

**PAPlants**

**Department of Agriculture**

**Commonwealth of Pennsylvania**

**Nominating Category: Digital Government – Government to Citizen**

**Nominator**

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## **Executive Summary**

The PAPlants web application is the product of merging 27 previously disconnected applications into a single comprehensive data-driven application used by the Bureau of Plant Industry as well as public citizens.

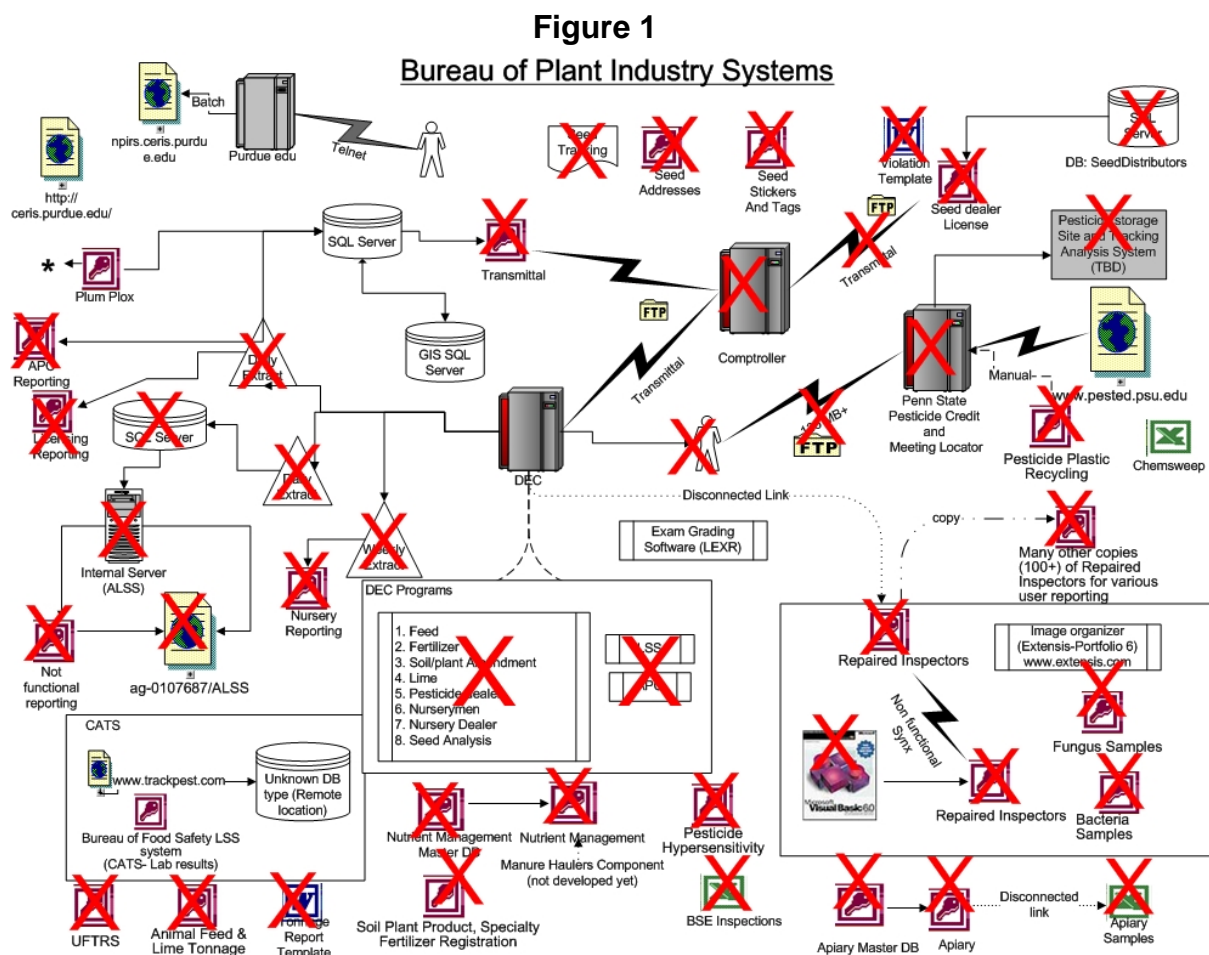
PAPlants enables citizens to register for exams, manage continuing education credits, view laboratory test results and view plant industry inspections results. The system also allows for quick reference regarding the quality of agricultural products, location of agricultural businesses/dealers, interactive mapping for locating specific vegetation and identification of proper disposal sites for harsh materials. Additionally, the system is used by various businesses and state agencies for identifying hypersensitive people on a GIS map prior to spraying harmful pesticides.

This application has enabled Pennsylvania to be a technological and industry leader in the Plant Industry. The designers are subject matter experts in their field, and the interfaces were designed with input from industry leaders across multiple state governments. PAPlants is the first consolidated application in the nation with one comprehensive data source for the Plant Industry. This has resulted in increased value and usability of the existing data for reporting and management activities, as well as reduction on data maintenance efforts. The Pennsylvania Department of Agriculture's investment has yielded highly effective software specific for agriculture, with lowered costs to all parties and higher effectiveness in program management.

## Description

The Pennsylvania Department of Agriculture (PDA) had 27 disparate, disconnected databases, applications and manual records for various programs that all provided the same basic core licensing and certification services for the Bureau of Plant Industry (Bureau). Program participants for these services were tracked separately and were not correlated. For example, an individual who held a Plant Merchant license and also a Pesticide Applicator license would have two different accounts in two separate databases. Additionally, there was significant time spent by PDA staff on redundant data entry and providing information by telephone to citizens and agricultural business entities. There was no way to query all the data or derive statistics. There was also significant lag time between collection of specimen samples in the field, submission of the samples to the lab, and entry of data required for analysis of the sample.

To solve this problem, in November 2005, the PDA conducted an 'as-is' assessment to understand the business and technical needs to solve these problems and to determine scope and direction for the project. **Figure 1** visually depicts the amount of redundancy we were able to eliminate.



During the assessment, some possible solutions included reviewing various commercial off-the-shelf systems (COTS) and the in-house development of a customized

application. The COTS solutions were incomplete and could not satisfy the business requirements as outlined in the assessment: one consolidated database, citizen facing web components, and capacity for field staff to work disconnected in the field and synchronize later. Additionally, customization costs for the COTS products were prohibitively high. It was decided that in-house development was the most cost-effective and efficient solution to develop the system.

In April 2006, the PDA put together a team of 12 developers. The development team worked with the business areas to identify the system requirements, design a prototype, and ultimately build the solution. The resulting application uses SQL server 2005, SQL server 2005 Reporting Services, and Microsoft VB ASP.NET in which all Commonwealth security standards and Information Technology Bulletins were adhered. The system has an extensive component level security that is easily managed by the designated Bureau employee.

The project management approach utilized was the standard project management approach as defined by the Commonwealth Enterprise Project Management Office in conjunction with Microsoft's Solutions Framework (MSF). All deliverables for the project were prioritized based on end-user needs. The project was further managed and controlled by weekly status/steering meeting direction.

The first release of the application in February 2007 consisted of the web-based components and included the licensing module, some lab sampling and the pesticide continuing education module. In May of 2007 communication outreach to citizens and agricultural business entities was conducted to promote awareness and accelerate adoption of PAPlants. There is also on-line information and instructions for how to get the most out of PAPlants. The following are the primary business functions supported by the web component of the application:

- **Licensing:** This includes licensing for seed, commercial feed, fertilizer manufacturing, soil and plant amendment, lime manufacturing, pesticide dealer, plant merchants, apiaries, manure hauler/brokers, nutrient management and odor management businesses.
- **Lab Sample Processing:** A lab sampling component is available for feed, fertilizer, soil/plant amendment, lime, apiary, and plant merchant samples.
- **Pesticide Continuing Education:** Technically, this is a subsystem of pesticide dealer processing in the licensing system. It includes tracking of continuing education credits, exams, education classes and viewing access to registered users. There is a module available to the general public which allows interested individuals to locate upcoming courses and register for courses and exams. Penn State University provides all of the training and development of the training materials.
- **Hypersensitive Registry:** Individuals who are hypersensitive to pesticides are listed on the Hypersensitive Registry. Pesticide applicators are required to check the registry and notify any individuals located nearby prior to spraying. They can also display a map that shows them the location of hypersensitive individuals.

The second release in February 2008 included enhancements and additional modules, including a client server application. This provided the capacity for staff to work disconnected in the field and synchronize later back to the single consolidated database. All PDA staff were trained on-site utilizing classroom style methods. All PDA end-users are successfully using all modules of the application. The following are the primary business functions supported by the client server component of the application:

- **Inspections:** During the inspection or survey the field staff collects samples. The data from the samples, including the GPS points where the samples were collected, are entered into PAPAplants Inspector on-site during the inspection.
- **Lab Sample Collection:** The bar coded samples from the field are delivered to the PDA laboratory and analyzed. When the data from the field is synchronized and the lab tests are complete, both the field staff and the lab staff have access and can see all relevant information regarding the samples, such as specific tests performed, the test results and any notes.

Overall, PAPAplants provides the PDA the ability to manage plant-based regulation and tracking for the Commonwealth to ensure quality assurance and consumer protection for citizens. It provides consolidated plant industry data that enables the Bureau to manage plant-based regulation and tracking for the Commonwealth. Additional enhancements and functionality are ongoing.

### **Significance**

It is important to note that PDA had undertaken this project on several earlier occasions and none had been successful. This history, coupled with the task of migrating data from 27 disparate systems in many different formats (mainframe, Access, Excel, propriety systems) made for significant challenges to overcome. Through consensus building, collaboration with other Commonwealth agencies and many dedicated individuals, PDA was able to successfully accomplish the goals of the PAPAplants project.

The significance of PAPAplants to the public lies in highly accurate management of the agriculture industry within a state and across industry boundaries – at minimal cost to the citizens. The integrated system provides citizens and agricultural business entities with real time 24/7 access to information needed to make informed decisions on products, businesses, educational opportunities and health (hypersensitivity).

The significance of this project to the PDA and the Commonwealth lies in the extensive business process reengineering that allowed PDA to look at how best to conduct their business from a 'clean-slate' perspective so they could determine how to automate processes to improve the delivery of services and decision making. This includes, streamlined work flow, elimination of redundant data entry, improved data quality, faster collection of revenue, better allocation of staff to workload, performance based reporting on employees and over-all improved capacity to use data for decision making.

And also of broad significance, in the event of any type of plant disease outbreak, the GIS system component can quickly identify any of the affected areas so that the impact

of the outbreak to other local farms and the public can be assessed easily and contained quickly. Agricultural agencies are a key constituent in responding to certain emergencies, in this case real-time access to data related to plant health, agriculture and bioterrorism serves to help protect and keep safe the nation's food supply.

### **Benefit of the Project**

PAPlants has provided benefits to citizens, agricultural business entities, other states, Commonwealth agencies, not to mention staff and executives at PDA. Specific benefits are outlined below.

A major benefit to the PDA and other state agricultural agencies is based on a development model previously developed and used by Pennsylvania in a previous project. This model is premised on the fact that while each state has their own laws and regulations, the results are similar types of services that each state needs to provide. This makes PAPlants highly transferable and customizable. Moreover, it becomes extremely cost effective as the source code is free to other states wanting to utilize the application. (In order to do this, states must enter into a Memorandum of Understanding (MOU) with the Commonwealth and the other participating states.) All MOU participants share software; separately underwrite state-specific requirements; and jointly fund mutually beneficial enhancements. In addition to Pennsylvania's \$1.5 million initial investment on the project, current enhancements from member states total over \$100K. Under the MOU, the enhancements funded by any one participant are available to all participants at no additional cost. This innovative and collaborative model allows for the implementation of highly effective software specific for agriculture, with lowered costs to all parties and higher effectiveness in program management. (Interested states should contact the Pennsylvania Department of Agriculture for additional information on becoming a participant in the MOU.)

A huge benefit to the PDA and other Commonwealth agencies was the implementation of electronic payments to the Comptroller's office. Historically, transactions with the Comptroller's office were completed through carbon-typewritten forms on a typewriter or were handwritten. An electronically transmitted payment through PAPlants eliminates the need for these outdated methods and improves the timelines and accuracy of the payment transfer. Validation checks have been built into the front-end of the system thus reducing data submission errors and increasing data quality. This new process for revenue collection provides for more accurate submissions, faster access to the funds and faster collection of revenue. To quantify, under the old system the transfer process took two weeks to complete. It now is a one-day process. It has also provided for elimination of redundant data entry including: processing of checks and remittance of the payments to the Comptroller's Office thus allowing staff time to be freed up for higher level activities. Since April 2006, PAPlants has electronically processed over 103,000 checks totally almost 9 million dollars. In fact, the electronic payment processing module is so efficient and successful that it is now being used across the PDA for all payment collection and processing.

As mentioned above, PDA engaged in a 'clean slate' business process reengineering exercise that allowed them to streamline plant industry functions throughout the agency. The streamlined work flow resulted in improved efficiency, communication and reporting and analysis of Plant industry information to citizens, businesses and government agencies and includes:

- Automated Mailings: Printing, stuffing and mailing information to citizens and business entities has been automated thus eliminating a huge amount of staff time spent on these activities. Additionally, this decreases the turnaround for processing license renewals, examination results and lab results from three to four weeks down to one day.
- Elimination of redundant data entry: This includes: processing of checks and remittance of the payments to the Comptroller's Office, and keying of data from the field samples. This results in eliminating data entry errors, improving data quality and releasing staff time to work on higher level tasks such as analysis and decision making.
- Access to Information: PA Plants provides citizens with immediate 24/7 access to information needed to make informed decisions on products, businesses, educational opportunities and health (hypersensitivity), thus significantly reducing time spent on the telephone with citizens and business entities. This frees up staff time for other important tasks.

Another benefit of PAPlants is the reduction of data submission errors and the improvement in data quality. Validation checks have been built into the front-end of PAPlants and advanced system logic reduces user error and enforces the legal regulations that must be complied with. This is extremely important as the system is home to over 200 reports providing the PDA with real-time access to much needed data for reporting and decision making. This includes employee performance reporting, staff resource allocation, cross year budget comparison, delinquent account statuses, proof of current workload used to substantiate agency staffing needs and information regarding plant disease management and quarantine . Additionally, PAPlants provides efficient and accurate reporting for the various and numerous mandatory USDA reporting requirements. In the past the data was hand counted and compiled for submission. This took multiple staff members and weeks of time. With the new system, the required reports can be generated with the click of a button. The time savings allows for better staff allocation, especially in times of economic distress, including staff reductions.

PAPlants has enabled Pennsylvania to be a technological and industry leader in the Plant Industry. The Pennsylvania Department of Agriculture's investment has yielded highly effective software specific for agriculture, with lowered costs to all parties, higher effectiveness in program management and better service to citizens.