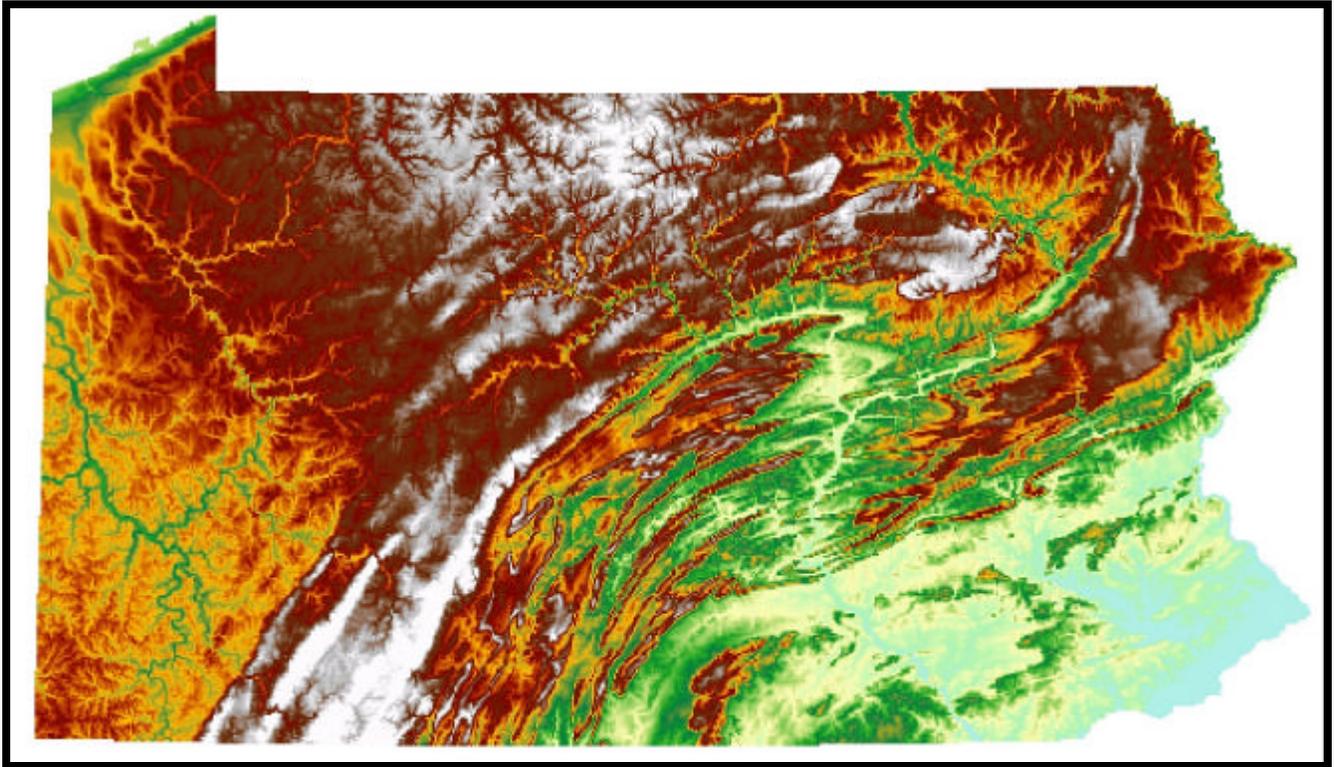


PAMAP



A Next-Generation GIS Basemap for the Commonwealth of Pennsylvania

Premise: Create a common digital GIS basemap (PAMAP), ten times more accurate than current basemap versions, on which all existing programs, projects, and governments collaborate for mutual benefits. This resource will provide enhanced capabilities for homeland security, asset management, economic development, decision-making, local and statewide planning, education, crime analysis, emergency response, recreation, travel and tourism, and generation of additional revenue for the Commonwealth.

This program has the support of all PA Executive Agencies as well as local governments and private industry. At current funding levels, the project is estimated to take 10 years. We hope to convince the new administration that this effort is critical to the security and economic health of the Commonwealth and should be expedited by increasing funding and personnel resources immediately.



Submitted Jointly by
PAGIC and PAMAGIC
November 25, 2002



Introduction

PAMAP is a cooperative *program* whose outcome will be a complete, high resolution, seamless, digital Geographic Information Systems (GIS) basemap of the Commonwealth. At stake is Pennsylvania's ability to maintain its competitive edge in technology, security, and economic development with surrounding states.

Bringing the PAMAP program to fruition will engender important and lasting partnerships in the Commonwealth. These partnerships will build the information resources, tools, and skills that will protect and promote the development of billions of dollars worth of revenue and assets every day. Stakeholders in the PAMAP program are state, local, and federal governments as well as the business sector and academia. The beneficiaries of the PAMAP program will be every person who lives, works, invests, or plays in the Commonwealth of Pennsylvania.

With the current level of funding and personnel resources available to the program, PAMAP will take at least 10 years to complete. Modest changes in our mandates for cooperation and action could *dramatically* accelerate PAMAP completion. Benefits from this initiative would begin to flow within the first year in this accelerated program environment. The key change required to accelerate PAMAP is executive leadership to focus efforts, increase funding and resources, and encourage collaborations.

The long-term benefits of PAMAP include enhanced homeland security, economic well-being, and efficiency between state and county efforts across the Commonwealth. These issues are prominent nationally, as well, and a coherent program will attract federal partners and aid.



White Paper Contributing Organizations:



PAGIC (The Pennsylvania Geospatial Information Council) is the Commonwealth's GIS coordinating body for state agencies, formed in 1999 and whose mission is, *"To cooperatively, across agency jurisdictions, facilitate the sharing of common geospatial data; develop and recommend management approaches to data development and sharing; develop partnerships with public and private sector organizations, local, other state, and Federal agencies; and participate in Federal initiatives as appropriate"*.

<http://www.pagic.state.pa.us>



PAMAGIC (The Pennsylvania Mapping and Geographic Information Consortium) is a grass roots GIS coordinating body formed in 1996 *"...to provide leadership, coordination and guidance to enhance the development of spatial information and related services in Pennsylvania"*.

<http://www.pamagic.org>

Statement of Importance

This document was developed through joint Pennsylvania Geospatial Information Council (PAGIC) and Pennsylvania Mapping and Geographic Information Consortium (PAMAGIC) meetings held during September and October 2002. Historically, these two organizations have not worked closely together. This white paper represents a major change in that philosophy as these two organizations have come to realize what is at stake if the PAMAP initiative does not succeed in Pennsylvania as well as the benefits to be gained by shortening the time to completion of this initiative. As a result of this commitment, both organizations have decided to continue meeting together quarterly and to formalize the relationship between Executive Agencies and the geospatial community in Pennsylvania.

It is the consensus of all parties that presenting this unique opportunity to the new Governor of Pennsylvania and his transition team is critical to Pennsylvania's continuing success as a technology leader in the nation and to position the Commonwealth to succeed in bringing new businesses into the state, to create new jobs, to maintain the integrity of its borders and the security of its peoples, to protect and grow its recreational and tourism industries, and to conserve and protect the environmental quality of its lands.



Since 1999, PAGIC has served as the organization through which state agencies have cooperated in order to discuss Commonwealth issues related to spatial data, promote data sharing, and address technology issues relating to the use of GIS and spatial data. In the post 9/11 age, the members of PAGIC find themselves required to support the additional needs of Homeland Security and economic development, which has seriously suffered in the past year.

To fulfill these new logistical requirements, a higher level of Pennsylvania administrative support is also required. With the pending change in administration, the concerned parties wish to impart to Gov. Rendell and his transition team how important PAMAP is to all Pennsylvanians and what a tremendous opportunity the Governor has to guarantee a legacy-level improvement in Pennsylvania government operations, homeland security, economic development, and improvements in communication and coordination among all government organizations in the Commonwealth, all during his first year in office.

Another white paper on GIS and Pennsylvania Homeland Security was drafted by PAGIC and presented to the current administration in August 2002 and is included as an addendum to this document.

PAMAP Benefits

Some of the major benefits of PAMAP will be:

- Better decision-making for infrastructure protection, homeland security, economic development efforts, asset management, and environmental protection.
- The entire Commonwealth will benefit from prior investments and shared experience in GIS development, and from a dramatic reduction of duplicated efforts and products.
- Enhanced emergency response and management will result from common access to real property information; county government is the legal steward of the parcel data that is integral to most advanced uses of geospatial information.
- County budgets will eliminate the major fluctuation that normally occurs every 4-6 years to fund aerial photography for periodic updates, enabling them to save money, share information, and focus on improving business processes instead.
- Executive agencies will partner to reduce data acquisition and maintenance costs annually, and will enjoy enhanced information exchange among agencies without sacrificing program goals or autonomy.
- Data producers will benefit from uniform bid specifications and a larger marketplace.
- Federal agencies will have a single point of contact for data acquisition partnerships and better long-range planning for data needs.

Since promotion of PAMAP began in July 2001, support for the program has grown at all levels of government. Both DOT and DEP have pledged financial support and services for the next fiscal year. At the federal level, USGS and NIMA have focused their outreach to the Commonwealth on PAMAP. Most counties with the high quality geospatial data required to build PAMAP are interested in participating in the PAMAP program, sharing their data, and receiving incentives for their support and services. A survey and inventory of all counties' data holdings during the summer of 2002 provided the management information necessary to plan new data acquisition and long-term strategies. Despite all of this support, current projections are for completion of PAMAP no earlier than the year 2012, due to the current financial and resource constraints of the PAMAP program contributing agencies.

The main reasons for a ten-year target for PAMAP program completion have been:

- The funds currently allocated for producing statewide orthophotography (\$500,000/year) will cover only a small fraction of our land area each year.
- Individual agencies' planning and budget processes do not ordinarily lend themselves to the coordinated funding and action implied by PAMAP.
- Individual Executive Agencies lack direct support for GIS at the highest agency levels.
- Half of the 67 counties in the Commonwealth have little or no experience with geographic information systems technology that would maximize their benefit from PAMAP.
- Existing and proposed Executive Agency policy initiatives that require coherent base mapping have not integrated PAMAP in their planning to date.
- Adoption of PAMAGIC best practices/standards is just beginning at the state level and counties will not adopt the data standards without direct benefit to their constituents, or assistance with costs of standardization.

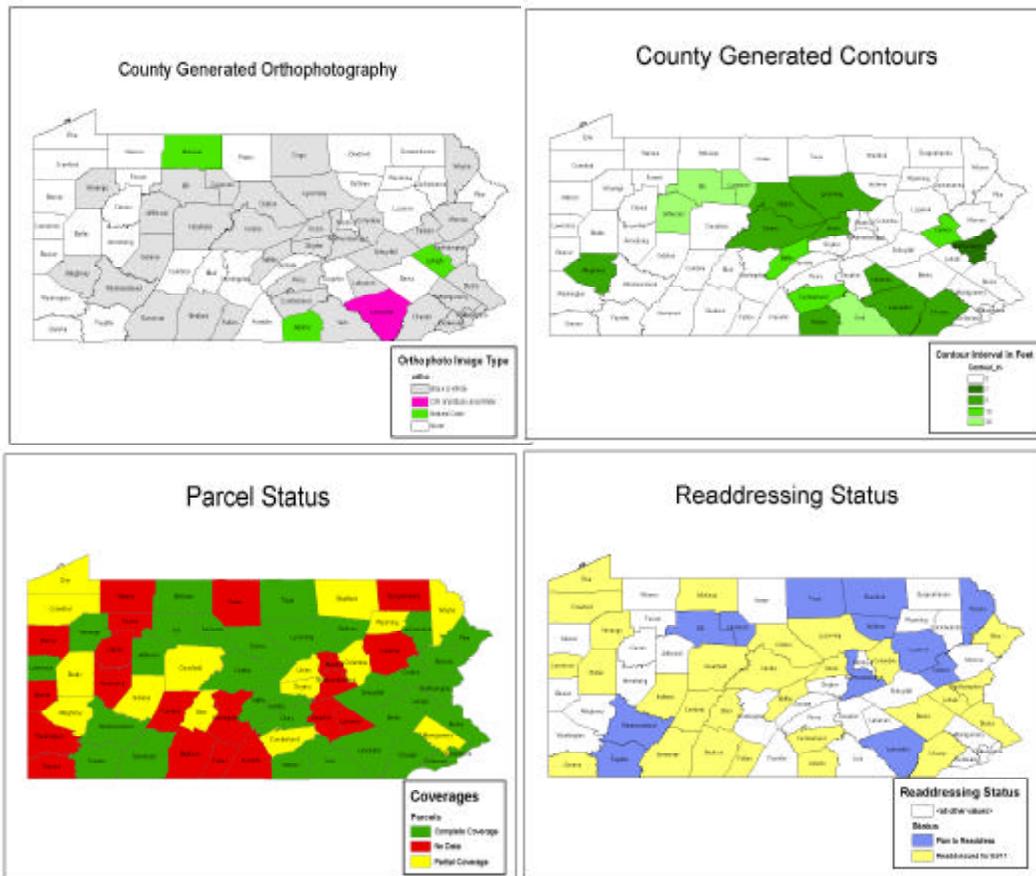
Primary Recommendation – Develop PAMAP at an Accelerated Pace

It is technically and politically feasible to accelerate the development of the PAMAP program. The homeland security and economic development benefits alone make this a priority in the post 9/11 world. Although we have no current mandate to accelerate this program, the steps outlined in this document would complete the PAMAP program in three to five years instead of ten or more. Specific steps aimed at each level of government in the Commonwealth are required.

County governments in the Commonwealth are the key in this initiative; as they are the only source for complete parcel information and street address data, two of the defined primary foundation layers of PAMAP. Parcel data is the most difficult and costly for counties to create, and a uniform parcel layer for the entire state is a primary requirement for the success of PAMAP.

The diversity and political autonomy of the counties make the creation of standardized information extremely challenging. As an incentive to local government, the state should provide aerial photography in the form of orthoimagery on a regular basis (e.g. on a 3-year cycle to cover the state). In return, counties would provide local geospatial data enhancements on a quarterly basis to the state for incorporation into the statewide PAMAP basemap. This step would allow counties with knowledge and interest, but without the financial wherewithal to perform these functions today, to accelerate their development of accurate GIS data layers.

Furthermore, a PAMAP project office should be created to serve as clearinghouse for partnership opportunities among the various stakeholders, and provide a focal point for outreach and technical development.



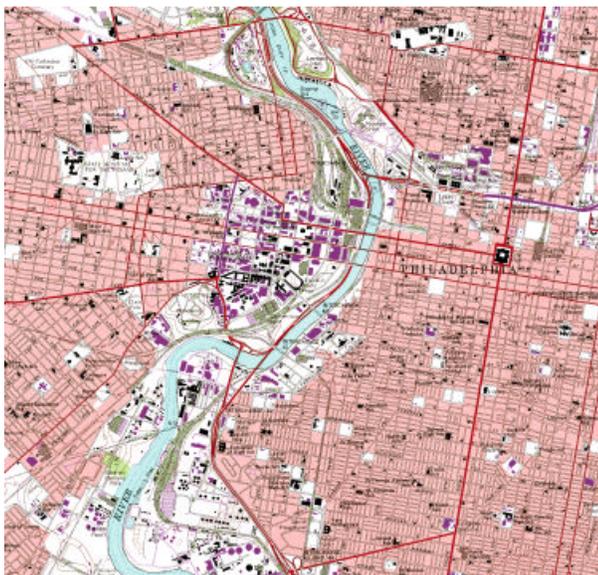
The figures above illustrate the current status of different county generated data layers.

At the state level, the Bureau of Topographic and Geologic Survey (Topo/Geo) in the Department of Conservation and Natural Resources (DCNR) will manage the production of PAMAP. Today, there are only two extensionists working to coordinate with county government in the Commonwealth. Additional coordination should be provided by a technical advisory group composed of PAGIC, representing state agencies; and PAMAGIC, representing academia, local government and commercial enterprises. In addition, it will be important to develop staff for a PAMAP Program Office to manage the relationships with the counties and provide technical assistance. The inclusion of local government in the overall program management will lend credibility and promote cooperation among the agencies.

The Commonwealth should provide seed funding for capacity building through DCED to ensure that the acquisition of local data in less advanced counties proceeds quickly. Finally, existing programs within agencies (State Police IIMS, the PASDA clearinghouse, DMVA Emergency Operations Center, PEMA GIS development, Homeland Security preparation) must coordinate with PAMAP in pursuit of a common goal. All agencies will have access to the same seamless and complete, highly accurate GIS basemap data as a framework for their own, mission-specific GIS uses.

It is important that all Executive Agencies coordinate their efforts to acquire and maintain the base data layers, particularly in support of Homeland Security. The focus on DCNR Bureau of Topographic and Geologic Survey as program coordinator utilizes existing managerial oversight and fiscal control, without changing the mission or function of the individual agencies. While Topo/Geo will administer the PAMAP program, PAGIC and each individual Executive Agency are also required to support the effort and make it successful by encouraging development of interoperable data.

There is increasing evidence that federal programs will seek out and utilize a single point-of-contact in each state for spatial data issues, and that those states lacking such a contact will miss opportunities for shared data development and costs. Federally, PAMAP is already a pilot of the US Geological Survey's National Map program. Pennsylvania will benefit from aerial photography acquired by the USGS and the National Imagery and Mapping Agency (NIMA) scheduled for the Spring of 2004 (surprisingly, as of this date, there will be no flights for the 133 Cities program in Pennsylvania in 2003). FEMA is actively pursuing better base mapping for the National Flood Insurance Program. The Environmental Protection Agency (EPA) and the Center for Disease Control (CDC) grant programs specifically favor states with coordinated mapping and GIS initiatives. Focusing Commonwealth efforts on the PAMAP program should attract additional technical and financial assets from these federal sources.



Philadelphia 1:24,000 Scale Quad Sheet Detail (1/10th the accuracy of PAMAP) and not utilizing GIS data from Philadelphia's existing GIS program.

Additional Recommendations

The GIS efforts in Pennsylvania state government have largely been agency-specific and uncoordinated, other than data sharing initiatives. As a result, tremendous duplication of effort has occurred in the creation of data layers that are not as accurate as those available at the local level and by agencies that are not directly responsible for the management of a resource or asset, thereby creating a separate and redundant GIS data set. The coordination of state and local geospatial data creation efforts would result in cost savings by all parties. By having a single, complete and seamless, high quality basemap of the state, all Pennsylvania state agencies could devote their GIS efforts to the creation of new data and applications particularly suited to their business functions. Private industry could develop applications based upon a known, standard basemap, reducing costs to users while increasing entrepreneurial opportunities.

If no change in policy and funding occurs, the Bureau of Topographic and Geologic Survey will still continue with their budget of \$500,000 per year to acquire digital orthophotos and topographic data. The creation of a complete and seamless PAMAP basemap will take at least a decade at the current level of funding.

If additional funding is provided by Gov. Rendell's new administration (\$2 million per year needed for orthos), it will be possible to dramatically accelerate the production of all data layers. Estimates by NSGIC (National States Geographic Information Council) show that the cost of producing the basic GIS layers for Pennsylvania would cost about \$224 million dollars. By partnering, we make use of existing investment by counties (at least \$50-100 million to date) and share costs for future development. Commonwealth agencies will benefit from a shared, common base map. Private industry will benefit from a uniform dataset statewide, which will allow the production of generic applications. Local governments benefit by sharing the costs of producing a county-level GIS and removing the "budget bump" of contracting to obtain aerial photography every few years. *All* parties gain from the use of better, more current, and more accurate GIS basemap data.

To achieve the desired results for broad-based use and applications of geographic information, three distinct and immediate actions should be taken by the Commonwealth:

1. Acceleration of PAMAP should be formally endorsed by the Governor, and the role of DCNR Topo/Geo as program lead acknowledged.
2. Authority for development of PAMAP and spearheading the growth of critical PAMAP-related GIS applications should be vested with all Executive Agencies.
3. Additional funding in the amount of \$5 million per year over the next three to four years should be devoted to completion of PAMAP. This would allow for the accelerated acquisition of orthoimagery (\$2 million), and creation of basic data layers in partnership with county governments, as well as marketing and promotion, partner development, and data aggregation. Additional funds will be necessary for maintenance, but at a significantly lower cost.

Fictitious Newspaper Articles

The following paired fictitious newspaper articles describe possible future events based on real world concepts. In each case, the first article on the fictitious subject presents a realistic illustration of some of the positive outcomes that are achievable in the indicated timeframe *with* PAMAP. The second article presents an illustration of outcomes based on the availability of the current GIS basemaps, without the benefit of PAMAP. The positive articles represent only a fraction of the real benefits a collaborative effort and expedited PAMAP program would yield. Unfortunately, the second, negative articles could potentially come to pass if we do not expedite PAMAP.

SCENARIO ONE: Emergency Response

Poultry Industry Saved by Rapid Action, Governor credited

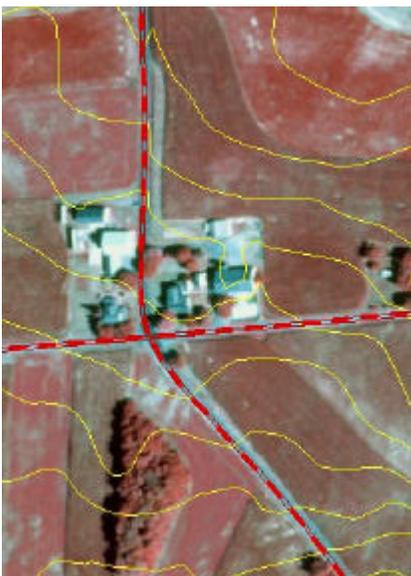
June 6, 2005

Governor Rendell was credited today as the state's poultry industry narrowly avoided an epidemic of Avian Influenza or AI, a devastating disease of chickens and turkeys. With the implementation last year of the PA Department of Agriculture's Animal Infrastructure Program, a detailed database was ready to assist epidemiologists to rapidly locate diseased fowl and set up buffers to prevent further disease spread.

PDA's Animal Health GIS Task Force was called into action when the first diseased bird was detected. Within 48 hours all commercial poultry operations within a 10 mile radius had been contacted and testing begun. The rapid response helped quell the outbreak and kept the disease contained.

"The quality and quantity of data available made all the difference," said one researcher. "With the detailed digital GIS data from PAMAP, we were able to quickly notify adjoining farmers, model where the virus could be transported and notify producers at risk."

County officials were happy the disease incident ended quickly. "I'm glad they nipped it in the bud this time," said one of the County Commissioners. "Our growers were really hurt by that last outbreak."



SCENARIO TWO: Emergency Response

Avian Flu Devastates Pennsylvania Ag Industry, State's inadequate action blamed

June 6, 2005

Avian influenza (AI), popularly referred to as Avian flu, had devastated the poultry operations in three Pennsylvania counties as of late Wednesday. State officials are cautiously optimistic that they've seen the end of the worst AI outbreak in US history. Agricultural leaders are still asking why the outbreak took so long to control.

State veterinary officials were informed of positive AI test results early last month on a single farm, but were unable to contain the outbreak. They have been hampered in their response by the lack of accurate geographic data to predict the disease's spread and take proactive countermeasures.

Topographic maps used by field technicians are more than 20 years old and do not include dirt farm roads. Moreover, state officials had no comprehensive database of growers or their locations, which would have allowed speedy contact with the growers.

Scientists at the University of Pennsylvania Veterinary School's New Bolton Center and Penn State's College of Agriculture immediately offered assistance. They were able to map diseased flocks once they were identified but lacked the specific information on such things as neighboring poultry operations, and property owners. Identification of susceptible farms was delayed for a full week since workers were unable to accurately predict where disease spread was likely.

The resulting spread of AI cost the state \$4,000,000 to contain and is estimated to cost up to \$3 billion in grower losses and insurance claims. Several producers will file for bankruptcy and the Commonwealth's status as one of the nation's top poultry producers is in jeopardy. The previous administration is being blamed for its lack of funding for the PAMAP program, which would have provided accurate GIS data to help stem the spread of the disease.



SCENARIO ONE: Economic Development

High-Tech Company Chooses Pennsylvania for New Facility

June 12, 2004

Nexgia Corporation announced today that their new computer chip facility would be located in York County, Pennsylvania. The facility will include both engineering design and manufacturing of the next generation of chips for wireless devices. The facility is expected to employ 300 people to start in the fabrication plant next year, with another 1500 added in the next five years as the devices proliferate. State officials celebrated the decision as a sign of new economic strength.



Nexgia spokesman Brian Peterson stated, "PAMAP made the difference, because the large amount of accurate and detailed GIS data made available to us by DCED and York County's IDC really made the decision easy. Our site selection team was able to access Pennsylvania's data through the Web, allowing them to drill down to local data layers to make a thorough assessment of each potential site. We were able to see the parcels we would have to purchase, and determine clear ownership on each one. We were able to view the location of water, sewer, and other utilities, and quickly determine whether capacity was adequate. We consider ourselves an environmentally friendly firm, and we were able to view large amounts of environmental data to see what kind of impact the plant would have, and minimize the impacts on the local community. We were able to analyze the transportation infrastructure, and view demographic information to look for the skilled labor force we require. The amount and detail of data available at the state and local levels were accurate enough to save us hundreds of thousands of dollars on detailed site surveys until the final site was selected. No other state we considered could offer this level of detail."

State economic development officials hailed the decision as indicative of the type of cooperative effort required to bring new business to the

Commonwealth. Emily Johnson, spokeswoman for the Governor's Office, said, "We were able to provide a coordinated effort among state, regional, and local officials that really impressed the company. We were able to address all of their information needs in a timely manner, and give them the confidence that they were making a sound choice. We are excited for the skilled jobs that this facility will provide to the region, and are certain that our PAMAP-based approach will help attract many more new companies. We are seeing a new era in attracting and retaining businesses in Pennsylvania."

Governor Rendell is expected to participate in next month's ground-breaking ceremony and the facility should be open for business in 18 months.

SCENARIO TWO: Economic Development

Nexgia Abandons Search for PA Site

June 12, 2004

Nexgia Corporation announced today that they have abandoned their site search for an engineering and fabrication facility in Pennsylvania. The company will now focus its efforts in New York and Delaware.

Nexgia is a designer and manufacturer of computer chips used in next generation wireless devices. The company has been looking for a site to build a new facility to meet the expected increase in demand for its products over the next 10-15 years. The facility is expected to provide both engineering design of chip devices as well as manufacture of the devices, and will employ up to 2000 skilled laborers.

Nexgia spokesman Brian Peterson stated, "We are very disappointed that we could not continue our search for a site in Pennsylvania and find a suitable facility location. The economic development folks of Pennsylvania were able to provide basic information about potential sites, and their support of our search was enthusiastic. The Keystone Opportunity Zone program and incentives offered by the state were encouraging, however, the lack of detailed parcel and infrastructure information proved to be a stumbling block.

Detailed information on water, sewer, gas and other utilities was spotty for the sites in the state that we looked at, and our team could not make a definitive evaluation. The other states have more detailed GIS information including parcels and statewide web-based mapping and query systems for selecting a qualified site."



Pennsylvania officials expressed their disappointment in the company's decision.

SCENARIO ONE: Government Efficiency

Governor Touts Revenue Enhancement Initiative July 1, 2005

The Commonwealth of Pennsylvania closed out its fiscal year with a modest \$73 million surplus. Some critics attribute this surplus to the whims of economic good fortune. Governor Rendell's senior staff members beg to differ.



“Our financial success,” observed the Commonwealth’s Revenue Secretary, “relies upon innovative collection techniques, including data sources like PAMAP and new tools that accurately relate specific economic activity to geographic locations. We have a better sense of where business activity is occurring in the Commonwealth.”

“This enhanced data has permitted us to identify, register, and collect tens of millions of dollars from over 5,000 businesses and individuals conducting business activities within Pennsylvania without proper payment of taxes. Audit selection for business and individual taxes now takes into account disparities between income and sales data attributable to specific business locations for tax purposes with other information reported by Pennsylvania taxpayers.”

“Significantly, our partners in Pennsylvania local government have reaped additional benefits from this approach in improved collections for earned income taxes and local business taxes.”

Pennsylvania’s Budget Secretary noted, “We have gone the extra mile to ensure that each dollar is wisely spent and all reasonable efforts are made to ensure that all taxes legally due are collected. The evidence of this good stewardship is another year of expanded education and economic development programs – without a tax increase imposed on our citizens.”

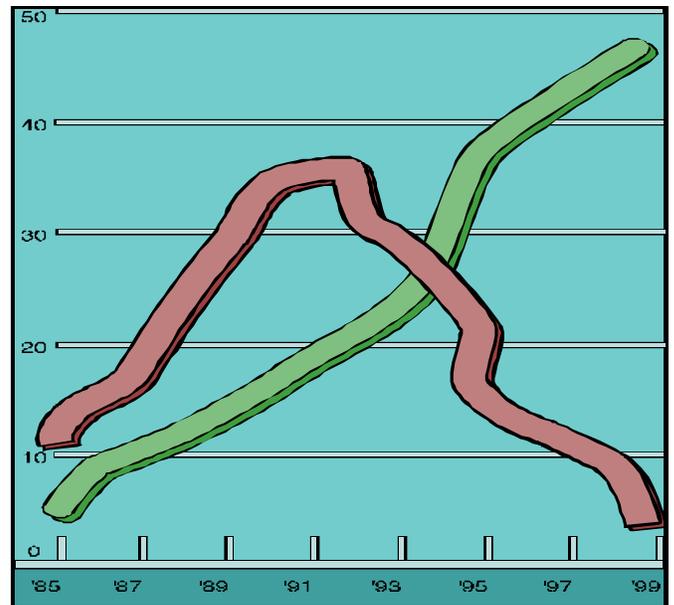
SCENARIO TWO: Government Efficiency

PA Closes Year \$121 Million in the Red July 1, 2005

Pennsylvania closed the 2004-05 fiscal year with a \$121 million shortfall in its General Fund, attributable to slower than anticipated revenue growth. The Commonwealth collected just over \$25.3 billion as opposed to the nearly \$25.5 billion projected.

Spokespersons for the Governor’s Office and the General Assembly indicated that a solution to the budget impasse created by the tax collection deficit was expected within the week. Both the Governor and legislative leadership promised no cuts in priority programs including newly enacted school programs, Pennsylvania Children First and PA A+.

An unnamed source close to the budget negotiations indicated it was likely that the shortfall would be covered through a combination of spending cuts in economic development programs and a rate increase of up to a tenth of a percent in the state’s personal income tax rate from the current 2.8 to 2.9 %.



Conclusions

PAMAP is a necessary and important resource for the Commonwealth of Pennsylvania. Whether the program is expedited or not, the PAMAP program *will* be implemented. However, with the current level of funding and resources available to the program, it will require **at least** ten years to be completed. Many economic development opportunities that could be achieved with a completed PAMAP program during this period will potentially be missed. Surrounding states that compete for the same financial monies as Pennsylvania may take business away from Pennsylvania, resulting in missed opportunities to bring substantial numbers of new jobs to the state.

With the current levels of world terrorism, it is likely that Pennsylvania will again be a target of future terrorist acts. With PAMAP, it may be possible to contain and respond to acts of bioterrorism and destructive acts. Without PAMAP, the Commonwealth will have more difficulty responding to terroristic acts as well as natural disasters. Homeland Security for the Commonwealth and the protection of critical infrastructure elements depends on the availability of complete and seamless spatial data for the entire state at an accuracy that is not available today. With the many nuclear power plants, unprotected potable water resources, and high density population areas at each end of Pennsylvania, it is difficult to coordinate the necessary plans for protection and response without PAMAP.

State agencies and local governments today have difficulty sharing geospatial information because of many issues, including available funding, the lack of common data standards, and differing data accuracy needs. PAMAP is designed as an instrument to provide a common basemap for the entire state, crossing political boundaries, and solving many of the problems that exist today for coordinated planning among agencies at different levels. The availability of a complete and seamless statewide parcel spatial data layer will result in increased revenues, multilevel planning capabilities that have been impossible to date, homeland defense response and preemption, natural disaster response, and it will have a tremendous impact on the abilities of the Commonwealth and county governments to attract new business to the state and create new jobs.

GIS technology and spatial data is an integral part of state government in Pennsylvania today. Governor Rendell has an immediate opportunity to make a difference in eGovernment initiatives across the state by supporting the PAMAP program and expediting the funding and personnel resources necessary to shorten the creation time to implement the program. By allocating an additional \$25 Million each year to the program, PAMAP can conceivably be completed in a three to four year period, and will demonstrate significant benefits starting in year one. Maintenance costs once PAMAP is initially completed will continue, but at a much smaller level of investment for ongoing efforts.

The return on investment (ROI) for this initiative can be conservatively estimated at **\$250 Million** over a ten year period by making government more efficient, protecting the environment and critical infrastructure, and by tripling the Commonwealth's economic development successes through complete and seamless planning data sets and tools used by state and local EDC organizations, thus creating many new jobs in Pennsylvania. Initial payback on the PAMAP investment may be completed within two to three years of program completion.

PAMAP will become a legacy that propels Pennsylvania to be a leader among state governments. Competition among states continues to grow and those states with the best tools and geospatial data to support statewide decision-making will have a clear advantage over those who do not. In the mid-Atlantic region, Pennsylvania is currently playing catch-up to states like Delaware, New Jersey, and New York. Our ability to competitively win new federal monies will be limited in several years if we do not act quickly on PAMAP. With a completed PAMAP, we will have a resource second to none in securing federal projects and funds and drawing new jobs and industry to Pennsylvania.

No other statewide IT initiative, other than the ImaginePA effort to standardize statewide agency operations and procurement functions, offers as great of a return on investment (ROI) in making state government function more efficiently than PAMAP. In addition, no single statewide IT initiative or other program offers as great an opportunity to bring new businesses and jobs to Pennsylvania as PAMAP. Finally, Pennsylvania's Homeland Security initiatives require highly accurate geospatial data to be successful. The current accuracy of spatial data available today may not be accurate enough to protect the maximum number of lives in case of a terroristic act or natural disaster within the Commonwealth.

It is the consensus of all state agencies and the spatial technology community in Pennsylvania that the PAMAP initiative is a prime opportunity to make a significant difference in the future of Pennsylvania. It is important that new Executive Agency Secretaries be cognizant and supportive of individual GIS initiatives in each agency and of PAMAP in general.

We would appreciate an opportunity to personally address this matter with the transition team and Governor Rendell and discuss the merits of prioritizing and expediting the PAMAP program through additional funding and by making this a priority with all Executive Agencies.



The following individuals donated their time and efforts and directly contributed to the creation of this white paper:

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Bob Reeder, DMVA
Mike King, LORL
Ed Burke, PEMA
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Damon Anderson, DCNR
Dr. Jay Parrish, DCNR

Dr. Bill Toothhill, Wilkes University
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Dan Campbell, University of Pittsburgh

Eric Jespersen, Rettew Associates
Jim Knudson, GeoDecisions/Gannett Fleming
Chris Markel, GeoDecisions/Gannett Fleming

Attachment: GIS – A Key Component of
Pennsylvania Homeland Security

GIS – A Key Component of Pennsylvania Homeland Security

Homeland security is focused on three primary objectives: protecting life, property, and critical infrastructure. The events of September 11, 2001, have significantly increased the difficulties of providing for the safety and security of the residents of Pennsylvania (PA) and have brought a heightened sense of urgency to the implementation of related strategies. Building a strong anti-terrorism system requires the creation of a central nervous system in the form of a Geographic Information System (GIS) and a task force of experts to guide, manage, and support the system. When implemented, it will be a highly graphic link among first responders and all levels of government. A Homeland Security GIS will enable emergency managers to assess risks to community and infrastructure, establish specific mitigation/protection plans, determine the scale of an emergency, estimate rate of spread or progression, identify and evacuate at-risk populations, expedite and direct rescue efforts, provide accurate damage assessment, and prioritize recovery efforts.

The Pennsylvania Geospatial Information Council (PAGIC) is an organization established by a Memorandum of Agreement of June 10, 1999, between sixteen (16) Commonwealth of Pennsylvania agencies, boards and commissions, the Legislative Office of Research Liaison, and participating partners consisting of statewide associations and nonprofit organizations. PAGIC's primary purpose is to cooperatively facilitate the sharing of common geospatial data across agency jurisdictions; develop and recommend management approaches to data development and sharing; and develop partnerships with public and private sector organizations, local, other state, and Federal agencies. The group's focus to this point has been on information exchange at agency levels, and on merging data development among those agencies.

The events of September 11, 2001 supplant the status quo for this organization in favor of rapid facilitation of a Homeland Security GIS. Simple coordination and clearinghouse functions for public administration purposes are now superseded. PAGIC can be invigorated through the required participation by *all* Commonwealth Departments and Agencies and with broadened partnership with local governments and statewide stakeholders. The new imperative is to identify the data and infrastructure that advances Homeland Security and to implement this regime.

Three main components are needed for a successful GIS for homeland security:

- A Homeland Security GIS staff to provide leadership and ongoing support
- The hardware/software necessary to implement a GIS and make the information available to necessary personnel on different levels in different forms
- The data/information of sufficient precision and accuracy needed to support the GIS

Much of this is already in place to serve each agency's own mission. Moreover, significant expertise and data resources are found in county government.

PAGIC can be a key component of the GIS task force as it evolves into a more proactive and product-driven entity. Local government involvement is crucial, especially at the county level, and must be expanded. There is a strong need to create partnerships between all levels; a need for compelling, action-oriented relationships that will utilize the resources presently available and develop goals and products for the future. These are the key components of *PAMap* and this body strongly recommends accelerated implementation of this critical program to create a complete precise collection of digital aerial photography of PA and the accompanying geospatial data basics (i.e. roads, etc.).

The following milestones are already complete or in process in the Commonwealth:

- existing statewide GIS data sets are housed and documented in a state clearinghouse with free, open access, known as PA Spatial Data Access (PASDA).
- data standards have been developed and disseminated (PAMAGIC) to allow interoperability among state, local, and federal partners
- liaison created with USGS for coordination of our portion of the National Map; PA is a pilot state and has received grant funds to assist
- liaison created with US Census for a comprehensive inventory of data holdings and GIS capacity within PA counties
- a team consisting of public, private, and academic stakeholders has been created to advise in the development of *PAMap*.
- an inventory has been initiated of existing statewide data and acceptance by individual agencies of the stewardship role needed to maintain specific data layers (primacy)
- agreements and partnership arrangements are being developed between the Commonwealth and individual counties for data exchange and maintenance

All this activity would be enhanced by a strong executive mandate, without which the pace will remain modest and the most effort will be focused on agencies' existing business needs.

Counties are the custodians of real property parcel data, and the sharing and exchange of data between state and local government will increase the ability to be proactive and react in the case of an emergency. Currently, no one is mandated to identify priority data layers, establish responsibility for maintaining and updating those layers which presently exist, or determine sources of data for layers which need to be created and developed. Expansion of this data is critical to eliminate present vulnerabilities stemming from incomplete or missing data. This data must be available at local levels, and also funneled into a library available for state level decision-making. The data presently contained in a myriad of databases need to be connected into a distributed network to minimize the risk of a single event incapacitating Pennsylvania's ability to respond to emergencies.

The key components and expertise needed already exist here. However, changes to systems within agencies would serve us well when applied for Homeland Security. The Pennsylvania Incident Response System (PAIRS) is derived from an existing DEP program and can be a prototype for Homeland Security support. Pennsylvania businesses and universities routinely build programs to analyze and represent GIS data and are nationally prominent. Individual counties have programs in place for data access and reporting, and especially so in areas of incident response. Model programs like Justice Network (JNET) have prototyped secure information exchange among multiple agencies and local law enforcement.

Urgent recommendations of the PAGIC for immediate action are:

1. Expedite by executive order the completion of *PAMap* as conceived by the DCNR Bureau of Topographic and Geologic Survey to ensure that aerial photography is finalized by 2005 and ongoing updates occur on a three year cycle.
2. Execute by emergency procurement the hiring of an expert GIS support permanent staff at a 5 person level of effort. This staff will define and implement a Commonwealth Homeland Security GIS and develop a strategy for keeping up to date. They will report to the Director of Homeland Security.

3. Appoint a temporary Governor's Action Team to oversee the immediate creation of a PA Homeland Security GIS and review progress in 60 days. This team will be chaired by Director of Homeland Security and have as members, Chairman PA Emergency Management Council, Chairman PAGIC, and Director PEMA. At their discretion they may create a GIS Task Force for Homeland Security drawn from the talent pool of technical expertise already working within state agencies.
4. Invigorate by executive order the PAGIC and require active participation by all Commonwealth Departments and Agencies. Direct priority effort to support of Homeland Security. Actively involve local government and industry specialists in development and programs for sustainable GIS in the Commonwealth.

A strong executive mandate is required to build the precise and up-to-the-minute data needed for urgent decision support and a Homeland Security GIS capable of real-time management of field data in time of crisis.

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