

# **A Case Study: Implementing an ERA System and Culture of Change**

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## **Abstract**

The age of electronic research administration (ERA) is well under way, yet the prediction that by the “end of the decade, grantee organizations will have in house-systems...to provide seamless interface with federal government and private foundations” (Kulakowski, 2006) has proven more difficult in practice. Many institutions have expended and continue to expend scarce resources in the identification, adoption and implementation of ERA systems to better function in the electronic era of grants management. In 2000, Lisa Ballance and Herbert Chermiside explained the long and arduous process of selecting an ERA system that would address the needs of Virginia Commonwealth University (VCU) (Ballance, 2000). However, the development or selection of an ERA system is just the beginning. The more difficult logistical challenges, such

as resource management, process development, integration, adoption and training, follow in the implementation stage. This paper describes the implementation of an ERA system at VCU and the culture of change associated with such implementation. Additionally, the aim is to help other institutions in their adoption of such systems by recounting the process as it relates to research administration infrastructure.

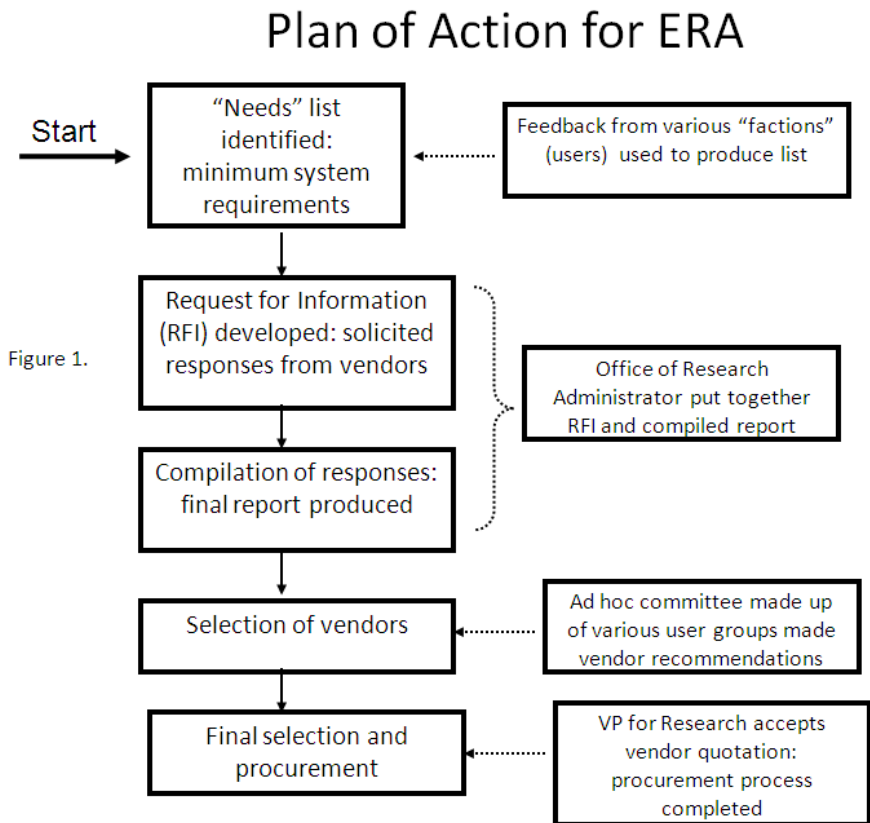
## Introduction

The sharing of information is taken for granted in today's electronic age. Social networking, instant messaging, RSS feeds and real time updates for anything going on in the world is an indispensable part of everyday life. Advances in hardware and software technology have made the sharing of vast amounts of information so common that there is no aspect of modern life that has not been affected. Even texting while driving, although not a safe practice, is so common that legislation has been proposed to ban it. In addition, car navigation systems have all but replaced the need to ask anyone for directions.

In an article published in *The Journal of Research Administration* in 2000, Lisa Ballance and Herbert B. Chermiside described advances in technology such as “development of networking, from the office local area network (LAN) to the Internet” that had made it possible at that time “for individuals to create, access, manipulate and share massive amounts of information” (Ballance, 2000). Both authors explained how these advances had made it possible for institutions involved in research administration to enter the “age of Electronic Research Administration (ERA)” They explained the process undertaken at Virginia Commonwealth University (VCU) to identify, select and procure an ERA system. At the time of this writing, nearly 10 years have elapsed and much has happened. This paper describes the implementation process at VCU, including stages of implementation that may help other institutions as they move forward with executing a large-scale electronic solution for research administration.

### **Selection of an ERA System is Just the**

**Beginning**



Ballance and Chermiside described in detail the initial process of selecting an ERA system at VCU. They described a systematic and directive approach for identifying key system needs from diverse “factions” within the University and then developed a “Request for Information (RFI),” which solicited specific information from available software vendors (Ballance, 2000). Once the RFI vendor responses were received, the information was compiled and a final report was written that identified five available ERA systems, three of which were quickly eliminated because of developmental and technical support issues. An ad hoc committee of users including researchers, administrators, and technical and financial support staff was formed. This committee then invited the remaining two vendors for on-campus presentations. Finally, one vendor was invited to make a live presentation and to provide a quotation for purchase that was accepted by the vice president for research. This process capped an 11-year period during which VCU identified and recognized the need for an ERA system (Ballance, 2000). The process is summarized in Figure 1.

As the article pointed out, the selection process for an ERA system was long and deliberate. It involved the buy-in from many different groups, users and decision makers at the university. The selection process involved the long-term commitment of resources to identify, vet and purchase the system. The process ended when the “purchase order was issued on September 29, 1999, and implementation of VCU’s ERA system is under way as the last words of this paper are being written” (Ballance, 2000). The selection process was only the beginning.

### ***Implementation of an ERA System***

Nearly 10 years have elapsed since the purchase order was issued for VCU’s ERA system. During that time, different versions of the system have been deployed and more features have been added, but implementation continues to this day. If the selection of the system marked the birth of ERA at VCU, the implementation phase has been and continues to be the never-ending middle. The level of commitment to implement such a system cannot be understated. If the selection of an ERA system required long-term commitment of resources, the implementation phase requires an even higher level of commitment and dedication. Long-term planning, changing timelines, testing, training, ongoing maintenance, upgrades, troubleshooting, support staff needs and technological considerations are all part of the implementation process.

### ***Planning, Testing and Timelines***

Early implementation of an ERA system required careful planning and coordination, rigorous testing, and timelines for implementation. Beginning in 1999, shortly after the purchase of the ERA system, VCU set in motion the implementation process. Careful planning required the assessment of available resources for implementation, the establishment of deadlines and timelines and initial training. As part of the purchase agreement, vendor representatives working with University Information Technology (IT) staff installed the system on University servers. Vendor representatives also trained the few initial system users in the Office of Sponsored Programs (OSP). At the time, only one IT individual, with multiple other duties, was available to assist with system configuration. Office of Research staff numbered a handful of people. ERA data input and management were centrally housed in the Sponsored Programs Office (OSP). ERA data access by way of reports or data inquiries was available to faculty and staff in the field in the University Departments.

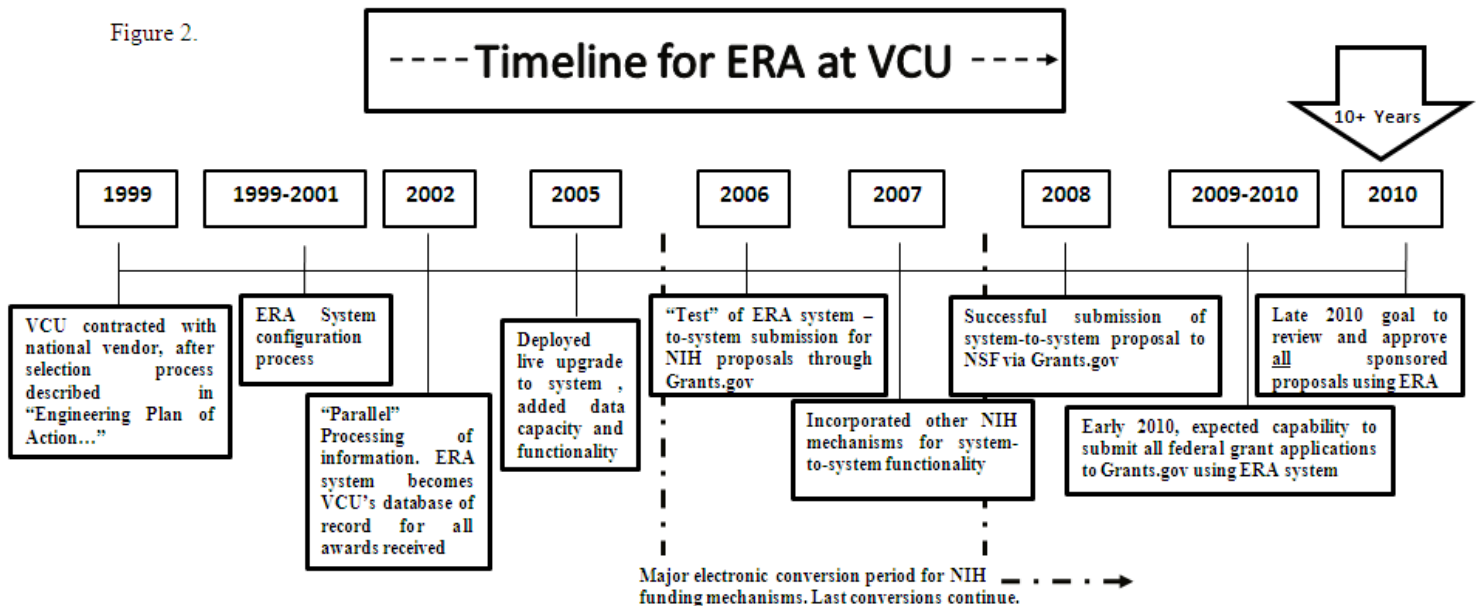
From 1999 to 2001, OSP staff and the IT individual set about configuring the system for operation. In 2002, parallel processes were set in place to permit use of the legacy database system alongside the new ERA system. The use of both systems allowed the testing of the new ERA system to ensure the integrity and accuracy of the data being processed in the Office of Research. The three-year timeline for initial implementation and parallel processing allowed for extensive system testing, software installation, troubleshooting and early debugging. Part of this process involved data migration from the legacy system to the new ERA system. Data integrity was a key concern in the early stages of implementation. The parallel processing stage allowed for the testing of data to ensure reliability.

Beginning in 2003, parallel processing was discontinued, and the new ERA system became the database of record for all proposals processed and awards received. During this process, training of staff and faculty in the use of the ERA system continued. In addition, training on how to search for funding opportunities and how to set up principal investigator profiles, both features of the ERA system, also continued along with data integration and conversion from the legacy system into the new database system.

By 2005, advances in the ERA software system precipitated a major upgrade, which added data capacity and functionality. At this time, the federal government’s E-Grant initiative through Grants.gov was gaining ground as a portal for grant announcements and electronic proposal submissions. In anticipation of Grants.gov, the ERA system was prepared to handle system-to-system submissions. The advent of Grants.gov and system-to-system submissions precipitated a culture of change among faculty and staff, as the transformation to a comprehensive electronic system seemed to be under way. Users who were uncomfortable with electronic submission packages as opposed to paper applications had a substantial learning curve and had to be helped by the central office through training and assistance.

In 2006, successful pilots of system-to-system application submissions to the National

Figure 2.



Institutes of Health (NIH) via Grants.gov using the ERA system were completed. These successful tests opened the way for an increase in functionality and also the ability to incorporate other NIH mechanisms as they transitioned from paper to electronic format. By 2007, the

majority of NIH applications were being submitted electronically through the use of the ERA system. This process continues to this day as NIH completes its transition to an electronic submission format. In 2008, the ERA system was used successfully for a National Science Foundation (NSF) submission. The goal is to submit all federal grant applications to Grants.gov using the ERA system by early 2010 and all sponsor proposals using the ERA system by late 2010. This process will be facilitated as the functionality and capacity of the software is improved by the vendor. A timeline of the ERA implementation process is provided in Figure 2.

## ***Training and the Culture of Change***

As the transition from paper to electronic proposal submissions and to the ERA system has taken place during the last decade, many users and groups have had to become accustomed to this developing electronic culture. In general, groups with long and extensive research experience have had a more difficult time transitioning to the “new” way of doing things than people newer to the field. Regardless, training in the new ERA system and the changing procedures and policies is crucial for the widespread adoption of these new processes. Training on how to use, manage and take advantage of these new systems is important as a way to educate stakeholders in the direct benefits and impact of the changing nature of the research enterprise. At VCU, training has remained a constant feature during the evolving implementation phase of ERA. As system functionality changes and improves, training continues to play an important part in the adoption of these changes.

In the beginning of the implementation process, training in the ERA system consisted of small classes on how to look for funding, change a PI profile or look up award information. As system functionality and features changed, training evolved into scheduled seminars around campus and at the central office. As electronic submissions also evolved, sessions were scheduled on a monthly basis. These monthly sessions on electronic proposal development using the ERA system continue today. Training in the ERA system is now mandatory for PIs and staff who wish to submit electronic proposals using the system. Also, as software and system functionality change, training classes as well as documentation are made available to potential users.

Continued training and assistance by the central office helps system users and other stakeholders adopt or buy into the advances and changes presented by this electronic culture. In a more general sense, continued training and education can go a long way in “marketing” the services provided by the central office and can greatly improve the satisfaction of faculty and staff who can benefit from these services (Kulakowski, 2006).

## ***ERA Maintenance and Support***

A key component in the implementation of the ERA system at VCU is the increase in support staff and resources available to deal with changes in system technology, version upgrades and general system support. As ERA services have continued to expand in correlation with the increase in electronic data management, system-to-system submissions and the expansion of the research enterprise, additional staff and resources have made it possible to keep up with this expansion.

In the early stages of its implementation, one or two people were charged with supporting the ERA system. During the past decade, the ERA support staff has grown into an in-house

information technology (IT) office, staffed by half a dozen people and located within the central research office. This staff supports the ERA system and other computer-related issues exclusively for the central research office. This investment in resources and staff has been crucial during the expansion of ERA services.

The IT staff is also crucial in maintaining and upgrading the ERA system as the vendor releases different software versions, patches or functionality. Expansion of ERA services during the past decade has grown to include funding search services, system-to-system submissions, and animal research protocols, and will soon include conflict of interest modules. As software changes are released, the IT staff plays an important role in ensuring the ERA system remains in functional mode. In addition, the IT staff provides an active role in troubleshooting any system problems or issues directly with the vendor. This level of IT support improves the operation and management of the ERA system.

### ***Considerations for Implementation***

Implementing an ERA system is not easy; the process can be long and dynamic. At VCU, the process of implementing a comprehensive ERA system continues to this day. Much planning, work and resources have been invested in the ERA system. A number of factors and issues have been considered throughout the implementation process. Much has also been learned from this process. Some considerations are discussed below.

A key factor in the implementation stage is to have a long-term vision and framework of what needs to be ideally achieved, and then set intermediate targets that can be reached on the way to the long-term goals. Both intermediate targets and long-term goals can be adjusted as conditions warrant throughout the process. For example, is the long-term goal a fully integrated ERA system (pre-award, /post-award, animal/human subjects, conflict of interest)? If so, the intermediate goals can be set to add or activate specific modules throughout the process. It can be anticipated and even expected that if environmental conditions change, stated intermediate targets and maybe even the long-term goals may have to be revised.

The resources available for implementation can be one of the most important factors in the operation and success of an ERA system. Despite all the technological advances, a key resource always seems to boil down to human capital. Are the necessary staff resources available to carry out the stated goals in implementing and operating an ERA system? Other resources such as the technology infrastructure of both the university and the central office can play a crucial role in the implementation process. If the necessary resources are not available, the situation may warrant acquisition of additional resources to successfully implement the system. If resources are limited yet needed for ERA implementation, the case can be made to decision makers for additional resources given the expected benefits of a well-running system. Another key resource is the relationship with the ERA system vendor (if purchased), and the development of the ERA system software by the vendor. This relationship may prove crucial, especially when trying to mitigate system problems when they arise. An associated consideration is software and system obsolescence or changes in best practices in the research industry. This may prove an important consideration if the system cannot keep up with technological changes.

Finally, a healthy training program associated with the ERA system is an extremely important part of any implementation program. The benefits of a training program are numerous. Users can stay abreast of changing system functionality and also the different stages of implementation as the system is expanded. In addition, training provides an opportunity to create a certain level of communication between the central office and faculty, staff and administrators in the field. Training programs may help to reduce uncertainty

and frustration on the part of users who may not be comfortable with the changing electronic culture. Training has been an important part of the ERA implementation process at VCU. A summary of some of these considerations are listed in Figure 3.

Figure 3.

#### Considerations for Implementing an ERA System:

- ✓ Consider long term goals while establishing intermediate targets
- ✓ Readjustment of goals or targets may be necessary throughout the process (this is not unusual and can be expected)
- ✓ Consider resources (staffing, tech infrastructure, software, vendors, etc.) available and adjust as necessary to reach stated goals
- ✓ If resources are limited, present benefits vs. cost (to decision makers) of improving “customer” service and research enterprise stemming from improvements to ERA system
- ✓ Anticipate or expect unintended issues with system software, staffing, resources and try to mitigate as quickly as possible
- ✓ Establish a healthy training program to benefit system users and promote good communication and customer service (with faculty, staff administrators, etc.)
- ✓ Consider technological obsolescence and stay abreast of industry advances and best practices

### ***Relevance to the Practice of Research Administration***

The implementation of an ERA system is both a relevant and integral part of the modern practice of research administration. The Council on Governmental Relations (COGR) notes ERA as one of the principles of good management practices. Not only should an ERA system be a part of a comprehensive strategy for e-business but colleges and universities should “demonstrate a commitment to providing the resources necessary to operate the research enterprise in an electronic environment” (COGR, 2001). This would apply by extension to other research institutions. In addition, an ERA system may fall under the “infrastructure” component of the Society of Research Administrators International’s Body of Knowledge. A good research administration practice must depend on an ERA system as part of the research enterprise infrastructure. In many advanced applications, ERA systems may actually form the basis of the whole research enterprise at many research institutions. ERA “has now been nearly subsumed into the standard operating procedures of research administration itself” (Kulakowski, 2006).

### **Conclusion**

The implementation of an ERA system is a challenging and dynamic process. At VCU, the implementation, operation and expansion of an ERA system continues to this day, nearly 10 years after the purchase of the system. Technological advances, research enterprise demands, and funding requirements have made ERA systems an integral part of modern research administration. The VCU ERA system has been an important infrastructure tool in the

management and operation of the research enterprise. The experiences at VCU mirror those of other research institutions as they implement and expand ERA services.

Research administration continues to be a complex, dynamic and ever expanding field. When the task of research administration is considered along with and as part of the normal operation of a contemporary American university, college or other institution, the challenges and scope of this task seem enormous. ERA systems facilitate and help in this process. As a fixture in the infrastructure of the modern research enterprise, ERA systems support the research mission of all these institutions.

The age of ERA is well under way and began with the “vision of paperless grants (electronic proposals, awards, progress reports)” aided by the proliferation of the internet, electronic commerce and computer technology used across many industries (Kulakowski, 2006). Yet the prediction that by the “end of the decade, grantee organizations will have in house-systems...to provide seamless interface with federal government and private foundations” (Kulakowski, 2006), has not yet proven true. Many grantor agencies and grantee institutions have adopted ERA systems with varying degrees of success and functionality. The vision for many institutions is a fully integrated ERA system that covers all facets of research administration from pre-award to post-award to close-out. Further advances in software and system technology may soon make this a reality at a reasonable cost. At VCU, the selection of an ERA system was just the beginning. The more difficult logistical and institutional challenges followed in the implementation of the system. These challenges continue today. However challenging, research institutions need to embrace ERA systems as an integral part of the infrastructure of the research enterprise. The future of ERA is happening now, get on board!

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