following feature classes: zip codes, sanitary service districts, jurisdictional boundaries, fire firstdye boundaries, census blocks, political election district boundaries and census designated places**

**Planning Feature Dataset contains information for the following feature classes: zoning and comprehensive plan.**

**Physical Environment Feature Dataset contains information for the following feature classes: contours, hydrology, hydro facilities, soils, woods and culverts.**

4. What staff resources were required to implement the system (i.e. report approximate staff and consultant time as FTE's)

**Staff resources to support this project based on a 37.5 hour work week equating to approximately 1950 hours annually. Prince William County**

established a Design Team to champion every aspect from inception to implementation. The team consisted of 1 GIS Database Administrator, 1 GIS Supervisor, 4 GIS Application Developers, and 2 GIS Analyst II. This Design Team worked with the Consultant Team (ESRI) that consisted of 1 Sr. Project Manager, 1 Project Manager, 1 Senior GIS Analyst/Geodatabase Designer, 1 Senior GIS Analyst/Documentation Specialist and 1 Database Analyst. This team worked closely in an active environment over the 18 month period.

<u>FTE</u>	<u>Staff Position</u>	<u>Organization</u>
.60	GIS Database Administrator	Prince William County
.33	GIS Supervisor	Prince William County
3.0	GIS Applications Developers	Prince William County
.33	GIS Analyst II	Prince William County
.15	GIS Analysts	PWC agencies with GIS staff
.33	Project Managers	Consultant
.33	Sr. GIS Analyst	Consultant
.10	Database Analyst	Consultant

## **APPENDIX “A”**

### *Summary of System Accomplishments*

**The mission of the Prince William County GIS Division is to provide citizens with the most efficient, easy and cost effective access to information about their properties; and to provide businesses and other government offices with geo-spatial data necessary for economic development, growth, and community welfare; and to establish and maintain geographic maps linked with corresponding databases that provide current and accurate information.**

**The parcel maintenance system takes advantage of a workflow management tool that provides a more defined and controlled structure for parcel editing. This structure serves as a quality control gatekeeper and provides the ability to diagnose data quality issues. Duplicate steps were eliminated and the time and resources spent on completing parcel maintenance tasks has improved. GIS data is more current and available to users.**

**The new system allows staff to establish and meet enhanced performance measures. The old process required a tile to be locked for editing by an analyst to perform updates and all other tasks on that tile had to wait in queue, often resulting in missed performance measures. The use of versioning dramatically changed the current process by allowing multiple copies of the data to be worked on simultaneously while being managed by the job tracking software helping the County reach their performance goals by rarely exceeding the fifteen day measure.**

**Tool customization is an important aspect in creating and maintaining the quality standards of the County’s spatial data. The new parcel maintenance process no longer makes it necessary for analysts to rely primarily on visual checks but rather to rely upon tools that ensure high-quality checks that meet local and regional data standards.**

**All of these accomplishments were completed in a single migration without having to maintain dual systems, applications or processes. There was no interruption to GIS services for County Agencies, Citizens and Development Community Customers. The system allows for Prince William County to provide a higher level of customer service by increasing accessibility to the most up-to-date available.**

**APPENDIX "B"**  
*Letter from Executive Administrator*



Craig S. Gerhart  
County Executive

**COUNTY OF PRINCE WILLIAM**  
OFFICE OF EXECUTIVE MANAGEMENT  
1 County Complex Court, Prince William, Virginia 22192-9201  
(703) 792-6600 Metro 631-1703 FAX: (703) 792-7484

**BOARD OF COUNTY SUPERVISORS**

Corey A. Stewart, Chairman  
Martin E. Nohe, Vice-Chairman  
Hilda M. Barg  
Maureen S. Caddigan  
W.S. Wally Covington, III  
John D. Jenkins  
Michael C. May  
John T. Stirrup

March 14, 2007

URISA ESIG Awards Committee  
1460 Renaissance Drive, Suite 305  
Park Ridge, Illinois 60068

Dear 2007 ESIG Selection Committee:

I am authorizing the following submission for consideration in the Single Process System category for the 2007 URISA Exemplary Systems in Government Award (ESIG): *The Prince William County Office of Information Technology, Geographic Information Systems Division's Parcel Maintenance Process.*

This new parcel maintenance system takes advantage of cutting edge technology to ensure that the most timely and accurate GIS data is available for use in the business decisions that we are faced with on a daily basis. The new process clearly eliminates redundant efforts by staff and has decreased the amount of time to process jobs by 50%, which results in a cost saving for both the government and its Citizens.

Thank you for the opportunity to submit this paper for consideration. If you have any questions, please contact Angela Mills, GIS Database Administrator with the Office of Information Technology, GIS Division at 703-792-6840 or [amills@pwcgov.org](mailto:amills@pwcgov.org).

Sincerely,

Craig S. Gerhart  
County Executive

## APPENDIX "C"

### *User Testimonials*



Thomas Bruun  
Director

## COUNTY OF PRINCE WILLIAM

5 County Complex Ct., Suite 260  
Prince William, Virginia 22192-5308  
(703) 792-6820 Metro 631-1703 Fax: (703) 792-6828

DEPARTMENT OF  
PUBLIC WORKS

Early Assistance Program  
(703) 792-6756

March 9, 2007

Dear ESIG Committee Members

I am writing to you today regarding Prince William County's Parcel Maintenance Process.

Since opening the PWC Development Services Building in November 2006, the Early Assistance Desk has facilitated 19,000 customer transactions. In each instance where a new customer enters the system, a technician is required to verify five separate parcel related conditions before assisting the customer in initiating a new project application. Once all inhibiting conditions have been eliminated, the technician may then interview the customer to assess the customer's required business needs.

As employees of Prince William County we have pledged; *to do the right thing for the customer and community every time*. It is critical for Early Assistance staff to correctly assess the following parcel related information for each customer project inquiry:

1. Regulatory Jurisdiction
2. Address Validation
3. Incidence of Protected Resources
4. Incidence of Private Septic System
5. Square footage of residential structure

Geographic Information Systems Division's parcel maintenance process provides the Early Assistance program with the most up-to-date parcel data available which is the single most valuable tool at staff's disposal. Having the most up-to-date parcel data available at the Early Assistance Desk helps provide the best possible customer service. If any of the information used to pre-screen the application is inaccurate or out of date the entire outcome of the application is at risk. If erroneously screened applications are allowed to enter the system, customer expense and valuable staff time are wasted and an incalculable cost of customer disservice is incurred. If the same application is erroneously approved, irreplaceable protected resources and public safety may be jeopardized.

Sincerely,

A handwritten signature in black ink, appearing to read "George Payne".

George Payne, Early Assistance Manager  
Prince William County Department of Public Works  
5 County Complex Court  
Woodbridge, Virginia  
703-792-6756



## COUNTY OF PRINCE WILLIAM

5 County Complex Court #140, Prince William, Virginia 22192-5308  
(703) 792-6840 Metro 631-1703 Fax: (703) 792-7192

Office of Information  
Technology  
Geographic Information  
Systems Division

Kathryn T. Prescott  
Division Chief

March 14, 2007

To: URISA ESIG Committee

Subject: Prince William County Parcel Maintenance Process

As the primary users of the new Prince William County Parcel Maintenance Process the Data Management Team within Prince William GIS have benefited from all of the improvements and enhancements of the new process. The Data Management Team is responsible for the creation and maintenance of all geo-spatial data. Members of this group interface on a daily basis with other County agencies to ensure the currency of data. The majority of the data update work completed is done through the parcel maintenance process. Prince William County is a rapidly developing community and there is pressure on us to keep up with the demands of the citizens, customers and other county agencies for current GIS data. The parcel update process in the previous system with comparable workload the entire focus of the data management team was on keeping up with demand of the need for new parcels and addresses updated in all of the county databases. There were very little resources left for other data layer updates or any data improvement projects outside of emergencies. The new parcel update system with comparable workload has allowed for resources to be available for additional data layer maintenance and data quality improvement projects and an improvement in meeting set performance measures. Through the implementation of the new Parcel Maintenance Process we are able to provide more accurate information in a much shorter time frame than before the new system was in place.

Through out the entire development of the new process the team's needs, concerns and requirements were always kept in mind and balanced with the data needs of all the customers of the final GIS data. This project was a real cooperative effort and the final product has been very successful.

Sincerely,

Helen M. Walla  
GIS Supervisor  
Data Management Team



## COUNTY OF PRINCE WILLIAM

1 County Complex Court (MC470), Prince William, Virginia 22192-9201  
(703) 792-6800 Metro 631-1703, Ext. 6800, FAX 792-7691

DEPARTMENT OF  
FIRE & RESCUE

Mary Beth Michos  
Chief

March 14, 2007

Re: 2007 ESIG Award for Prince William County Parcel Maintenance System

Ladies and Gentlemen of the Selection Committee,

As the GIS technical lead for the Department of Fire and Rescue, the currency of street centerline and premise address information is extremely important to the functions of the Department of Fire and Rescue, the Emergency Operations Center and to Public Safety Communications.

With the move of the parcel maintenance process to the geodatabase technology, updates to street centerlines and addressing are performed at an earlier stage and are available to the Public Safety agencies for analysis and planning purposes. This is specifically beneficial in keeping the street information in CAD and mapping for our mobile data units accurate and up to date.

The accuracy of this data assists with real-time travel routing of emergency vehicles, tracking multiple incidents at one address and situational planning for potential crisis events that result in EOC activation. Having street centerline and address updates before they are recorded or very soon after, greatly improves our ability to be pro-active and efficient in providing quality services to the citizens of Prince William County.

Thank you,

David J. Simms  
Technical Program Analyst  
Prince William County  
Department of Fire and Rescue  
703-792-7013