



# **INTEGRATED SERVICES PROGRAM**

## **BUSINESS PLAN**

JANUARY 2010





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# Executive Summary

The Integrated Services Program (ISP) was established in the Information Technology Investment and Enterprise Services (ITI&ES) of the Virginia Information Technologies Agency (VITA) on May 15, 2006 at the direction of the Chief Information Officer (CIO). The ISP was the consolidation of the Public Safety Communications (PSC) and the Virginia Geographic Information Network (VGIN) Divisions as well as the Radio Engineering function of the previous Telecommunications Directorate. The goal of this reorganization was to leverage existing services and expand services to localities and public safety, more generally, to further the mission and vision of VITA.

The original business plan for the ISP was adopted in January 2007 to further this goal and has directed operations of the ISP since that time. However, as the ISP approaches its fourth anniversary, the changing environment within the Commonwealth over the last few years mandates revisiting the goals of the ISP and the business plan to support those goals. This version of the ISP Business Plan is the first major revision and marks a significantly new direction for the program. The primary change is a shift away from being a direct, application service provider. The previous plan contemplated the ISP providing E-911 and GIS application services through the IT partnership to state and local agencies at an enterprise level. The goal was to aggregate the need of the users to provide the application services in a cost efficient manner and creating a fully funded and self sustaining service offering. Unfortunately, the IT Partnership was unable to provide these services removing the key advantage for the ISP to manage these efforts. The ISP's plan to implement GIS application services was also impacted by the adoption of the GIS Strategic Plan, which downplays the need for enterprise applications and focuses efforts more on communications, coordination and collaboration.

Regardless of this shift away from the ISP providing the application services directly, the ISP's implementation strategy will include a focus on the following key components:

- An effective collaborative approach that aggressively pursues partnership arrangements, leveraging the Commonwealth's economies of scale potentials that provides more cost effective solutions to small to mid-size state agencies and local government;
- A governance model that is coordinated among all interested stakeholders including the Boards and professional associations; and
- Definition of and adherence to a business-oriented value proposition.

The shift in direction impacts how these collaborative and governance services will be implemented, not whether these services are implemented. Instead of the ISP acting as the service provider for an enterprise solution available statewide, the ISP will act

to facilitate opportunities for sharing services at a regional or agency level. This would not preclude these solutions from being leveraged throughout the Commonwealth, but the key difference is that the services would be managed by the state or local agencies for other agencies and not by the ISP. While this will be the new direction for the ISP, it also would not preclude the ISP from providing some services where it makes sense.

Since the *Code of Virginia*, requires the existence of the PSC and VGIN Divisions, the structure of the Divisions within the ISP will remain relatively unchanged, though additional positions will be requested in future budget years. Similarly, both the VGIN Advisory Board and the Wireless E-911 Services Board will continue to perform the same functions they did prior to the creation of the ISP and will be supported by the VGIN and PSC Divisions, respectively. In addition to utilizing the Boards in the same capacity, several communities of interest network (COIN) councils have or will be formed to more adequately represent stakeholders throughout the Commonwealth.

The ISP will continue work on several projects outlined in this plan. Additionally, the ISP will continue enhance services during the next year using the E-911 and GIS strategic plans as guides. However, it is important to note that no service within the ISP can be all things to all people. In order to remain focused on the implementation strategy listed above, some tough choices may be necessary about which services can or, maybe more importantly, cannot be provided by the ISP. The ultimate test will be whether the service provides the best return on the investment of time and funding.

Since much of the ISP is funded through the Wireless E-911 Fund, the ISP has a different funding source than the rest of VITA. This funding source has been reliable and is projected to sustain all operations of the ISP through the next biennium. It should be noted that recent budget actions will significantly impact the larger E-911 program by reducing available funding to the Commonwealth's 9-1-1 centers for maintaining and enhancing their E-911 systems. Eight million dollars annually is being shifted from the Wireless E-911 Fund to the Compensation Board to fund Sheriffs' dispatchers, who had previously been funded from General Funds. This funding would have been used for 9-1-1 grants to localities to purchase equipment replacements and upgrades. The lack of this funding will greatly slow down the implementation of new technology that will allow 9-1-1 centers in Virginia to process calls for help more efficiently and from new communications devices such as text messaging and voice of IP.

One of the other big challenges for the ISP will be ensuring participation from all required partners. Many of the projects of the ISP will require the active involvement of many stakeholders (as many as 158 different agencies), but the ISP does not have the authority to compel participation. Encouragement and incentives have been the best approach for the ISP so far, but it is difficult to ensure 100% participation with only these tools available. Additionally, the large reduction in available grant funding also reduces the incentives that can be provided by the Wireless E-911 Services Board to encourage participation.

Overall, the outlook for the ISP is strong though tempered by the current economic environment. The team established within the ISP is highly skilled, trained and motivated. One key to the continued success of the ISP will be the investment into the development of staff to ensure that they maintain their sharp edge. While that will be difficult in these tough fiscal times, all attempts must be made to find alternative methods of delivery that do not require significant expense or travel.



## Overview

### *Creation of the Integrated Services Program (ISP)*

Since its creation in 2003, the Virginia Information Technologies Agency (VITA) has begun a significant transformation of the way IT services are provided within the Commonwealth. As part of this transformation, the Commonwealth's Chief Information Officer (CIO) has encouraged the pursuit of a number of synergies across VITA activities. An emphasis was placed on ways to reduce duplication, leverage strengths and mitigate weakness within programs that had historically operated independently.

To recognize and respond to that emphasis, effective May 15, 2006, VITA reorganized several existing programs into the Integrated Services Program (ISP). The ISP brought together the Public Safety Communications Division (E-911) and Virginia Geographic Information Network (VGIN) along with the two State radio engineers (formerly in VITA Telecommunications) under one service delivery umbrella. The goal of this reorganization was to streamline and improve the delivery of existing and future services to our state agency and local government customers. The advantages of this consolidation will be achieved through reducing the overlap between programs (such as with regional outreach) and leveraging the strengths of each program to benefit the others.

This did not represent a reduction of the services provided by any of the individual organizational units. Quite the contrary, by leveraging existing efforts, services were actually expanded since the creation of the ISP. Each of the divisions, E-911 and VGIN, which are both established in the Code of Virginia, have continued to meet or exceed their current statutory responsibilities even as these new services have been implemented. Additionally, support for both boards, the VGIN Advisory Board and the Wireless E-911 Services Board, has continued and will remain unchanged or improve as this plan is implemented.

## ***Business Description***

The Integrated Services Program (ISP) is VITA's consolidated, centralized program for delivery of services to public safety, local government and for geospatial services. ISP's responsibilities fall into two primary categories:

- Public Safety Communications Support, which includes support of the Wireless E-911 Services Board, providing technical assistance to all public safety answering points (PSAPs), planning for the future of E-911, the management of radio frequencies for many state agencies, providing radio engineering and acquisition services and supporting the operation of the Virginia Emergency Operation Center (VEOC); and
- Geospatial Support, which includes support of the Virginia Geographic Information Network (VGIN) Advisory Board, coordination of enterprise geospatial services and establishment of a geospatial data clearinghouse and catalog; and

The *Code of Virginia* (§2.2-2025 through 2.2-2031) establishes the Virginia Geographic Information Network (VGIN) Division and the Public Safety Communications Division (PSCD) and assigns specific powers and duties to each. Though the Divisions have been consolidated into the ISP, each Division within the ISP must still meet these requirements of *Code*.

## ***ISP Governance***

The ISP is organizationally located in the Information Technology Investment and Enterprise Services (ITI&ES) Directorate of VITA. The program's Director reports directly to the ITI&ES Executive Director, who in turn reports to the Chief Information Officer (CIO) of the Commonwealth. The CIO serves as the chief administrative officer to oversee the operations of VITA. Though the CIO is ultimately responsible for the operation of all of VITA including the ISP, two other Boards have a role in the governance of this program. The Wireless E-911 Services Board, which was established in 1998 (§56-484.13) to promote and assist in the deployment of wireless E-911, provides direction and planning for the PSCD though there is no direct supervisory relationship. However, since the CIO serves as a member (and as the Chairman until July 1, 2008) of the Wireless E-911 Services Board, this Board does exercise a great deal of influence of the activities of the Division. Similarly, the VGIN Advisory Board was created in 1997 (§2.2-2423) to advise the VGIN Division and coordinator on issues related to the Division's powers and duties. Again, no direct supervisory relationship exists to the Division or the VGIN Coordinator, but the CIO also serves on the VGIN Advisory Board and usually commits to advice provided by the Board.

## Mission

VITA's Mission Statement embodies the basic charge set out in its 2003 enabling legislation as well as the intent of the Governor and General Assembly that the agency set an example for effective government transformation:

*To provide information technology that enables government to better serve the public.*

VITA's responsibilities fall into four primary categories:

- Governance of the Commonwealth's information security programs in support of the responsibilities of the Chief Information Officer of the Commonwealth;
- Operation of the IT infrastructure, including all related personnel, for the executive branch agencies declared by the legislature to be "in-scope" to VITA;
- Governance of IT investments in support of the duties and responsibilities of the Information Technology Investment Board and the Chief Information Officer of the Commonwealth;
- Procurement of technology for VITA and on behalf of other state agencies and institutions of higher education.

VITA is a unique organization, pioneering a 21st century model for information technology governance and operational excellence. The creation of VITA represents the most comprehensive reform of state government information technology in the nation and firmly establishes Virginia as a leader in the use of technology in government.

## Vision

VITA's vision is:

*To be Virginia's preferred government IT partner.*

- **Create value** – Provide enterprise IT services supporting the business of state government at the best return on investment, for our customers, stakeholders, and Virginia's taxpayers.
- **Improve the Commonwealth's competitive position in the national and world marketplace** – Harness opportunities to utilize technology to improve the availability, quality, and responsiveness of state services – seamless, friendly, anywhere, anytime – for our citizens and customers.
- **Create accountability for how public funds are spent on technology** – For VITA as well as for the entire executive branch.

- **Grow our employees** – Imbed opportunities for professional growth and development into the agency's organization and operations. Recognize and reward accomplishments.
- **Serve as the model for transforming state government** – Pursue streamlined business processes and innovative partnerships that revolutionize service delivery at significantly lower costs.

VITA provides outstanding service and technology solutions to support customers and address their business needs. VITA's services can be thought of as the information technology utility that supports specific agency requirements as they endeavor to deliver citizen services. While the agency works directly with the citizen, VITA works with the agency as a 'behind the scenes' service provider.

## ***Strategic Goals***

VITA has developed five (5) strategic goals for the agency over the next five years. They are:

1. Increase the accessibility of government;
2. Facilitate IT collaboration and partnership;
3. Ensure a trusted and reliable technical environment;
4. Create a reputation of performance for technology; and
5. Increase workforce productivity through the use of technology.

As a Division of VITA, the ISP must consider and support these strategic goals, as well as the vision and mission of VITA, within all programs and services it offers.

## ***Model for Operational Excellence***

VITA's customers are both the agencies for which we provide IT services and the citizens of the Commonwealth who rely on us to spend their dollars wisely. They want services and solutions that work, are on time, are reliable, and are framed within a first-class network of customer support. VITA's model for operational excellence considers these customers and the pillars on which VITA will succeed. By being the best and most efficient in both cost and process, VITA will be a model for operational excellence.

To achieve operational excellence, we clearly define what VITA is and also what it is not. VITA is not currently focused on providing highly customized, single solutions. We focus on the solutions that can be developed once and utilized by many. VITA is not currently focused on embracing each and every cutting edge technology as it emerges. We will adopt new technologies when they provide a means to address specific customer needs.

With our focus on customers, the model takes a five-pronged ("pillared") approach and builds a unique and dynamic way of doing business within state government.

## *VITA's Model for Operational Excellence*



## *Five Pillars of Success*

The five pillars on which VITA will build its success are:

- **Excellence in service delivery** – VITA customers can expect and have a right to demand the best in consistent and reliable delivery of solutions - what we promised, when we promised it.
- **People = Assets** – VITA's most important asset is people - talented, skilled state IT professionals who can deliver. They will be enabled through ongoing training, updating skills, and re-training throughout their professional careers.
- **Success through partnerships** – Our success will be celebrated as the product of a partnership between VITA, our customers, and our suppliers - working together to find new ways of getting things done.
- **Technology solutions** – VITA understands our customers' businesses and follows the rapid development and changes in technology. VITA applies new technologies to solve real business problems for our customers. We will deliver solutions, not just services.
- **Transparency** – There are two concepts to 'transparency'. One is that VITA's customers expect technology services to be like a utility ("the light switch") - something that is just there, yet is evolving and transforming over time. The other is that we want to operate according to open, consistent and clear

practices and principles so that the process of planning, provisioning and delivering IT services is a 'glass house.'

Each pillar is a guiding principle for how the ISP will approach its work and the development of the agency.



## Market Analysis

### *Place in the Marketplace*

Though the Integrated Services Program (ISP) is not a for-profit business, it must generate sufficient revenue to sustain the services offered. It is not, however, the intent for the ISP to directly compete with commercial entities within Virginia. Instead, the ISP will provide services not currently available to all state agencies and local governments and will help those same users achieve greater economies of scale through pooled-resources and regional procurements. Similar to other “buying cooperatives”, participation will continue to be optional, but will allow many agencies to receive services that would otherwise be unaffordable.

The services offered by the ISP fall into one of three categories:

**Consultative Services** – Providing professional, unbiased technical assistance and consultation to customer agencies.

**Governance Services** – Coordinating with stakeholders to develop and promulgate standards and best practices to ensure that investments made by the Commonwealth are managed in an efficient and effective manner.

**Collaborative Services** – Leading or supporting efforts that increase collaboration among local and state agencies that improve efficiency and the delivery of services to the citizens of the Commonwealth.

Previous versions of this Business Plans focused more on applications services that would be managed and implemented by the ISP. This revision makes a deliberate shift to greater partnerships with other stakeholders in the development and provision of such services. Where previously the intent was to focus on enterprise and hosted services that would be consumed by the customers of the ISP, this new direction recognizes that the VITA ISP need not necessarily be the application service provider, but still must ensure that the new services are managed to provide the optimum return on the investment made by the Commonwealth. This also does not mean that the ISP cannot or should not host any services or applications. In situations where the ISP provides value in hosting an application because of an existing investment or it just

makes sense for the ISP to manage the effort, the ISP will consider providing the service directly.

## **Market Segments**

### **State Agencies**

For state agencies in-scope to VITA, many ISP services can appropriately be described as a regulated utility. Like a traditional utility, such as an electric power company, the ISP is the sole provider available within its franchised operating territory (i.e., the in-scope agencies). And just as the State Corporation Commission regulates electric power rates, VITA ISP's rates are directly regulated by JLARC. Therefore, this business plan is by necessity distinct from that of an IT service organization operating in an unregulated, private sector environment. It must, for example, accommodate serving customers that might be considered "unprofitable" in other environments, and at equal rates for the same services. VITA should also expect, as other regulated entities do, to be subject to periodic benchmarking by its regulatory body, to determine how efficient and effective it is relative to other similar organizations.

Currently, approximately twelve state agencies consume geospatial services from the ISP. However, preliminary studies shows that many other state agencies (including the executive and legislative branches as well as higher education) could also benefit from the use of geospatial technology in their planning and analysis activities. The ISP may need to provide technical assistance to these agencies help them develop the business case for an investment in GIS. Through its work establishing standards and best practices, the ISP can provide general direction to all potential customers allowing the ISP to focus on those needing more assistance.

To this point, state agencies have not been a consumer of PSAP services from the Public Safety Communications Division. However, several state agencies operate emergency communications centers similar to a PSAP, which could consume services in the future. While this may not be a primary focus for the services provided, those agencies can benefit from the services also being offered to the PSAP community. Several state agencies utilize the radio engineering services of the Division for the design and management of agency radio systems. These services have included needs assessments, radio propagation studies, interference mitigation and Federal Communications Commission (FCC) license management. A few larger agencies, like the Virginia State Police, have their own radio engineers that provide these services.

### **Local Governments**

Virginia's local governments include 95 counties, 39 cities, 190 towns, and numerous authorities and special districts. Many of these local governments are both existing customers and data providers to the ISP. Financial and technical assistance has been provided to every locality in Virginia that operates a PSAP. Additionally, GIS data has been provided to every locality for public safety and general government applications. The localities have also provided GIS data to the ISP for inclusion in the statewide

road centerline data file. This partnership is essential to the continued success of both local and statewide efforts.

As the technical challenges and requirements have grown on the local PSAPs, many localities have looked increasingly to the ISP for assistance. While the largest PSAPs in Virginia may have the depth of resources to have personnel to support these efforts, most of the PSAPs throughout the state are much smaller and need ISP support. It is much more efficient to aggregate this need at a regional or statewide level and provide the support to a number of PSAPs rather than each PSAP having to develop the support in-house. As an example, technological advances in telecommunications are being developed at a dizzying pace. They are deployed in the market place at different paces in different areas of the Commonwealth. Monitoring these trends and determining their impact to the delivery of E-911 in an area is best performed by the ISP regional outreach program with alerts being provided to those local PSAP managers that may be impacted.

Several localities have utilized radio engineering services from the ISP as a low cost alternative to hiring an engineering firm for basic assistance. Quite frequently, these services are requested to determine if an engineering firm is needed to resolve a problem. As an example, radio engineering services from the ISP may be used to identify a radio coverage problem and to identify potential solutions to the problem. Once the locality selects a solution, they will often need to acquire the services of an engineering firm to design the solution or manage its implementation. The ISP services will assist the locality in correctly identifying the problem and how to best proceed to a solution.

## **Citizens of the Commonwealth**

While citizens are not typically viewed as a customer of a support agency like the ISP, there are two areas where the ISP has historically served the public directly or indirectly with partner agencies. First is in the area of GIS data provision. The ISP hosts or maintains enterprise GIS data for the Commonwealth. While this data has historically been inaccessible to the citizens, the data must become more available where they use the data. It is unrealistic to expect that ISP staff will be able to manually prepare every potential request for data, but tools and partnerships can be developed that will permit the citizen to generate their own data. To accomplish this, the ISP has been developing appropriate and sustainable methods of GIS data distribution through a GIS clearinghouse and through partners, such as the major Internet search engines, that many citizens already use to find geospatial data.

The second area where the ISP has serves the public directly (or indirectly) in the past is in the area of E-911 public education. However, inadequate resources will limit the ISP's role in E-911 public education moving forward. Additionally, no widespread education problem has been identified though more localized issues likely exist. As a result, the ISP will continue to support local or regional education efforts, but will not take on any statewide programs. If identified as a need by the PSAP constituents, the ISP will help develop best practices for local and regional programs.

## Commercial Enterprises

The primary commercial market for ISP service is in the area of GIS data and services. Once viewed as a large potential for revenue, the reality has proven to be much less lucrative. Large commercial enterprises with national coverage are not interested in procuring GIS data from an individual state since they need a standard data solution that will serve their entire footprint. Smaller commercial ventures, which do not have the financial ability to pay for high accuracy data, are instead opting for data available from other free sources (Google Earth, MapQuest, etc.). Although these same Internet mapping providers are potential purchasers of data, they have instead proposed data sharing agreements and partnership. This type of arrangement has still proven to be beneficial to the Commonwealth, though not providing a reliable revenue stream to the ISP. Instead, these partnerships provide an avenue to allow the citizens of the Commonwealth to utilize the data developed with their tax dollars.

It also provides a means of advertising or marketing the GIS maintained by the Commonwealth. By license agreement, those partners receiving GIS are not permitted to distribute the data beyond the images displayed on the website. This has already resulted in some sales of data so it is incorrect to believe there is no commercial market for the GIS data. But it will likely not be a significant source of funding to ISP and VITA. The ISP will continue to pursue possible partnerships that can benefit the Commonwealth through data sharing or making data available to the citizens where they use it most.

## *Strengths, Weaknesses, Opportunities and Threats*

### Strengths

- Staff Knowledge, Skills and Ability – The current staff within the ISP are highly-trained and motivated individuals. Each staff member has demonstrated that they have the knowledge, skills and abilities to perform the required work. However, over half of the current staff of the ISP has been with VITA for only about two year. Retaining this staff for continuity and sustainability will be a significant priority for the future.
- VGIN Advisory Board and Wireless E-911 Services Board – Though not supervisory to the divisions of the ISP, the Boards provide an established community of interest network (COIN) of the ISP to call upon for input, advice and feedback.
- Face-to-face Customer Relationships – A weakness of many state programs is their focus on the Richmond area. The ISP has expanded its focus through the establishment of its regional outreach program. Additionally, the ISP program attends the statewide professional conferences for public safety communications and GIS and conducts quarterly regional meetings with program stakeholders. The combination of the regional offices and the regular meeting schedules allows the ISP to maintain strong relationships with its

customers, which cannot be achieved through email or even telephone conversations.

## **Weaknesses**

- Depth of Resources – The ISP is a lean organization without a great deal of redundancy among the staff positions. As staff members have left to pursue other career opportunities, the program has struggled to manage the responsibilities of the departed staff member. This is compounded by the budget environment over the past few years, which has typically delayed or prevented the recruitment of replacement staff. The provision of new or expanded services being requested by ISP customers has also been impacted by the lack of depth of resources as there are too few resources to shift to changing priorities. With the budget issues, it is unclear from where these additional resources will come.
- Lack of Basic Agency Funding – Although many of the services the ISP offers (or will offer) are provided at a significant cost savings over the same service from another provider, many of the potential customers are insufficiently funded or are not funded for the service at all. As an example, many agencies have a need for digital aerial photography for GIS development. Even though the ISP offers this to the agencies at a fraction of what it would cost from any commercial source, several agencies have indicated that they do not even have the funding to afford the ISP cost. Simply put, a cost savings is only a savings if the agency is spending the money to begin with. This is not limited to state agencies as many localities are not able to afford such services as disaster recovery or 24-hour monitoring of their current systems. This may result in a cost increase to the locality for these ISP services, but the service will be additional features not currently affordable to the locality.

## **Opportunities**

- GIS/E-911 Synergy – Although each has its own mission and purpose, the PSC and VGIN Divisions have a great deal of overlap between the services they provide. By leveraging the similarities, and reducing duplication, the ISP has been able to operate much more efficiently and provide better service to our customers. As an example, the ISP Regional Outreach program supported both E-911 and GIS outreach through the seven established, regional offices throughout the Commonwealth. This facilitates much better communications between the local agencies and staff in Richmond. This is especially important in areas remote to Richmond.
- Geospatial Enterprise Platform (GEP) – Established in 2005, the GEP has the potential to provide the infrastructure for geospatial services throughout the Commonwealth. While it was originally constructed to support the emergency management mapping application, the GEP can support a wide variety of applications and services. Since the platform is not yet being utilized to its full

capacity, it is a valuable asset to support geospatial services in both local and statewide programs.

## Threats

- Local Participation – Local governments are not required to participate in the services offered by the ISP. E-911 and GIS services are provided to localities and are consumed only if the locality views them as beneficial to their agency. In other words, the ISP must show a value to the local government beyond what the locality could achieve on its own. In order to achieve the greatest economies of scale and ubiquity of services, it is important that all or at least a large number of localities participate. As an example, to sustain the road centerline project each locality must submit their data updates to the ISP on a monthly or quarterly basis. There is no legal or regulatory requirement for this submission, but if the data is not submitted, it impacts ALL users of the statewide roads database. There are similar services within the E-911 program that will require large scale participation to achieve ubiquity (such as next generation E-911), but incentives and demonstrated value may not be enough to convince all localities to participate.
- Customer Choice – Related to the participation in the provision of services is the issue of customer choice. There are few services that state agencies and localities are required to acquire from the ISP. Instead, they could choose to develop the capability themselves or purchase it from another vendor. While the intent is to be the service provider of choice for both state agencies and localities, if value is not demonstrated (and in some cases even if it can), the customers will go elsewhere for the services and the ISP will fail to meet its mission.
- Budget Crisis – Though it impacts all agencies throughout government in the Commonwealth of Virginia, it is important to note the continued impact of the current budget crisis on the ISP. Currently, the ISP has four vacant positions that have caused a reduction in the services the ISP can offer to its customers. With a continual hiring freeze still in place, each subsequent departure of an employee will further impact the services offered. Additionally, the budget crisis has caused \$8 million to be shifted from the Wireless E-911 Fund to the Compensation Board to fund sheriff's dispatchers previously funded through General Funds. While this does not have a direct impact on the ISP budget, it greatly reduces the amount of funding available to the PSAP grant program. Since the PSAP grant program is a primary source for 9-1-1 technology and network upgrades in the Commonwealth, this large of a reduction will significantly delay the implementation of new technologies.



## Strategy

ISP's Business Plan implementation strategy includes a focus on the following key components:

- An effective collaborative approach that aggressively pursues partnership arrangements, leveraging the Commonwealth's economies of scale potentials that provides more cost effective solutions to small to mid-size state agencies and local government;
- A governance model that is coordinated among all interested stakeholders including the Boards and professional associations; and
- Definition of and adherence to a business-oriented value proposition.

Each of these strategy components is further outlined below.

### ***Collaborative Services***

As technology advances, often small and mid-sized state agencies and localities are left behind because they lack the resources to implement them. By definition, a collaborative approach increases the economies of scale by bringing together a larger number of users into the acquisition and sharing of a single solution. By reducing the amount of infrastructure that is needed, cost to all users can be reduced. Additionally, it may make features available to users that may not otherwise have been able to afford them on their own.

This approach can be utilized for E-911 as well as GIS services. With recent advances, almost all of the systems utilized in a PSAP could now be provided through a shared services model. Customer premise equipment (telephone), computer-aided dispatch (CAD) systems, mapping display systems and voice logging recorders are the most likely to benefit from this approach as each has a significant infrastructure (servers, etc.) cost in addition to the client workstations. GIS services have similar infrastructure requirements that can prevent some agencies or localities from initiating a robust GIS program. Having this service shared among multiple agencies or organizations can reduce or even eliminate the capital outlay from some participants and puts the technology within their reach.

A collaborative approach is a commitment to look beyond the needs of one agency to the benefit to the Commonwealth as a whole. While some requirements are agency specific, many are requirements for several agencies within the enterprise. Rather than each agency focusing on their own requirements, and potentially duplicating the efforts of another agency, a collaborative approach would require coordination among the agencies to ensure efficiency. While this approach can benefit application development, it can pay even greater dividends in the area of data acquisition and

maintenance. As an example, many state agencies and localities need data regarding the road network within the Commonwealth. This data is generated by over 150 localities as well as the Virginia Department of Transportation (VDOT). A collaborative approach recognizes the benefit of a single effort to develop this statewide data file and provide it to all who need it rather than having each agency to develop and maintain their own file. This approach may require individual users to do more than they would otherwise to satisfy just their own needs, so it is imperative that substantial benefit is shown to all that participate.

Past version of this plan focused on a strategy of an enterprise approach that was similar to this collaborative approach. The primary difference and reason for modification is that the enterprise approach had much more of a directorial connotation to it. Over the past several years, it has become clear that these efforts are much more successful when a benefit can be shown to all participants. In a time of increasing workload and decreasing resources, that benefit must be tangible and provide a return on the investment being sought.

## **Coordinated Governance**

The governance of E-911 and GIS in the Commonwealth is a federation of user and service provider agencies that want to provide the best services to the citizens of the Commonwealth. While some formal governance structure exists, much of it is dependent on the participation of each agency. The Wireless E-911 Services Board has dominion over the allocation of the Wireless E-911 Fund (to a degree), which can be used to encourage desired behavior, but reduced resources to the Fund will likely impact this ability for some time to come. The VGIN Coordinator has some authority over geospatial data and metadata development, but it does not cover all potential users or creators of these data. As a result, the ISP must utilize a coordinated approach to governance.

The term governance often has a connotation of authority or control. In fact, the Thesaurus lists synonyms to be “supremacy” and “dominance”. However, the concept of coordinated governance does not imply that the ISP is seeking to position itself as the E-911 or GIS authority. Rather the intent is for the ISP to be the entity charged with coordinating governance activities among the federation of state and local organizations. Both the E-911 and GIS strategic plans, which were developed with strong input from ISP customers, include objectives to develop standards and best practices for agency operations in those two areas. It would be inappropriate for the ISP to develop these independently. Instead, the standards and best practices must be developed with the users and other interested stakeholders.

To the extent that proposed governance activities overlap with the activities of other organizations, the ISP must coordinate with those other organizations. Clearly the VGIN Advisory Board and the Wireless E-911 Services Board will continue to have a large role in the governance of their respective services. Additionally, other organizations will also have a role. This includes not only other state government organizations, such as the Statewide Interoperability Executive Committee (SIEC) and

the Office of Commonwealth Preparedness (OCP), but non-governmental organizations, such as professional organizations representing E-911 and GIS.

## ***Value Proposition—Operational Excellence***

Value propositions, while common in the private sector, are not as uniformly used within government. Early in the process of establishing VITA, it became apparent that the value-add VITA would offer its customers would need to be well defined and equally well understood, in the marketplace context of operating as a regulated utility. If the ISP is to succeed as a service organization, it must ingrain in its staff the benefits expressed in its value proposition.

The ISP's customers are the agencies and localities for which it provides public safety communications and GIS services and the citizens of the Commonwealth who rely on the agency to spend their dollars wisely. They want services and solutions that work, are on time, are reliable, and are framed within a first-class network of customer support. By being the best and most efficient in cost and process, the ISP will be a model for operational excellence.

Achieving operational excellence requires a clear definition of what the ISP is and also what it is not:

- The ISP focuses on the solutions that can be developed once and utilized by many, but does not promote highly customized, single solutions.
- The ISP adopts new technologies when they provide a means to address specific customer needs, but does not embrace each and every cutting edge technology as it emerges.



## **Organization**

### ***Organizational Approach***

The ISP's organizational structure emphasizes expertise within each of its technology tower, but encourages collaboration horizontally across the towers to maximize customer service and efficiency. The ISP is organized into three towers, the Public Safety Communications (PSC) Division, the Virginia Geographic Information Network (VGIN) and the Regional Outreach program, in which resources are shared to ensure that the most skilled or knowledgeable individual is used to address a customer's needs.

The PSC and VGIN Divisions are established by the *Code of Virginia* (§2.2-2031 and §2.2-2026, respectively) and thus must exist and perform the duties defined. The *Code* requires each Division to be headed by a Coordinator.

The defined duties for the PSC Division are fairly broad stated simply as:

*“The Division shall provide staff support to the Wireless E-911 Services Board and encourage, promote, and assist in the development and deployment of statewide enhanced emergency telecommunications systems.”*

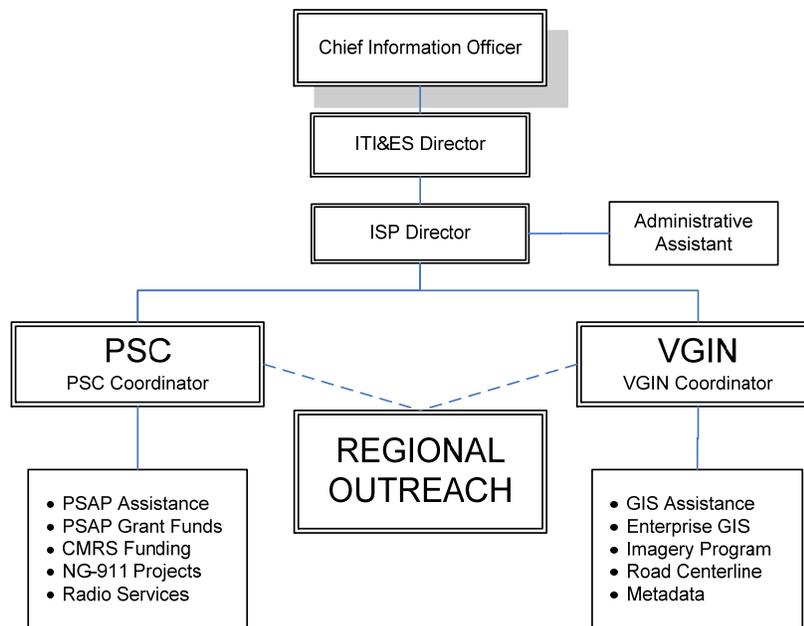
The VGIN Division is created in *Code* as follows:

*“There is established within VITA a Geographic Information Network Division (the Division), which shall foster the creative utilization of geographic information and oversee the development of a catalog of GIS data available in the Commonwealth.”*

Subsequent sections of *Code* provide more specific powers and duties of the Division and the VGIN Coordinator, but all support the general purpose outlined above. VITA is authorized by *Code* (§2.2-2030) to establish a non-stock corporation to assist the VGIN Division with the development and acquisition of geographic data and statewide base map data; however, this authorization has not been exercised. To this point, there has been no identifiable benefit to using a non-stock corporation for development and acquisition of data. Further analysis is needed to determine if such a corporation would benefit the distribution of data, but legislative change may be necessary to allow this.

## Organizational Structure

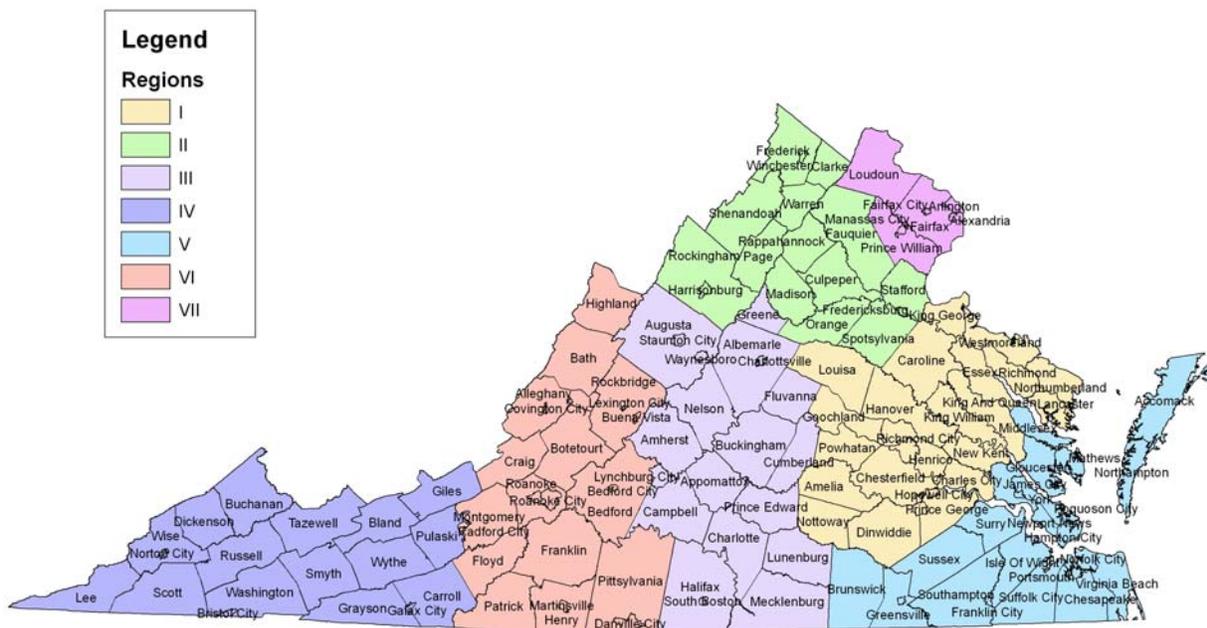
The following is the current organizational structure for the ISP:



## Completed Organizational Changes

Since the last revision of this plan four organizational changes have been completed. First, two Public Safety Communications program managers were hired. The two program managers were needed to support functions currently performed by the PSC Coordinator and the ISP Director. Specifically, one is supporting the successful PSAP grant program while the other is supporting the other fiscal activities of the Division including the automatic, monthly payments to PSAPs and wireless carrier cost recovery. Originally, it was anticipated that some of these activities could be supported by the regional coordinators, but the demand for their services has prevented this. The need for someone to manage the fiscal activities was recommended as part of the 2007 VITA internal process audit.

Second, the transition from four to seven regions for the outreach program has been completed. While the coordinator for the Appomattox region was hired in May 2009, unfortunately, the continued hiring freeze has prevented the filling of the Northern Virginia position. Additionally, the Southwest regional coordinator has left that position to pursue other opportunities. As a result, two of the seven regional coordinator positions are currently vacant. Permission to fill these positions is being sought, but the likelihood of success is not certain. The alignment of the ISP regions to the Homeland Security Regions used by the Office of Commonwealth Preparedness (OCP) has proven to be extremely effective and efficient. The ISP regional coordinators have been able to assist with OCP activities like statewide interoperability, which has many of the same constituents as the PSC Division.



The third organizational change was to merge the former radio engineering division into the PSC Division. This was done, in part, because the radio engineering manager retired (leaving one employee in the Division), which the current freeze has prevented hiring a replacement. However, it has also allowed a refocusing of the ISP's radio

engineering efforts on public safety activities with the resources available. With such limited resources, the focus must necessarily be narrowed to those most important.

The final change was to add a third GIS Data Analyst for work on the road centerline maintenance program. This position was needed not to expand services but rather to sustain existing services. The work has previously been performed by a contractor, but since the work is consistent and steady, it was much more cost effective to be performed by internal staff. Two analysts were initially employed but the work load was such that a third analyst was needed. These positions are supported by revenue generated specifically for the road centerline program.

## **Planned Organizational Changes**

With the current budget environment, it is highly unlikely that other organizational changes will be possible during the coming biennium. The focus will be on filling the current vacancies (and any new vacancies) in the following priority order:

1. Southwest Regional Coordinator
2. VGIN Imagery Program Manager
3. Northern Virginia Regional Coordinator
4. Radio Engineer

If after these positions are filled, there is an opportunity to add another position, a Regional Outreach Manager is needed. Currently, the PSC and VGIN Coordinators each supervise half of the regional coordinators. While this is functional, it is not ideal. Having a single manager of this effort would benefit the organization by decreasing span of control for the leadership and improving management of the regional coordinators, who are all remote from Richmond.

## **Use of Contactors**

The ISP (and predecessor organizations) has relied on contractors for several years to augment in-house staff. Most frequently this augmentation was to supplement a workforce that was simply too small to accomplish the required tasks. With the additions noted above, the ISP has sufficient staff to perform all duties currently identified or planned, and the use of contractors has essentially been eliminated. Where vacancies exist, the scope of services provided have been scaled back to meet the resources available.

Contractors may still be necessary to provide services outside the ability of the ISP staff such as applications development, surveying or photogrammetry. These tasks will be narrowly defined to confine costs; and will typically be in support of a specific project, and will be limited in duration to that project.

## **VGIN Advisory Board and Wireless E-911 Services Board**

The VGIN Advisory Board and Wireless E-911 Services Board are established in the *Code of Virginia*, but have dramatically different duties and responsibilities. Staff support for both Boards is provided by the ISP, but that is where similarity ends. The VGIN Advisory Board is charged with providing advice to the VGIN Division on issues related to the powers and duties of the Division. The Wireless E-911 Services Board is responsible for providing funding and technical assistance for the deployment of E-911 and to planning for the future of E-911. Although neither Board is supervisory to the Divisions of the ISP, they provide an excellent forum for the ISP to discuss issues and options with constituents. The relationship with each Board has been strong in the past; however, the ISP must continue to strengthen the relationship in the future by improving communications with the Board members and seeking greater guidance and support from the Boards.

## **Community of Interest Networks (COIN)**

Though the Boards provide an excellent resource to the ISP, it is unrealistic to expect that they can represent all of the stakeholders within the Commonwealth. As a result, the ISP must utilize several additional COINs to ensure that all constituencies have input. Fortunately, some COINs already exist, either already formed by the ISP, or formed regardless of the ISP. An example of the former is the State Agency GIS COIN. This COIN brings together the largest GIS users among the state agencies to provide advice to VGIN staff. Additional COINs that are needed include:

- State Agency Radio Users
- E-911 Training Requirements
- Next Generation E-911 Planning
- E-911 Best Practices
- Local Government GIS Users
- GIS Metadata/Library



## *Significant ISP Accomplishments*

### **Virginia Statewide Comprehensive 9-1-1 Plan**

#### Background

This Virginia Statewide Comprehensive 9-1-1 Plan, including the associated implementation plan, defines key strategic initiatives for improving 9-1-1 services and functionality across Virginia, especially during times of rapid technology advancement. The Plan describes a future for 9-1-1 to include Next Generation 9-1-1 (NG 9-1-1) and will influence Virginia's statewide decisions concerning 9-1-1. The successful achievement of the Plan's initiatives will result in Virginia's ability to continue to meet the public's high level of expectations for 9-1-1 emergency service, provide a consistent level of emergency service across the Commonwealth, and contribute to excellent public safety capabilities that maintain secure communities.

Development of the plan began with a strategy to engage state and local 9-1-1 experts, practitioners, and users in the actual creation of the plan and to achieve consensus on a path forward. This was accomplished through a two-step process. The first step was a series of interactive interviews to gather data regarding the current and future state of 9-1-1, as well as initiatives and strategies that would support NG 9-1-1. The second step was to validate the data in an open offsite session held at the Virginia Information Technologies Agency (VITA).

#### Current Status

The Comprehensive Plan for E-911 in the Commonwealth was adopted by the Wireless E-911 Services Board at their January 2008 meeting. The plan establishes a vision;

**Virginia's 9-1-1 Centers receive, process and dispatch requests for emergency aid quickly and accurately: from any geographic location, from any communications device and in any language;**

And two overall strategic goals;

**Provide a standard level of emergency response service to the public; and**

**Position 9-1-1 centers to continuously meet the public's expectations.**

The plan further defined five initiatives in support of those two goals that would be undertaken by the Board and staff after its adoption. Those initiatives were as follows:

1. Conduct a baseline assessment of 9-1-1 capabilities and services;

2. Develop and apply statewide guidelines to foster a minimum level of 9-1-1 emergency response service across Virginia;
3. Implement a recruitment and retention program;
4. Enable Next Generation services by connecting 9-1-1 centers to the statewide IP backbone; and
5. Create a mechanism for advocacy in the political environment surrounding 9-1-1 emergency response.

Since its adoption, the primary focus has been on initiatives numbers one and four. A baseline assessment of the PSAPs in the Commonwealth has been completed. Staff is currently analyzing the data and is determining the best method for sharing and displaying the results. Though much work was expended on initiative four, the result of those efforts was to determine that the statewide IP backbone is not yet of a maturity and completeness to support NG 9-1-1. Though the projects in support of this initiative are continuing, staff is working to determine appropriate alternative for statewide connectivity.

## **GIS Five-Year Strategic Plan**

### Background

To date, the VGIN Division has primarily interfaces with the 12 largest state agencies GIS users. While a few smaller agencies have made inquiries, the vast majority of the executive branch agencies have not sought any kind of GIS support. A study of geospatial needs was conducted in 2003 to support the need for an enterprise approach, but only the largest users were interviewed and the study stopped short of identifying specific geospatial needs in smaller agencies that are not currently being met. This project is to conduct a complete needs assessment of all in-scope agencies to determine geospatial requirements and to develop a strategic plan to address those needs. Anecdotal and experiential evidence seems to indicate a large number of requirements that may be able to be satisfied with a few enterprise solutions, but a more detailed analysis is needed before a plan to meet the requirements can be developed.

### Current Status

The GIS Five-Year Strategic Plan was adopted by the VGIN Advisory Board at their January 2010 meeting. The plan establishes a vision:

#### **Using geographic knowledge to create a better Virginia**

And overall three strategic goals:

**Coordination and Collaboration:** Provide greater coordination and facilitate collaboration within the geospatial community;

**Communication:** Increase communication and outreach to the general public, decision makers, and the geospatial community; and

**Creative Services:** Continue to create a platform for spatial solutions in the Commonwealth.

The plan defines two specific initiatives for each goal to be the focus of VGIN's activities moving forward. Those initiatives are as follows:

**Coordination and Collaboration:** *Initiative 1:* Develop and maintain geospatial standards; and *Initiative 2:* Oversee the development of a Commonwealth-wide geospatial clearinghouse that connects all levels of government and other VGIN stakeholders;

**Communication:** *Initiative 3:* Facilitate geospatial educational opportunities; and *Initiative 4:* Provide marketing advocacy and outreach by acting as the primary champion of GIS in Virginia;

**Creative Services:** *Initiative 5:* Provide framework basemap data layers to augment the current orthophotography and road centerline data layers; and *Initiative 6:* Identify and develop innovative technical solutions.

## Wireless E-911 Implementation Project

### Background

In 1996, the FCC released an order requiring wireless service providers to implement enhanced features and location technology on wireless telephone service. The implementation was to occur in two phases. Phase I provides the PSAP with the caller's telephone number and the address of the cell site receiving the call along with the orientation of the antenna, if the antenna is directional. Phase II provides the PSAP with the actual location of the caller within a defined margin of error depending on the location technology used by the provider. According to the order, the wireless service provider had to implement Phase I within six months of a request from the PSAP. The timeline for Phase II was contingent on the location technology selected by the wireless service provider, network-based (triangulation) or handset-based (global positioning system – GPS). For the request to be valid, the PSAP had to be "ready" to receive the information from the wireless provider, which practically meant that most PSAPs had to upgrade systems and implement new systems to utilize the additional data elements.

To assist the localities, the General Assembly established the Public Safety Communications Division in 2000. The Wireless E-911 Services Board was created two years prior to distribute funding to the PSAPs and wireless service providers; however, the Board had no staff support and very limited resources to provide direct technical assistance to the PSAPs. With the establishment of the Division, the Wireless E-911 Implementation Project was born. Although not directly responsible for the deployments, the Division has had to work closely with the 126 independent

local PSAPs (covering the 134 localities) of the Commonwealth to ensure ubiquity is achieved. Whether through direct assistance or managing consultants acting as local project managers, in collaboration with the Wireless E-911 Services Board, the Division has ensured that implementation has progressed as quickly as possible.

### Current Status

As of January 2010, all but four localities have completed implementation of wireless E-911 Phase I (call back number and cell site location) and Phase II (actual location of the caller) with all of the wireless service providers serving the locality. Two of these four localities, Halifax and Southampton Counties, must deploy the service with a provider that added coverage in their jurisdiction after the initial deployment with other wireless service providers. This will be an ongoing issue as wireless service is expanded into areas where service has not been previously provided.

The final two localities to deploy, Lee and Tazewell Counties, are moving toward deployment, but have been slowed by the deployment of their wireline E-911 projects. ISP staff is supporting these projects as well as the continued maintenance of the deployed services to ensure a high level of reliable service.

## **Wireless E-911 PSAP Grant Program**

### Background

The PSAP Grant Program is a multi-million dollar grant program of the Virginia Wireless E-911 Services Board supported by ISP staff. The primary purpose of this program is to financially assist Virginia primary PSAPs with the purchase of equipment and services that support the continuity and enhancement of wireless E-911. Any Virginia primary PSAP that supports wireless E-911 is eligible to apply for and receive these funds either as a stand alone applicant or as part of a regional initiative or a consolidation project. Grant awards are capped, but the cap is adjusted from year to year based on the estimated available funding.

### Current Status

In the first three grant cycles, over \$30 million has been awarded to PSAPs throughout Virginia. The PSC Grants Manager is responsible for the management of these grants including the awards, request to draw down funding and the eventual close out of each project. To date, about \$17 million of awarded grant funding has yet to be drawn down by the requesting PSAP including about \$1.1 million from FY2008. Though significant amounts have been awarded in the past few years, FY2011 awards will likely be significantly less than prior years. This is not for a lack of grant requests, but rather for a lack of funding due to the current economic crisis and other funding priorities.

## **Virginia Base Mapping Program (VBMP) Digital Imagery**

### Background

The goal of the VBMP is to provide a common database and format for the sharing of geographic information system (GIS) data. Driven by the need of local PSAPs to

share data regionally for emergency response, the data is also available for other applications, including planning, analysis, and recovery.

In 2001, the Wireless E-911 Services Board provided VITA's Virginia Geographic Information Network (VGIN) nearly \$10 million to capture digital orthographic (DO) imagery of the Commonwealth. The imagery consists of aerial photographs that have been adjusted for the curvature of the earth and elevation changes. This adjustment means the photography, when viewed in GIS, is extremely accurate, allowing distances and measurements to be taken directly from the photographs.

The imagery has provided a common base for the development of a statewide road centerline file and other data layers, also funded from the Wireless E-911 Services Board's original investment. The original plan was to update the imagery every four years. Hosted as an enterprise database, the data is available to all state agencies and localities.

### Current Status

The 2002 VBMP imagery was provided to the localities and several state agencies in 2003. Provided at no cost to the localities (due to the initial funding from the Wireless E-911 Services Board), state agencies that received the data only paid the cost of producing the data on DVD's or hard drives. The imagery has been loaded on the Geospatial Enterprise Platform (GEP). Several copies of the imagery, which requires approximately 2 terabytes of storage for 2002 data and 6 terabytes for the 2006-07, are being stored by other agencies throughout the Commonwealth for internal agency use.

In late 2005, a project to update the imagery was started. Unfortunately, due to a contracting problem, the contract was not executed until late in the "fly season" (the time period when there is no foliage and the sun is as high as possible – February through March in Virginia). As a result, the contractor was only able to capture 14% of the Commonwealth in 2006. During the 2007 "fly season," the contractor completed the acquisition of the rest of the Commonwealth and began processing all of the data. As the data was delivered, it was sent through an independent quality assurance process before it was delivered to each locality. There were several optional upgrades available to each locality (or others wishing to purchase them) such as higher resolution imagery, contours and structure locations. Localities purchased almost \$3 million in upgrades during this update cycle. Though financed with local funding, these upgrades become part of the VBMP imagery product and are thus available to all state agencies as well. As of May 2008, all imagery was received and distributed to the localities.

To make the acquisition of data more manageable, VGIN decided to split the state into two acquisition areas. This approach permitted a staggered schedule allowing acquisition of half of the state every two years rather than trying to accomplish the entire state every four years. Though acquisition in a single year was a feat achieved in 2002, it was only successful because of several favorable circumstances that do not occur every year. The staggered acquisition was implemented with the data

acquisition in 2009 for the eastern half of the state. The western half will be acquired in the spring of 2011. The 2009 data has been received and was distributed to localities by December 2009. Like with past acquisitions, upgrades were offered to localities, but due to the current economic situation, very few took advantage of the upgrade program.

The imagery has been made available to users in a number of formats. VGIN encourages user to consume the imagery as a geospatial web service. This allows the user to take advantage of the high resolution imagery without needing to store the large image files locally. In addition to the web service, it can be made available on external USB hard drives for those users needing a local copy. Since some users only require a few images for a small area, a file transfer protocol (FTP) site has been established in partnership with Radford University to allow the download of up to 25 images of the 2002. Staff process custom requests for data at the cost of production, but with the cost of labor it will likely be less expensive for the customer to utilize one of the standard offerings. The 2006-2007 data has been provided to Google for inclusion with the Google Maps and Earth products. Under the sharing agreement, Google may publish the data, but is not allow to distribute the data in its raw GIS format.

## **Virginia Base Mapping Program Road Centerline (RCL)**

### Background

The Road Centerline (RCL) Program is considered a critical component, along with the digital orthophotography, of the Virginia Base Mapping Program. The RCL provides a consistent and seamless roadway transportation GIS data layer for use in the Commonwealth. RCL data is maintained by VGIN at the statewide level using data provided by 157 local governments and the Virginia Department of Transportation (VDOT). The sustainability of the data is critically important so the data does not become out of date or unreliable.

The RCL data is made available through the Geospatial Enterprise Platform (GEP) as an XML web map service to several state agencies and private organizations. The GEP consists of database and web servers that are available on a 24/7 basis. The RCL project is not responsible for the establishment and the maintenance of the GEP or the publishing of the web services. RCL is responsible for the maintenance and oversight of the road centerline data.

RCL data from the local governments is provided to the RCL program on either a monthly or quarterly basis, depending upon the rate of growth in the locality and ability of the local government to provide their data. The program accepts local government road centerline data as they maintain it then performs a statewide integration that incorporates any modifications or additions to the master state database. VDOT also provides updates for the Interstate and Primary roadway systems on a monthly or quarterly basis. From a data perspective, VDOT is considered the primary source of record for the Interstate and Primary roadway data while the local governments are the source for all other roads.

## Current Status

The initial RCL master file was created from data provided from the localities and VDOT and data created from the 2002 digital imagery. Since this data was a snap shot in time, it needed to be updated and put into a “steady-state” maintenance process. After transitioning all localities to “stead-state” maintenance in 2007, the RCL project was closed out and became an ongoing program of the ISP. Since the workload of the updates was initially higher than anticipated, a contractor was utilized to fill the need. In 2008, two GIS Analysts were added to the ISP staff to support this program at a lower cost than the continued use of a contractor. The workload dictated a third analyst be added in 2009 to keep pace with the number of updates being received.

While a few data quality issues were identified, the data has proven to be of high quality and of value to the many agencies. Since the file is continually changing, data quality issues will likely continue to be identified, and as they are resolved, the quality will continue to increase. After issues surfaced with integrating the RCL into the VDOT Road Network System (RNS) system, a study was conducted to determine the gaps between the current RCL and VDOT’s requirements. A project has been initiated by VDOT to implement the findings of the study. The ISP fully supports these findings and will be taking step to meet VDOT’s needs, as necessary.

The largest threat to the continued success of the RCL program is the participation of the localities in providing data. Since the primary users of the statewide data are most often state agencies, there has been little payback to the localities to make the effort to provide the data. The “steady-state” maintenance process greatly reduced what a locality must do to participate, but there are still some that struggle to comply with the request for the local data due to limited time and resources to prepare the data. Since the requested data is public information, it is unlikely a locality can refuse to provide the data, but options may need to be explored to encourage greater participation.

## **Metadata Library Development and Implementation**

### Background

One of the primary legislative duties of the VGIN Division is to “oversee the development of a catalog of GIS data available in the Commonwealth” (§2.2-2026). However, as of 2006, the data catalog had not yet been developed. In discussions with the GIS user community, they identified the establishment of the data catalog and library of enterprise data as the simple most beneficial step that the ISP could take to improving GIS in the Commonwealth of Virginia.

One issue that has hindered progress in the past has been in the selection of a solution. Historically, the problem has been that not all geospatial data is maintained in a single environment and no single product could extract metadata from multiple environments. While the nearly ubiquitous ESRI was able to provide a solution to extract metadata from data maintained in their environment, it did not support data maintained in other environments. A custom developed catalog system could accept

metadata from data maintained outside of the ESRI environment, but not from ESRI maintained data. While metadata could still be manually entered in either solution, requiring this additional level of effort would likely reduce participation significantly.

### Current Situation

Fortunately, in late 2006, ESRI introduced their Geospatial Portal Toolkit that addressed the acquisition of metadata from all data sources. Unfortunately, after evaluation, it was learned that the ESRI product did not meet VITA web standards for accessibility, design or security. While the accessibility and design issues could be address at a reasonable cost, to meet the security requirements was cost prohibitive. A waiver from the security requirements was sought and granted until another option can be developed.

The ISP executed a purchase with ESRI for the implementation of the Geospatial Portal Toolkit. After the execution of the purchase order and implementation of the hardware, it only took about ten weeks for ESRI to deploy the portal. Of course, even with implementation of the portal, the project was not complete. While this provided the tool to support both the data catalog and library, it did not define what data is to be entered and how it will be maintained. As a result, parallel to the deployment of the technology, ISP developed the training and policies that support the use of this tool.

In partnership with the Virginia Tech GIS Extension Office, training was conducted throughout the state on the appropriate use of the metadata portal and the need for maintaining it. Though only state agencies are legislatively required to submit geospatial metadata to VGIN, local GIS agencies were strongly encouraged to participate as well. The metadata portal is available at the web URL of:

<http://gisdata.virginia.gov/>

### **Active Projects**

#### **Next Generation E-911 Routing and Database Project**

##### Background

New challenges threaten to undermine the historical success of the E-911 system. The current system architecture will prevent the E-911 system from being able to meet those challenges. The E-911 network was designed to support E-911 service to the wireline telephone system. Unfortunately, the design has changed little since its introduction in the early 1980's, which was actually based on 1970's analog technology. This means the current E-911 system handles voice very reliably, but can only handle a very small amount of data. While this was adequate for the wired world of the 80's and 90's, wireline telephone service is now declining. Many citizens are converting their telephone service to wireless or other newer technologies. Many are not maintaining wireline service at all, opting instead for the more mobile wireless service or cheaper Voice over Internet Protocol (VoIP) services. As reliability of these

services increases, more and more people will adopt them as their only telephone service. This shift has had a dramatic impact on Virginia's PSAPs.

Because of the large investments that had been made in the existing E-911 networks, when wireless E-911 emerged, the solutions for deploying wireless E-911 Phase I and Phase II were shoehorned into the existing wireline E-911 networks. However, with the advent of new telecommunications services such as VoIP, it is becoming increasingly difficult to shoehorn 21st century technologies into a 20th century infrastructure. It is also not practical to address with each new telecommunications service as a separate overlay to the existing E-911 network. The Commonwealth needs to begin planning now for the next generation E-911 system that will support the citizens regardless of the device, network protocol or location from which they request emergency services.

Because of grant award by the Wireless E-911 Services Board in the FY2008 funding cycle, the Southside region was selected for the NG 9-1-1 Routing and Database project. Specifically, the Board awarded \$450,000 to Franklin County, Patrick County and the Martinsville-Henry County PSAPs for the development of a next generation 9-1-1 (NG-911) pilot project. Though Northern Virginia was originally targeted for a project, ISP staff recognized this as an opportunity to partner with those PSAPs (collectively known as the Southside region) to develop a broader pilot. The PSAPs had already been working with Intrado, a nationally recognized leader in E-911 service delivery, to develop the pilot. Since connectivity was going to play a major role in this project, ISP staff brought Northrop Grumman into the project so that the project could leverage the statewide IP network being deployed through the IT Partnership.

Since the PSAPs had no contractual relationship with Intrado and the scope of the project is to establish the infrastructure for NG-911, the project team decided to utilize the IT Partnership and Northrop Grumman as the integrator to implement this project. Much of the first twelve months of the project was spent developing the scope of work and cost proposal for the pilot project. On June 12, 2008, the authorization to proceed was signed and provided to Northrop Grumman. In accordance with its scope, the year long project is broken into two six month phases. In the first phase, the infrastructure will be built and databases populated, but only test calls will be processed. In the second phase, live 9-1-1 calls will be migrated to the new platform. Before the project progresses from the first to second phase, the PSAPs will make the determination if the solution is ready to handle live 9-1-1 calls.

### Current Status

As the first phase of the project ended, liability concerns delayed Northrop Grumman's ability to move forward with the project. This resulted in May 2009 with Northrop Grumman withdrawing from the pilot project. After a period of project reorganization, the project has continued as a local project with the PSAP contracting directly with Intrado for the services. Though now more locally managed, ISP staff continues to be an active participant in the project and is providing additional financial support if needed.

## Hosted PSAP Services Project

### Background

The concept of hosted PSAP services was born from a discussion of the Wireless E-911 Services Board regarding ways to leverage the economies of scale within the PSAP environment. The discussion was the result of several small PSAPs seeking greater funding due to the limited local resources to maintain existing PSAP services. Several Board members made the observation that if small localities lack the resources to maintain a PSAP then maybe several localities should consolidate their PSAPs to achieve greater economies. This concept was not palatable to all in the PSAP community due to loss of autonomy and local control of emergency services delivery.

Trying to develop ways of achieving greater economies of scale, but recognizing the PSAPs' reluctance for consolidation, the concept of hosted PSAP services was formulated. With this approach, VITA or its partner, Northrop Grumman, would host the servers and backroom equipment that operates the call handling positions within the PSAP. Using VoIP and the statewide IP network, the served PSAPs will connect to this equipment and receive the services. By sharing common systems, the PSAPs will be able to interoperate and share information more easily as well as having the ability to redirect calls in the event of a PSAP evacuation or overload situation. Additionally, since the systems will be hosted in a tier III data center that is staffed 24 hours a day and 7 days a week, this service will provide routine maintenance, back-up and recovery services, which are not currently available to most small PSAPs. Other than using a shared system, the PSAP will still maintain their autonomous operation.

The Southwest Virginia region was selected as a pilot for this service. Several meetings were conducted in the region proposing the service and there was significant interest in the concept.

Wise County, Dickenson County and the City of Norton received \$450,000 in PSAP grant assistance from the Wireless E-911 Services Board for CPE procurement in the FY2009 grant cycle. Additionally, Lee County, who is deploying CPE under the wireline E-911 grant process, was identified as a possible fourth PSAP for a pilot project. ISP staff approached those individual PSAPs seeking their participation in a pilot project. After lengthy discussion, the PSAPs agreed to participate so long as a Positron system (one of the leading CPE systems available) was deployed, that there was no cost to the PSAPs for the pilot and that ongoing costs (after the pilot) could be identified before equipment was purchased. While the first two commitments were easily accomplished, the determination of ongoing costs has been harder to identify. A preliminary cost estimate has been determined, but it is significantly higher than the PSAPs can afford. This will require a reconsideration of how the costs are allocated or a reduction of the overall cost through reduction of scope or services.

In addition to the Southwest Virginia project, Montgomery County, Christiansburg and Blacksburg have approached the ISP about a similar project except utilizing PlantCML

CPE (the other major 9-1-1 CPE provider) instead of Positron. Since it is advantageous for the Commonwealth to support both major systems, ISP staff has been meeting with the region to explore a possible partnership. Again, the ongoing cost of the service is of critical importance to the PSAPs.

### Current Status

Unfortunately, the liability of processing 9-1-1 calls impacted Northrop Grumman's ability to continue participation with this project as well. As a result, the Southwest Virginia project was also reorganized as a local shared services project. Under this approach, one or two of the local PSAPs would host the CPE solution and share it with the other participating PSAPs. Also suffering from the loss of an ISP Regional Coordinator for that area, the project has not progressed as rapidly as anyone would like. The region is exploring its options and is still trying to define the total life cycle costs for a shared services solution.

Since the Montgomery County project had not yet decided to proceed with the Northrop Grumman project, they have been able to reorganize and progress more quickly. They recently released a request for proposal for both the CPE equipment to be shared and the connectivity to link the PSAPs together. With the award of these contracts, this project is expected to move forward rapidly and may be a model for future shared services efforts.

### **Existing Services**

#### **Wireless E-911 Services Board and VGIN Advisory Board Support**

The ISP provides staff support to both the Wireless E-911 Services Board and the VGIN Advisory Board. This support includes the planning and execution of each Board meeting, ensuring compliance with all open meeting laws, managing travel expenses for Board members and tracking Board member contact information. Wireless E-911 Services Board meetings are scheduled every other month (odd months) while the VGIN Advisory Board meetings are quarterly.

#### **Consultative Services**

##### Regional Outreach Services

When the Public Safety Communications regional coordination offices were established in early 2006, it was unclear how they would be received by the PSAP community. While their creation was at the recommendation of several in the PSAP community, it was expected that it would take time before they were fully utilized. Since filling the fourth regional position in January 2007, the regional coordinators have been absolutely overwhelmed with requests for assistance. Additionally, the ISP needed to leverage the success of the regional outreach program for all services the ISP offers. Though each regional coordinator has tried to develop a service plan for their region, they have had difficulty executing on those plans due to the demand for services. To this point, the requests from the localities have been continuing to control their efforts.

To address these issues and to enhance the services provided by the ISP, the regional outreach program was expanded from four to seven regions (as outlined in the “Current Organizational Changes” section above). With this expansion, the ISP is better positioned to support the localities not only for the services provided by the ISP, but also with other services of importance to its constituents, such as data and voice interoperability. Though this expansion occurred over two years ago, the continued hiring freeze has prevented the filling of all of the positions. Since November 2009, only five coordinators were filled after the resignation of the Southwest Virginia regional coordinator position at that time. The Northern Virginia position has never been filled.

### Geospatial Services

Similar to the PSAP consultative services, geospatial consultative services have been provided to several state agencies. Whether related to a specific project or geospatial services more generally, the initiation of a service request comes from a customer with a question. These services have been much less extensive than the PSAP services and have rarely involved consultation with local government. It is unclear whether there is a demand for geospatial consultative services to the local government, but with the expansion of the regional outreach program this will be explored.

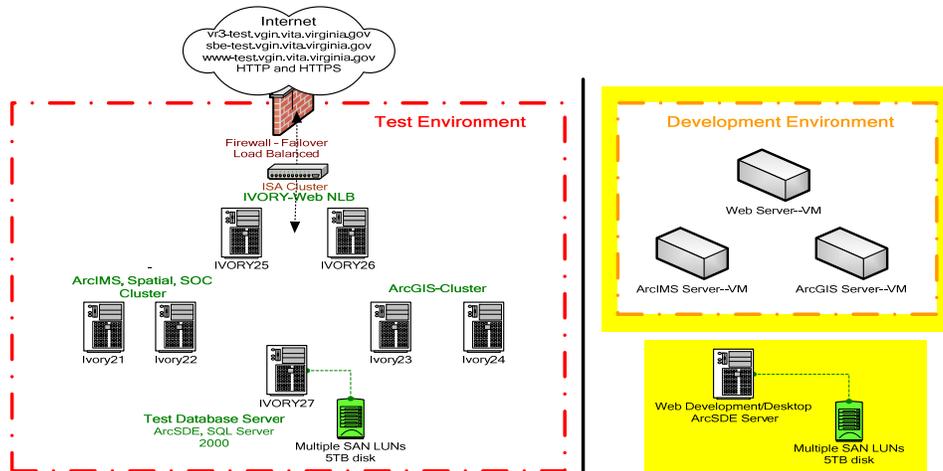
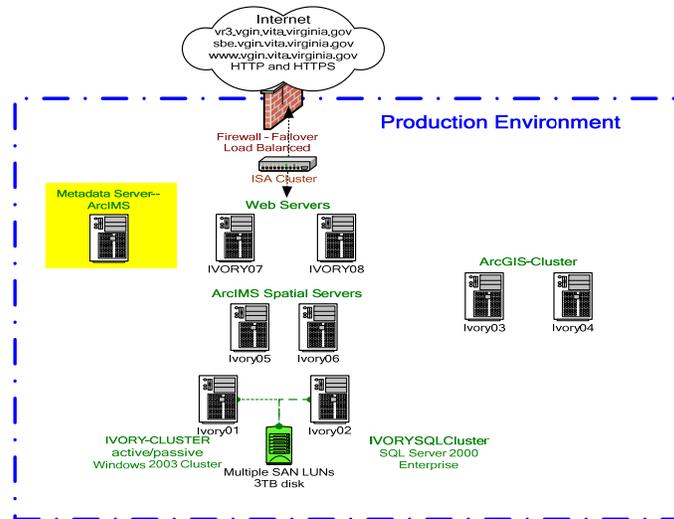
### **Educational and Training Services**

Since the creation of the PSC Division in 2000, the Division has hosted several training opportunities for PSAPs. The training was less part of an overall training program and was more ad hoc based on requests received from the PSAP community. While some of the training was conducted by PSC staff, other training was provided through sponsorship of formal training courses conducted by a professional training organization such as the National Emergency Number Association (NENA). Whether developed in house or by an outside instructor, the training has historically been a reaction to a request by a region or a group of PSAPs.

Additionally, the ISP has supported E-911 public education. However, inadequate resources will limit the ISP’s role in E-911 public education moving forward. Additionally, no widespread education problem has been identified though more localized issues likely exist. As a result, the ISP will continue to support local or regional education efforts, but will not take on any statewide programs. If identified as a need by the PSAP constituents, the ISP will help develop best practices for local and regional programs.

### **Geospatial Hosting Services**

The GEP provides a robust and stable platform for the hosting of geospatial data in an ESRI environment. Though initially consisting of just a production environment, a test environment has been added and a development environment is being deployed. The final platform design is as follows:



The GEP already hosts the 2002, 2006/07 and 2009 VBMP Imagery. Several state agencies, utilities such as Dominion and Miss Utilities, and private sector firms consume a web service of this data. Other data on the GEP include the following:

- Statewide Road Centerline data
- Rail Transportation data
- The National Hydrography Dataset (NHD)
- 2008 US Department of Agriculture “NAIP” imagery data (leaf-on)
- National Geographic Topography data
- Basic Elevation data
- Additional base data layers

As additional data is added to the GEP, more users will find the data of value to their operation. By accessing it from a central data library, each agency does not need to maintain an independent instance of the data. This has the potential to reduce their cost of storage. The focus needs to be on the addition of data that provides the biggest payback for the investment. The ISP must continue to work with the user communities through the GIS user councils (state agency and local government) to determine those data that are most critical to the broadest number of users. These data must be added to the GEP to be available to all users.

In addition to hosting data for community use, the GEP can host agency specific data and applications to prevent the agency from having to establish their own geospatial platform. While there are some large users like VDOT that will likely be able to justify a dedicated platform due to capacity and performance issues, the vast majority of agencies cannot. While initially targeted to state agencies, this type of data and application hosting can also be provided to local governments as they have many of the same economies of scale challenges that a small state agency has. Again, large local governments like Fairfax County would not be customers of the hosted GIS services, but for many smaller localities it may offer a reasonable alternative to building a geospatial capability in-house.

## **Radio Engineering Services**

### Engineering Assistance

The Radio Engineering Division provides assistance to agencies and localities in the design of new systems, analyzing communications problems and recommending solutions, identifying sources and resolving interference problems.

### Procurement Approval

Review of proposed communications systems and equipment procurement is necessary to prevent wasteful expenditure of resources. The personnel of many state agencies either consider themselves sufficiently knowledgeable to determine what is needed or rely upon the advice of other users or vendor representatives. This frequently results in requests for unnecessary equipment, systems which do not meet agency needs or combinations, which will function improperly or be incompatible with existing systems. This review also allows the Radio Engineering Division to ensure that there is a valid FCC license and that the frequencies being requested are authorized for use by the agency.

### Radio Spectrum Management

Radio spectrum is a scarce and valuable resource, similar in many respects to land, and like land, there is only so much available and “they’re” not making more. The demand is extreme. The Federal Communications Commission (FCC) and international regulatory agencies have decreed that the practices of the past will no longer be tolerated and much more efficient usage is to be mandated. At the same time the federal government is moving in the direction of “deregulation”, which means that much of the control formerly exercised by the FCC in this area is passing to

private associations, commercial interests and state governments. The states have been actively moving to meet these responsibilities. Virginia has been a leader in this regard and many, both inside and outside of state government, look to us for continued leadership and guidance in this area.

Approximately seventy four Virginia state agencies operate radio systems utilizing some two-hundred fifty radio frequencies. Many more radio users share frequencies within systems operated by other agencies/localities. The need for radio communications by state agencies is increasing continuously. Finding radio frequencies to accommodate the demand is becoming ever more difficult. Fortunately, modern technology makes it possible to utilize frequencies previously unsuitable for communication and to make increasingly efficient use of those traditionally employed. New frequencies and technologies require a significant higher level of administration and control. The Radio Engineering Division is heavily involved in the planning and development of procedures and systems to make more efficient use of radio spectrum and to implement newer technologies, when practical, so as to provide state government with the best possible radio communications. This capability exists nowhere else in the state government and is probably not available at any realistic cost anywhere else.

### Licensing

Despite deregulation, the federal government still requires licensing in order to prevent total chaos in radio communications. The process has become infinitely more complex in the last three years and promises to continue to do so. The licensing process, in addition to the legal ramifications, provides a tool for controlling monetary expense and avoiding confusing and mutual interference among state government users. Licensing has become a major activity of the Radio Engineering Division. Significant procedures, and data sources have been developed, and most state agencies have come to depend totally on their expertise in this area. Past attempts to obtain this service from alternate sources (radio hardware vendors or commercial firms specializing in this activity) have often been problematic. The results are usually very expensive and serve the interests of others rather than the user agency. The Radio Engineering Division has gone from hand calculations on topographic maps and typing FCC applications to GPS coordination and on-line filing with the FCC.

### FCC Policies, rules, regulations and trend setting for State & Local Government

The FCC rules and regulations governing Public Safety are constantly reviewed by the Radio Engineering Division. Although primarily focused on Title 47, part 90 FCC rules and regulations, the Division is also involved in other spectrum areas such as Fixed Earth Stations (satellite links) used in state higher education facilities. Immediate and future impacts to Public Safety and state government, as a whole, are reviewed, assessed and disseminated to various levels of management and governing bodies (i.e. 800 MHz rebanding, the narrow banding of part 90 frequencies by 2013 and its ramifications on all state and local governments, and 700 MHz). Other considerations that the ISP follows are FCC policies governing new technologies such as software

defined radio (SDR), 4.9 GHz and how will this effect Public Safety operations and/or protocols.

### State Wide Agencies Radio System (STARS) Support/Oversight

The ISP plays an important role in the spectrum management of STARS project. Besides serving on the various STARS committees, the Radio Engineering Division has oversight and/or insights on the various frequency assignments and uses on these frequency assignments around the Commonwealth of Virginia. The Division manages half of the state-controlled 700 MHz allotments granted to the states by the FCC. Additionally, the ISP provides guidance, policy, and frequency assignments to the other half of the 700 MHz assignments provided to the Virginia State Police (VSP)/STARS project.

### Radio Site Acquisition Support

Sites suitable for communications use are an invaluable resource because such sites are not always readily available. Competition for such sites is great and costs to buy, lease or develop are often prohibitive, or at least represent a considerable portion of the total cost of the radio system. Commercial interests, particularly radio system vendors, often gain control of the better sites in a geographical area and restrict their use to systems using the vendor's products. Management of such sites is not restricted merely to providing space but requires detailed engineering of each system to ensure that all will operate satisfactorily without interference or other performance deterioration. The state is fortunate in having available for development a number of sites under the management of VITA.

- James Monroe Building: In a large metropolitan area such as Richmond, there are two general requirements which are often difficult to meet simultaneously: range (distance), which is basically a function of antenna height above the surrounding terrain: and the ability to penetrate to the interiors of the large downtown buildings, which is a function of proximity to those buildings. Presently in Richmond, only two radio sites meet both requirements and of these only the Monroe Building is available for state use. The site has an environmentally-controlled structure which houses 8 to 10 communications systems.
- MCI Sites: VITA has an agreement with Verizon Business (MCI) to allow us to install and operate radio systems at all present and future tower sites within the state, some twenty or more sites at present. Currently, these sites are not being utilized.
- Chesterfield County site at Bon Air: VITA has negotiated a contract with the county to allow us to place radio systems at their site on the Department of Corrections property. This is an exceptional site located on one of the higher elevations in the Richmond area and includes a 500-foot tower.

- Other Agencies sites: VITA has semi-formal arrangements with several other state agencies such as Department of State Police, Virginia Department of Emergency Management to allow us to place systems at their sites. VITA negotiates each site on an individual basis.

### State Radio Frequency Planning and SOP Development

This is a relatively recent activity of the Radio Engineering Division. As discussed in the previous section on frequency management, the FCC has decreed that an entirely new, more effective planning procedure will be followed in allocating radio frequency spectrum. The new rules apply to a specific portion of the spectrum in the 700 MHz band.

The FCC has allocated to each state 96 narrowband channels in the 700 MHz band of spectrum and has given each state the authority to allocate and coordinate these frequencies. This will require not only statewide planning to allocate these frequencies efficiently, but will require coordination between the border states and Virginia. Initially 48 channels, or half the spectrum, have been allocated to the STARS project, and the other 48 channels are to be used to upgrade all the correctional facilities within the Commonwealth.

As a companion to the above 700 MHz frequencies, VITA has been allocated 1.2 MHz of interoperability frequencies in the 700 MHz Band for the primary use of interoperability between entities, states, localities, etc. Working in conjunction with the State Interoperability Executive Committee (SIEC), a plan will be developed to allocate these frequencies to localities with the Commonwealth.



## Action Plan

### **Virginia Statewide Comprehensive 9-1-1 Plan**

As noted in the accomplishments above, two of the five initiatives in the current plan have been closed out. The other three were not as much a priority for resources and thus are still in need of work. Since the Plan drives the work and grant funding priorities of the Wireless E-911 Services Board, it is essential that the Plan be updated and accurate as to the current 9-1-1 issues. As a result, during the upcoming year, the ISP must support three primary activities in support of the Comprehensive 9-1-1 Plan.

First are the analysis of the collected baseline data and the continued collection of additional data. Data was received from over two-thirds of the PSAPs in Virginia. Since a great amount of collective effort was expended by the PSAPs submitting the data and by staff collating the data, it is imperative that the data be analyzed and utilized for providing assistance to the PSAPs and for the Board to use in planning and

decision-making. The goal will be to provide the data to the PSAPs (that participated in the baseline survey) in a way that allows them to freely search and compare the data for PSAPs throughout the state. ISP staff will consult the COIN that developed the baseline survey (or similar group) in the development of the analysis tools. Additionally, ISP needs to continue to seek data from those PSAPs that have not yet provided data. Hopefully, the results of the analysis will provide the motivation for some to participate. Updates to the data are also important to ensure that the data being analyzed is as accurate as possible.

Second, ISP Staff will support the three existing initiatives not yet completed (develop and apply statewide guidelines to foster a minimum level of 9-1-1 emergency response service across Virginia; implement a recruitment and retention program; and create a mechanism for advocacy in the political environment surrounding 9-1-1 emergency response). This does not however mean that ISP staff necessarily will take the lead on any of these initiatives. Partnerships with organizations with strong interest in and ownership of these issues will be explored and encouraged. Though staff support of these efforts may still be necessary from ISP personnel, it should be appropriate representation from the other organizations, such as APCO and NENA, which will lead the initiatives.

Finally, the third area of ISP support will be in revising the Comprehensive plan to replace (if appropriate) the two closed initiatives. Though (as noted in the accomplishments section) the use of the statewide IP network for NG 9-1-1 was not successful, this cannot end all efforts within Virginia to move forward with NG 9-1-1 projects. As noted throughout this plan, the focus will shift from a central service provided through the IT Partnership to regional solutions coordinated to operate as a system of systems. The Comprehensive Plan adopted by the Board needs to be modified to reflect how the Board plans to implement this new approach and provide encouragement and support as required.

## **GIS Five-Year Strategic Plan**

Now that the GIS Strategic Plan has been completed, the focus shifts to its implementation. Though great progress can be made during the 5 year life-cycle of the plan, it is unlikely that all initiatives can be completed in the five-years. Also, with the current economic climate, it must be assumed the resources will be limited so prioritization of the initiatives and tasks within them will be paramount. Once the list of initiatives and tasks are prioritized, estimated schedules should be developed for each major milestone or deliverable. Progress toward these should be tracked and reported on a quarterly basis for the upcoming biennium and then annually thereafter. It will be equally important to adequately determine the required resources for each initiative and milestone. This will allow the tracking of progress and to provide some indication of the likelihood of success as well as making it easier to define the business benefits.

The process ISP staff will utilize to develop the prioritization and schedule will be participative much like the development of the plan itself. For each initiative, a champion needs to be identified. Due to the limited resources available within ISP,

organizations with interest in a particular will be leveraged. Like with the support of the E-911 plan, ISP staff support may be necessary, but it is important to allow other organizations to take the lead on those initiatives where there is a logical fit to increase ownership and improve the resulting work product. The groups organized to address each initiative are called “Framework Initiative Action Teams” or FIATs.

### **Virginia Base Mapping Program (VBMP) Imagery**

Up to \$1,000,000 in USGS partnership funds are being expended to collect LiDAR elevation data in the coastal jurisdictions of the Chesapeake Bay. This opportunity is a result of several needs coming together at the same time as well as effective needs assessment completed by VGIN in 2007. The acquisition of data is expected to occur in spring of 2010.

Though the VBMP imagery update for 2009 is completed, the lessons learned from that process must be applied to the next acquisition project, which will occur in early 2011. To the extent possible, since local funding for upgrades will be limited, partners must be sought. As an example, a locality east of Interstate 95 must upgrade to the higher resolution imagery and purchase contour development to develop acceptable flood plain projections. This may, in total, cost a county as much as \$300,000. Many of these same localities cannot afford this type of investment; however, since Hurricane Katrina, FEMA has been interested in developing more accurate flood plain maps and could be approached about providing some of the necessary resources.

Another recent change that was made and must be maintained going forward is the expanded availability of the data. In the past, this data has been tightly licensed and controlled. The reason for this was the intent to “market” the data to recover the cost of acquisition and fund future acquisitions. In the four years after the original data has acquired in 2002, only about \$400,000 has been received from the sale of that data. The experience with the 2006-2007 data was similar. As this data ages, it becomes less likely it can be effectively sold. As a result, the older data will be placed in the public domain making it more readily available. While this may have the impact of “wetting the appetite” of potential users for the more up-to-date imagery, there is also a risk that those users will simply use the “free” data and never consider updating to the newer data. However, users that do not have a need for up-to-date data probably would not spend significant funding to acquire it. Only the most recent version of the entire state will be kept out of the public domain (currently, 2009 in the east and 2007 in the west).

Instead of focusing on the sale of the imagery as a product, the focus of the ISP will continue to be on the provision of services. As mentioned above, the newest imagery requires about six terabytes of storage. Few users will have the capacity to store this much data and should instead opt to consume the imagery from the ISP as needed from a web service. An imagery web service has been made available to satisfy this type of user. Performance issues that impacted the adoption of the web service in the past have been address by developing image caching. Image caching allows the imagery to be displayed very quickly from the central repository reducing the amount of storage necessary statewide. However, it does require a significant amount of

storage on the GEP. While in the past the ISP has provided many versions of the data through web services with image caching, staff will need to evaluate this practice to maximize the benefit against the cost of storage.

Finally, while partnerships have been established with Google and Navteq for the sharing of the data, additional partnerships must be explored to expand the availability of the data to the citizens. The ultimate goal is to get these data, which were created with public funds; to the citizens in the applications they already use while still maintaining the intellectual property of the Commonwealth.

## **Virginia Base Mapping Program (VBMP) Road Centerline**

The largest threat to the success of the road centerline (RCL) program will continue to be the participation of the localities in providing data. Since the primary users of the statewide data are state agencies, there is little payback to the localities to make the effort to provide the data. A recent change to the “steady-state” maintenance process greatly reduced what a locality must do to participate, but there are still many that have not complied with the request for the local data. Since the requested data is public information, it is unlikely a locality can refuse to provide the data, but options may need to be explored to encourage greater participation.

Though the maintenance of the RCL program will likely continue to be the responsibility of the ISP, the Virginia Department of Transportation (VDOT) has offered to partner on the maintenance program providing staff resources to make data updates. While in such tight economic times all offers of assistance need to be considered, it must be done with an assurance that the high quality of the program will be maintained or improved. Freeing ISP staff time to develop other data layers in support of the GIS Strategic is desirable, but not at the cost of the success of the existing programs such as RCL and imagery.

## **Metadata Library Development and Implementation**

The metadata portal has now been operational for a few years. While it has proven to be an appropriate tool for the collection and searching of metadata, consistent feedback received is that the portal needs to have a greater focus on the data itself and not just metadata. This is in keep with a national trend to provide greater transparency into government data. Many government organizations have developed enterprise data portals where citizens can go to acquire data whether it is in real-time or historical. The GIS metadata library needs to be redeveloped with this in mind. However there are two caveats to be considered. First, the development of a clearinghouse for GIS data is an initiative within the GIS Strategic plan and thus must be addressed within the FIAT structure defined above. Second, though GIS data represents a large portion of the government data available, the requirement for an enterprise data solution is larger than just GIS and thus must be coordinated through a larger effort.

## **Next Generation E-911 Projects**

Now that E-911 services will not be offered through the IT Partnership (at least for the foreseeable future), the ISP role in the existing NG 9-1-1 projects has changed to more of a support of the local projects. While still requiring a large amount of time to monitor and participate in the projects, it is important that the ownership and leadership of the projects shifts to local staff. However, ISP staff can help with the critical process of developing lessons learned and reflecting on the work on the project. Often projects conclude (successful or not) with little or no documentation of the lessons learned. ISP staff needs to ensure a sufficient “reflection period” is taken and the results documented. The ISP staff can then take these lessons learned to educate other PSAPs, which may be considering moving forward.

Though resources will be limited the next few years, ISP staff should seek and support other partnerships for regional next generation applications. To the extent possible, staff should also monitor other NG-911 activities such as the USDOT effort and NENA standards development. As regional projects complete, such as the Southside project, ISP staff needs to identify potential opportunity to expand those services into other areas of the Commonwealth. While led at a local level, it is essential that ISP staff coordinate efforts to ensure that lessons learned in one project can be applied elsewhere in the Commonwealth. It is equally important that any regional projects can be incorporated into the larger statewide E-911 system in the future.

## **Wireless E-911 Services Board and VGIN Advisory Board Support**

Both the Wireless E-911 Services Board and the VGIN Advisory Board have existed without major modification for over a decade. A review of their enabling legislation and recommendations for modification should be conducted during 2010 with a goal of introducing such legislation for the 2011 General Assembly session. Since the Wireless E-911 Services Board has a process for requesting legislation through their annual reporting process, this process should be leveraged. Though no similar process exists for the VGIN Board, the Board should also be heavily consulted and their support for any resulting legislative changes shall be solicited.

## **Consultative Services**

### Regional Outreach Services

There are two primary areas of focus for the regional outreach program. First is the filling of the two vacant positions. While this is controlled by current budget policy to defer costs to the Commonwealth, any cost savings reverts to the Wireless E-911 Fund and does not impact the General Fund budget shortfalls. Having the unspent personnel funds revert to the Wireless E-911 Fund does benefit other programs of the fund like the PSAP grant program, but expending the funds for these positions is a more efficient and effective use of the funds. The goal will be to demonstrate this need and impact to justify filling these positions regardless of the budget situation.

The second area of focus is shifting as much of the statewide programmatic work currently performed by the regional coordinators to the central staff of the ISP. The

regional coordinators currently perform several functions that are duplicated from region to region that could be performed more efficiently at a statewide level. This can be best described by an example. Much of the current PSAP grant program is administered to a large degree at the regional level with the regional coordinators acting as the primary interface to the PSAP. The program is, however, consistent statewide. As a result, much of the program administration can be shifted to the central PSAP Grant Program manager with the regional coordinators focusing on the exceptions rather than the routine.

Filling the current vacant positions and seeking opportunities to shift work to the central program should allow the regional coordinators to focus on other areas that resource constraints have limited their ability to address. Most importantly is the development of regional plans that build level on this plan as well as the E-911 and GIS strategic plan at a regional. Each region in Virginia is somewhat unique and requires some customization of the high level plans to fit their current situation. Each regional coordinator needs to develop these plans with the appropriate amount of regional input which may vary from region to region. However, each regional plan must address both the E-911 and GIS needs for that region in coordination with the PSC and VGIN coordinators, respectively. It may also be necessary to coordinate with other programs within the state that are of interest to the ISP's local constituents such as the Commonwealth Interoperability Office or Emergency Management.

### Geospatial Services

Geospatial consultative services will continue to be provided to state agencies upon request on an ad hoc basis. Quite simply, as the reputation of the VGIN Division as a reliable source for assistance grows (as it did with the PSC Division) the demand for services should be expected to grow as well. In addition to continued services to state agencies, geospatial consultative services will be provided to local agencies upon request. The VGIN Coordinator must develop the criteria for the types of services that will be offered and provide training to the regional coordinators, as needed, to implement the services. The goal would not be for the regional coordinators to necessarily provide the consultative services themselves, but rather for them to route the request to an appropriate resource.

### **Educational and Training Services**

Rather than continue with this type of an ad hoc training program, the ISP needs to develop a comprehensive training services plan that identifies both E-911 and GIS educational needs and methods of satisfying those needs. This program must complement rather than compete with existing training programs such as those from the Department of Criminal Justice Services (DCJS), the Virginia Association for Mapping and Land Information Systems (VAMLIS), NENA and the Association of Public-Safety Communications Officials (APCO). During the development of this program, the ISP must identify partnerships (like those organizations already providing some training) for the delivery of the training. Innovative delivery methods must also be explored to address the limited training resources in most localities and state agencies. All regions of the Commonwealth must be able to avail themselves to the

training in a cost effective manner. Holding one training class in Richmond will not effectively address this issue.

## **GIS Hosting Services**

Though the GEP is an asset for the Commonwealth, its capacity is not unlimited. Additionally, the GIS Strategic Plan calls for the establishment of a clearinghouse of GIS data to be administered by VGIN. The capacity needed for the clearinghouse must to be considered before GIS Hosting Services can be widely offered. Clearly, data needed for the clearinghouse should be hosted on the GEP. But, other data or applications could be hosted even if it is of lesser enterprise value. Documentation must be developed to identify the criteria for GIS data and application hosting. Some data will likely be hosted at little or no cost to the customer agency due to the value it provides to the enterprise. However, rated services will need to be developed and approved by JLAC for hosting services for data and applications with limited value to the enterprise. The ISP will utilize the FIAT addressing the GIS data clearinghouse for input on the hosting criteria and rate structure. Until this is complete, ISP staff may continue to pursue hosting opportunities that make sense to the customer, VITA and the Commonwealth as a whole.

## **Radio Engineering Services**

Many of the radio engineering services remain a legacy of services offered for many years. Currently, there is no legislative or regulatory authority to perform many of the activities that are currently being undertaken by ISP staff. An assessment must be conducted to determine the appropriateness of the activities currently being conducted. For those determined to be appropriate, the authority to perform them must be obtained.

## **E-911 Effectiveness Study**

The ISP has long had plans to conduct an effectiveness study of the E-911 program. The study was to address two areas: a performance review of the Virginia program and a location accuracy requirements definition. The performance review was intended to be an independent verification and validation (referred to as an IV&V) review, which is part of the Commonwealth's project management standard for major IT projects. Though not required since the E-911 program was not defined as a major project, Virginia made a large investment in the program so an evaluation was deemed appropriate. However, the current economic environment and many competing priorities have prevented this plan from hitting critical mass to be executed. Similarly, the study to better define the location accuracy requirements for E-911 have not progressed due in part to the lack of an identified problem with the current accuracy requirements and actual, real world performance of the E-911 system. As a result, these studies will be put on hold until a greater need or greater resources have been identified.



## Funding Sources

### General Funds

No General funds are included in the ISP budget.

### Wireless E-911 Fund

In accordance with Section 2.2-3031 of the *Code of Virginia*, the cost of the PSC Division, which for the purposes of funding includes the Radio Engineering Division, is funded through the Wireless E-911 Fund. Additionally, the Appropriations Act includes several earmarks for Wireless E-911 funding to support other programs. Within the ISP, the VGIN Division receives \$1,750,000 each year of the current biennium to support the VBMP RCL and Imagery Programs. The VSP also receives \$3.7 million from the Fund to support their communications activities. Beginning in FY2010 (and expected to continue), the Compensation Board receives \$8 million from the CMRS funding to fund dispatchers in Sheriff Offices around the state.

### Internal Service Funds

Internal Services Funds have not historically been utilized in the ISP. Due to Appropriations Act language, the ISP was required to establish a rate structure for GIS services to go into effect by July 1, 2008. Due to the current economic situation, the ISP is taking all available steps to reduce the cost of data to state agencies.

### GIS Fund

The GIS Fund is a non-reverting fund established in *Code* (§2.2-2028) to support the VGIN Division's activities. Rates paid by agencies, as well as any fees or charges received from VGIN, are deposited into the GIS Fund.

## Rated Services

### Geospatial Services Rates

#### Background

In 2001, the Wireless E-911 Services Board provided \$9.8 million to the Virginia Geographic Information Network (VGIN), a division of one of VITA's predecessor agencies, to acquire high resolution digital orthophotographic imagery for the entire Commonwealth. VGIN was able to fully fund the first digital orthophotographic effort with a one-time fund balance.

The Wireless E-911 Services Board needed this digital orthophotography product as a resource for local public safety answering points (PSAPs) who must be able to locate 9-1-1 callers with wireless devices. For that reason, within its initial investment, the

Wireless E-911 Services Board also funded the development of a companion statewide digital road centerline (RCL) file that provides a single, integrated street file with addressing information compiled from over 150 source agencies throughout the Commonwealth.

The value of this data, which represents a snap shot in time, also degrades with time. With growth and development, the imagery provides a less and less accurate view of the environment and thus must be repeated every four years.

While the Wireless E-911 program has continued to support the geospatial program, it can no longer fully fund the cost of a statewide update. As a result, when it was time to repeat the digital orthophotography in 2006, general fund appropriations were approved by the General Assembly to augment the annual Wireless E-911 funding, with the understanding that, via Item 421 C of the Appropriation Act, an ISF rate structure would be established to fund this effort in the future.

### Funding Methodology

Though the VGIN is permitted to charge “market rates” for its services, the reality is that few if any state agencies have the funding to afford services such as the VBMP Imagery. As a result, the goal was not to charge a “fair” rate, but rather to find a rate the agencies could afford to continue to utilize GIS services. Many of the services that the agencies have been consuming had been previously provided at no cost. Consequently, most did not develop a business case to quantify the value the data provides to them or the citizens. Acquiring additional agency funding for these services has been difficult, but ISP staff is hopeful that sufficient agencies will continue using VGIN services to sustain the overall program.

## **Radio Engineering Services Rates**

### Funding Methodology

In the past, the Radio Engineering was funded through one of two sources. The first was through consultative services, which were billed based on an hourly rate based on the individual engineer providing the service. The second source of funding was from a telecommunications contract offered by VITA. As a result, any state agency that utilized this contract was not charged. However, this second funding source was lost with the transfer of the radio engineering to the ISP. As a result of the increased focus on radio engineering services to PSAPs and public safety agencies, this second source of revenue was replaced by the Wireless E-911 Fund within the existing funding levels of the PSC Division. In other words, no additional funding was required above the existing special fund allocation to the PSC Division. However, since state agencies are no longer contributing to this function through the telecommunications contract, a new methodology is needed to reflect the services being provided.

### Program Costs

The primary cost in this function is the salaries of the radio engineering manager and the radio engineer. While there is some cost for their supplies and supporting costs, it is negligible.

### Rate Development

A new rate structure must be developed for the radio engineering services beyond the existing hourly rates for personnel. To develop this rate structure, the yet to be formed State Agency Radio COIN will be utilized. While it is doubtful that any agency will look forward to the development of a new rate, giving them input into the “least objectionable” such rate will hopefully make it better accepted when it is implemented. The goal must be to develop this new rate structure by July 2010 so that agencies can include the impact into their next budget request. The rates would not go into affect until FY2011.