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## **Case Study**

# **R E S E A R C H   M A N A G E M E N T**

## **T h e   G e o r g e   M a s o n   U n i v e r s i t y**

**Kostrova Liudmyla**

**Head of the Research Department,  
National University “Kyiv-Mohyla Academy”**

**Kyiv, Ukraine**

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*Dr. Maria Dworzecka, Senior Associate Dean, Special Projects, College of Science*

*Dr. Suzann Slayden, Associate Professor, Department of Chemistry and Biochemistry, College of Science*

*Carol-Ann Courtney, Assistant Director, Pre-Award, Office of Sponsored Programs*

*Anne Schiller, Associate Provost of International Projects, Interim Vice President for Global Strategies.*

## 1. Introduction

Every university strives to be recognized as a world-class research institution. A primary goal of my university, National University of “Kyiv-Mohyla Academy” (Ukraine, Kyiv), is the same. And what do we understand by “**research university**”?

**The research university** means a modern institution which integrates teaching, research and innovation technologies. Of course, such a university is disabled without a talented highly competent faculty. It's clear that research university is a function of complementary interaction of three main, equally important, ingredients: outstanding faculty members, gifted, highly motivated student and funding from national, business and private resources. In reality confirming the right to be the member of a cohort of the best universities in the world is not a simple task from year to year

Thus, what must be done by a faculty and staff of a new university in a developing country which has political and economical problems, to occupy such an honorary place in the university's world rating? Does this goal to join the circle of the best global universities look like an unreasonable ambitious dream?

At the first glance it does. But it is worth to notify that not so long ago in 1991, upon Ukraine independence, the first president of our university, Vyacheslav Briukhovetskyi, declared the idea of resurrecting the Kyiv-Mohyla Academy, one of the most distinguished and earliest among higher educational institutions in Eastern Europe, and creating at it's historical location a modern Ukrainian university. At that time the successful realization of this project in Ukraine seemed to be unrealistic. Nevertheless the first students were enrolled in 1992. Since then only 18 years have passed and this term has been sufficient for the National University of “Kyiv-Mohyla Academy (shortly NaUKMA) to become one of the most prestigious universities in Ukraine. All the positive changes that took place in Ukrainian higher education during the years of independence were launched and tested at our University, among them – the opening of the first Bachelor, Master and PhD programs. And now the task is to find the right ways and means to make our dream of transforming NaUKMA into a world leading research university comes true.

Such complicated system as a research university cannot function without well-managed research administration. It is just such a research administration that provides links between researchers and funding resources and further transferring scientific achievements to the business community. Its function is of great importance even if a university has a highly qualified faculty, funding and students motivated to carry out research. The fact is that the quality of human resources and research facilities as well as any amount of funding would never be sufficient for any research institution. It would continually aspire to involve the best scientists, to have superior equipment and to get more and more funding for further investigation. So, let us consider the following questions:

What administrative structure is able to link scientists whose job is to conduct world-class research and educate future generations with national and private foundations which can sponsor investigations?

Who and how should be responsible for communication between these different communities for the benefit of all parties?

How to form the real research environment that would be attract to outstanding scientists and gifted youth and without which a research university is impossible?

The best way to answer these questions is to explore the structure and operation of research administration by example of a modern research university which is speedily developing. Undoubtedly, the George Mason University is just the very case.

## **2. Research administration and management (some general issues)**

Before starting this modest study let us clarify the object of an investigation. So, what does it mean “research management”? The definition one can get from the book **“Research Administration and Management”** which was published in 2006. It’s actually an encyclopedia in this field and “serves as a coming-of-age milestone for the profession of research administration”. This work has helped me a lot and I’d like to cite one of the responses: “The group of 86 contributors is comprised of well-respected topical experts that enabled the editors, Kulakowski and Chronister, to cover the vast breadth of Research Administration with ample depth to be useful to both the novice and the experienced administrator”.

According to the definition given in the article “The history of research administration” (by Kenneth L. Beasley), research administration is the support required for success in research programs and it is practiced in organizations that conduct research (institutions of higher education, industrial research laboratories and etc.). There are different research administrative positions within a single office with diversified responsibilities that have evolved from the following management areas:

- 1) the conduct of research and its impact on the entire organization;
- 2) the oversight and compliance of the sponsor’s management and fiscal requirements as stated in the grant or contract.

Very principle issue is emphasized by the author. The role of research administration is to be a handmaiden to the research community and its success in enhancing research results. Research administration is not an entity unto itself; rather it provides a service function for investigators. **“Thus, success in research administration is the measurement of success in the research programs being served”.**

The last abstract should be considered as the cornerstone point for successful research administrators. As handmaidens to researchers, research administrators have played a major role in investigations. Unfortunately in Ukraine investigators often play the role of a handmaiden to the administrative staff. Therefore it is particularly important always to keep in mind that **scientists do not have to spend their time with administrative details of the grant or contract.** “Achieving the research goals of the institution is the goal of research administrators”.

Thus research administration and management is only one of the necessary tools for transforming the institution of higher education into a research university. Beside this, the objective of great import consists in nurture and support of a highly qualified and entrepreneurial faculty that is excellent at teaching and active in research.

### **3. George Mason University (short file)**

Now it is necessary to say some words about the history of George Mason University (GMU). In January 1956 the Virginia General Assembly passed a resolution on establishing a branch college of the University of Virginia in Northern Virginia. In September 1957 first seventeen students were enrolled in the new University College and in two years the Board of Visitors of the University of Virginia selected a name for it: George Mason College of the University of Virginia. On April 7, 1972 the Virginia General Assembly enacted legislation which separated George Mason College from its parent institution. Renamed that day by the legislation, George Mason College became George Mason University (GMU).

Thus, GMU is among the young US universities. Since its creation the University has grown into a major educational force and earned a reputation as an innovative, entrepreneurial institution. Now it reached an enrolment of 32 thousands students studying in 177 degree programs, including almost 2,000 graduate students in 31 doctoral programs. This is an amazing breakthrough in the period of only 35 years!

Mason's (just so faculty, staff and students named GMU) is developed in response to the educational needs of its cosmopolitan constituency. The university has gained national distinction in a range of academic fields, including public policy, information technology, economics, the fine and performing arts, law, conflict resolution, and, most recently, the biosciences. Mason is ranked at 159 in the country among more than 600 universities nationwide. In 2009 year, Mason was awarded more than \$100 million in sponsored research.

This brief review of the Mason's history and achievements gives a compulsive evidence of the possibility to create a real research university in a short period of time. Observing the GMU's research units, graduate schools and research administration would help to understand the causes of such successful growth and use this experience in reforming NaUKMA.

### **4. Case-study methodology.**

**The main objective** of this study may be defined as the investigation of the interaction between several university units, namely, research centers, PhD programs and research administration. At the same time one of these units is the target of specific interest. That is the University Research Administration.

For understanding relationships in the university the case study research method was used. Robert K. Yin defines the case study research method as an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used.

For conducting research the following techniques were involved:

- 1) gathering data about units that are the subject of investigation (Internet, library);
- 2) interviewing the members of the faculty and staff;
- 3) observing the operation of the Office of Research Development (attending working meetings, presentations etc.);

#### 4) analyzing the data.

Each of the above mentioned technique was important and complemented to the others. The first step of research consisted of gathering information about the research structure of GMU: its colleges, research centers and graduate schools. It should be noted that University's web-site is very informative as well as the Faculty Handbook which is a real encyclopedia of GMU's life where one can find answers on many questions connected with teaching and research.

Preliminary data reviewing showed that colleges, schools and institutes which compose GMU have common general guides and regulations that nevertheless permit them to conduct their own policy in different areas of activity. Thus, these institutions are sufficiently independent and self-administrated. Independence and self-administration stimulate development of the diverse tracks for implementation of similar ideas and accomplishment of the related tasks. This diversity is good but it usually complicates research. Because of that for investigation of the interactions between research center, PhD programs and research administration, I chose the strategy of comprehensive analyzing and observing one of the institutions (of course, as comprehensive, as it is possible in the frame of this small and short case study research). And immediately a new question emerged: "What institution to select?" The answer was suggested by life itself.

On the second week of my fellowship in Mason I had an opportunity to attend the meeting of the George Mason University Research Council. At that meeting there was an interesting presentation on research activities in the Volgenau School of Information Technology and Engineering made by Dr. Daniel Menasce, Senior Associate Dean. Besides, I attended the meeting of the workgroup for preparing PFI (Partnership for Innovation) Project according to Program Solicitation NSF 10-581. The new software to identify complex cyber network attacks developed by the Center of Security Information Systems (the Center belongs to the Volgenau School of Information Technology and Engineering) was the core part of this Project Proposal. And at last, while the representatives from the Missile Defense Agency visited George Mason University more than half of the presentations were made by the PIs from the Volgenau School of Information Technology and Engineering. These events determined my decision to choose for observing in my case study research this School. I have to emphasize that my choice doesn't indicate that other schools, colleges and institutes of George Mason University are less interesting and/or successful.

My interviewing the staff and faculty members was focused on clarifying some features in their activities which are relevant to research.

Dr. Roger Stough	Vice President for Research & Economic Development
Dr. Ann McGuigan	Director of Office of Research Development
Carol-Ann Courtney,	Assistant Director, Pre-Award, Office of Sponsored Programs
Dr. Michelle Marks	Associate Provost, Graduate Education, Provost Office
Dr. Daniel Menascé	Senior Associate Dean, Professor, Computer Science, the Volgenau School of Information Technology and Engineering

Anne Schiller	Associate Provost of International Projects, Interim Vice President for Global Strategies
Dr. Maria Dworzecka	Senior Associate Dean, Special Projects, College of Science
Dr. Suzann Slayden	Associate Professor, Department of Chemistry and Biochemistry, College of Science
Dr. Abul Hussam	Professor, Director of the Center for Clean Water and Sustainable Technologies (CCWST), Department of Chemistry and Biochemistry, College of Science
Dr. Sushil Jajodia	Professor, director of Center for Secure Information Systems (CSIS), BDM International Professor of Information Technology, the Volgenau School of Information Technology and Engineering
Michele Krug	Graduate student, Cultural Studies PhD program, College of Humanities and Social Sciences
Tina Cipara	Graduate student, Public Administration Master program, College of Humanities and Social Sciences

Range of questions discussed during interview covers following issues:

Research centers:

- reason for its creation;
- research funding and interaction with research administration (Office of Research Development, Office of Sponsored Program);
- linking with PhD program (namely, involving graduate students to carry out research in centers);
- motivating and supporting researchers, particularly young ones;
- achievements of the researcher and center.

PhD programs

- opening of new PhD program;
- admission;
- appointment of the supervisor;
- formation of the defense committee, its role and function;
- reviewing thesis;
- procedure of defense.



### Research administration

- funding opportunities;
- training on preparing project proposal;
- roles of Office of Sponsored Proposal;
- collaboration of the PIs and Pre-Award team manager;
- roles of Pre-Award team manager.

Day-to-day being in the Office of Research Administration, attending working meeting and some university's events as well as regular communicating with my advisor, director of the Office of Research Development Dr. Ann McGuigan, permitted plunging in the working atmosphere of this unit and observing it from inside.

### Conference, meetings, presentations

October 5, 2010	Meeting of the workgroup for preparing PFI (Partnership for Innovation) Project according to Program Solicitation NSF 10-581.
October 12, 2010	
October 12, 2010	Meeting of the Research Council
October 12, 2010	Presentation of the Working Proposal to Launch a Center for Social Innovation at George Mason University.  Faculty and staff from Department of Public and International Affairs, Department of English, College of Humanities and Social Science, School of Management, School of Public Policy, Office of Research Development, Business Alliance of George Mason University.
October 27, 2010	Reception for Russian secondary school teachers of English as a Foreign Language, Math, Sciences, and Technology who participate in exchange program funded by the U.S. Department of State's Bureau of Educational and Cultural Affairs and implemented by Center for International Education, College of Education and Humanities Sciences.
October 28, 2010	Working meeting of GMU's PIs and representatives of the Missile Defense Agency.  Visits of research centers:  Center for Secure Information Systems (CSIS, the Volgenau School of Information Technology and Engineering;  Center of Excellence in Command, Control, Communication, Computing and Intelligence (C4I Center), the Volgenau School of Information Technology and Engineering;  Center for Geospatial Intelligence and Geoinformatics, College of Science.

November 3, 2010	Celebration of Achievements 2010. The 9th annual reception to honor the research, scholarly, and creative accomplishments of the University's faculty and students. The official announcement of the three winners of <i>Emerging Researcher</i> , <i>Scholar</i> and <i>Creator Awards</i> . Colleges, schools and institutes display books, awards, exhibit catalogs, and posters representing both faculty and student research achievements.
November 6, 2010	Pre-Conference Seminar "Governance and Compliance in a SharePoint World" and Exhibition in the frame of the ARMA 55 <sup>th</sup> Annual Conference & Expo"

Below is brief information about research administration, centers guideline, graduate policies as well as requirements of the doctoral degree with further description of how this is realized in the Volgenau School of Information Technology and Engineering.

## 5. Structure of research administration in GMU

Research Administration in George Mason University is headed by Vice President for Research and Economic Development and is an important part of the University Administration (see appendix 1). The specific research targets for the research administrative unit are shortly and clearly formulated:

"We will continue to develop thematic areas of research excellence and continue to grow research centers of excellence.

We will become an economic engine for Northern Virginia by continuing to increase our research portfolio, spinning off technologies, and creating companies.

We will increase our national rankings of research universities with the goal of breaking into the top 100 of public research universities and to reach \$250 million of sponsored research by 2014".

Several offices and committees are included into the Research Administration:

- Office of Research Development
- Office of Technology Transfer
- Office of Sponsored Programs
- Office of Research Subject Protections
- Office of Environmental Health and Safety
- Office of Research Policy Development

One of the committees is a matter of great importance. This is the Research Council.

**The Research Council (RC)** is a committee chaired by the Vice President for Research and Economic Development to support the strategic and operational needs of the research mission of George Mason University.

Specifically, the Research Council is charged with:

Promoting interschool collaboration of research and horizontal and vertical communication of research initiatives through interaction of faculty, dissemination of information, and support for recruitment of research faculty as needed.

Reviewing and commenting on any strategic plan for research as requested by individual deans, institute directors, or by university administrators.

Identifying and providing potential solutions to issues related to research administration, compliance, and policies.

The committee is comprised of one representative from each school, college, or institute, selected by the relevant dean or institute director. The RC is advisory to the Provost and President. It will meet at least once per month, but can meet more often as deemed appropriate by the Chair or as requested by any three members of the RC.

It is a real challenge to become a research university. In the light of this ambitious goal the key problem is research funding. Thus, first of all, we focused on the activities of two following offices: Office of Research Development and Office of Sponsored Programs.

The Office of Research Development (ORD) provides support to faculty, students and staff in identifying and seeking funding to increase George Mason's funded research base.

To accomplish this ORD provides:

- *Limited Submission Process*  
Management of the internal selection process for limited submission grant opportunities (those where the agency limits the number of proposals from a single institution).
- *Coordination / Identification of Funding Sources & Dissemination of Information*  
Coordinates institutional activities to identify funding information from outside entities and disseminates this information to units. Coordinates university-wide funding activities with outside entities such as Strategic Partnerships.
- *Assist and Coordinate Large and Complex Proposal Efforts*  
Support cooperative and collaborative research activities at Mason by expanding Mason's capacity to strategically pursue major multi- and interdisciplinary team based research initiatives.
- *Funding Opportunity Search Consultation*  
Offers individualized consulting sessions to faculty and research staff on the identification of funding opportunities and advises on appropriateness of funding sources and strategies for interactions with agencies.
- *Seminars and Workshops*  
A variety of seminars and workshops are offered each semester. These are organized in the following series: Basics, Tips for Success, and Grants Management. Special Topics sessions are arranged as interests are identified.

The Office of Sponsored Programs (OSP) is the pre- and post-award administration office for all externally sponsored projects for Mason. OSP provides assistance in proposal budget development and proposal submission. The office also reviews and signs off on all

proposals to external sponsors. All contracts with the University which involve sponsored projects are reviewed, negotiated, and executed by OSP.

When awards are received, OSP generates budgets. OSP works with researchers, departmental administrators and other administrators to resolve problems of institutional cost sharing, contractual terms, and budget matters. Changes to the accounts, communication with sponsors and project closeout are also coordinated through OSP. OSP reviews and advises the Mason research community on matters of new or revised federal and state laws, rules, and regulations that affect research administration.

All these function are significant and must be implemented in the Research Department of the NaUKMA. Unfortunately, its actual structure is unable to facilitate seeking funding and preparing successful project proposal.

What **have we to do** to change this situation?

What **can we do** for transforming the department into the service agency of research management which would provide assistant for researcher as extra-class “handmaiden”?

One of the drawbacks in my department is connected with a lack of reliable, well thought-out guideline and flow charts for preparing project proposal, as it is in George Mason University (see appendix 2, 3). These documents should be worked out.

At the same time to provide support to faculty, students and staff in identifying and seeking funding a specific administrative unit is required with functions and responsibilities similar to those of the Office of Research Development in GMU.

In addition an important task is to improve and maintain the web-site of the Research Department, particularly, the English web-site. The well-done English web-site would contribute to sharing information about research activities and achievements of our university.

## 6. Research Centers

Today GMU numbers almost one hundred research centers, to be more precise 94. According to the Faculty Handbook<sup>1</sup> “a center is a unit of the University intended to advance the University's mission of research and/or public service. It normally housed within a department, college/school or institute.” Altogether Mason has 11 departments: 5 colleges, 4 schools and 2 institutes.

Investigations carried out at Mason are concentrated in its research centers. These centers do not develop or administrate academic degree programs. Centers with large grants or contracts may require the presence of research faculty whose affiliation with the center is coterminous with the life of the grant or contract. It is important to emphasize that faculty appointed to a center under externally funded grants or contracts may not receive probationary or tenured appointments through the center.

Centers contribute to strengthen the performance of research at George Mason by creating communities of faculty and students who share research and scholarly interests. As

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<sup>1</sup> The Faculty Handbook defines and describes the conditions of full-time instructional, research, and clinical faculty employment; the structures and processes through which the faculty participates in institutional decision-making and governance; and the academic policies of the University as established by its Board of Visitors.

has been noted above research centers don't administrate graduate programs nevertheless in majority of cases graduate students carry out their thesis research there.

A center is chartered for a specific period of time by the Provost and the President on the recommendation of appropriate faculty and dean(s) or institute director(s). Chartering of the research center is an important tool for communicating to external funding agencies. In the Faculty Handbook's statement it is pointed out that "whenever possible, centers are expected to derive most of their operating budgets from a source or sources other than state appropriations."

The procedure of chartering new research center is not complicated and includes the following steps:

- 1). Preparation two documents: the brief cover memorandum and proposed charter.

Memorandum should include the following

- Name of the center
- Name of the center director and term of appointment
- Time period for which chartering is requested (usually three to five years)
- Any special concerns or opportunities raised by the center

Proposed charter should address the following matters:

- Name of the center
- Academic unit in which the center will be housed
- The purpose of the center and the opportunities to which it responds
- Potential contributions of the center to the unit and to George Mason, including impacts on graduate and undergraduate students
- History of prior successes and activities that justify the center's establishment
- External constituencies that are or may be interested in the center
- Names and positions of principal faculty participants
- Name, position, and term of the director
- Potential collaborations and partnerships, both in and outside George Mason
- Center finances, including, where available, expected sources of revenue, project and administrative costs, and history of external funding for related activities
- Plan for ongoing assessment and periodic evaluation of the center

- 2). Submission a cover memorandum requesting accompanied by the proposed charter for the center to the Vice President for Research with a copy to the Associate Provost for Personnel and Budget. Ordinarily, this memorandum should be submitted by the dean or director of the local academic unit, as well as by the chair of the home department for units organized into departments.
- 3). The Vice President and Associate Provost will review the proposed charter and discuss any concerns they may have with the requesting unit. They will then make a recommendation to the Provost, who will determine whether the center should be chartered.

A center is administered by a director who is appointed for a fixed term by the local unit administrator of the unit within which the center is housed. The Office of the Vice President for Research maintains a web page devoted to research centers, for which each chartered center provides a brief summary and a link to the center's home page. (Each center must create and maintain its own home page). Center's charter is issued for a fixed period of time (typically three to five years).

Approximately one to three months prior to the end of the chartered term, the local academic unit dean or director should initiate a process of review and assessment of an existing center, leading to a decision and recommendation on renewal, including any revisions, of its charter. If renewal is sought, a renewal memorandum should be submitted to the Vice President for Research and Associate Provost for Personnel and Budget requesting such renewal.

The charter renewal memorandum should include:

- Name of the center
- Name of the (new) center director and term of appointment
- Time period for which renewal is requested (usually three to five years)
- A summary narrative assessment of the accomplishments of the center
- A summary review of the center's financial performance, including details regarding extramural funding and percentage of total funding obtained from non-state funds
- A summary discussion of any efforts made to eliminate or consolidate the center with other operating units
- Any concerns or opportunities raised by the proposed renewal

The renewal proposal should include one letter of support from a relevant dean or director (unless the center reports directly to the Provost).

Now it is worth to say some words about research centers in my Ukrainian university. The research potential of the faculty was developed along with the growth and development of the NaUKMA. The first university research center was created contemporaneously with the university's resurrection and now their number has run up to 31. The procedure of the center's chartering is very much alike those in George Mason University with the difference that the final decision is to be approved by the University's Council. It obligatory includes:

- 1) Submission covers memorandum and proposed charter to the Head of the Research Department, Vice President for Finance and Administration and Vice President for Research.
- 2) Reviewing charter and discussion all issues concerning requesting center.
- 3) Making recommendation to the University Council.

But there are some points which are required in the Mason's center charter and that are worth to include in our cover memorandum or/and center's charter, namely:

- History of prior successes and activities that justify the center's establishment
- External constituencies that are or may be interested in the center
- Names and positions of principal faculty participants
- Potential collaborations and partnerships, both in and outside university
- Commitment to create and maintain center's own home page.

And some words in conclusion. Formerly I think that one of the problems in handling of research centers is connected with their continual increasing in number and a lack of the researchers wish to consolidate with other units which have similar scientific interests. I was thinking of implementing some university's regulations which would restrict the chartering of new centers and push to form new research units within already existed centers. Observing the situation at George Mason and talking over this point with representatives of administrative staff and faculty, I have changed my mind and realized that has nothing to do with the aspiration of some scientists to form his/her 'own' research center. If the chartering of the center stimulates research, let it be. Let us remember that research administration must be the service agency that caters to researchers than the command body which issues orders and then checks their accomplishment.

## 7. PhD Programs

There is no way to form a research university without creating environment that would be attractive to outstanding scientists and talented youth. PhD program is a function of teaching and research, of transferring knowledge, experience and skills. Doctoral training and learning makes the young researcher a full member of the research team.

The PhD programs are a point of interest in this study because they are based on the concept of "training through research" and because the Doctoral School together with the Research Department are the responsibility of the Office of the Vice President for Research and Graduate Studies of the NaUKMA. It is clear that development of PhD programs is carried out in close connection with Research Department, particularly, the university's research centers.

NaUKMA is the first Ukrainian university taking part in the reformation of the post-graduate programs. The important step for NaUKMA was in receiving the grant and executing the project "Implementing the European Higher Education Area Third Cycle in Ukraine". This international project, supported by the European commission through the "TEMPUS/Tacis" program lasted from November 2006 to November 2007.

The main goal of the project was to study the European experience of creating and administering structured research programs (including taught curricula) of the so-called 3rd cycle of education — that is, programs that lead to the terminal academic degree, the doctorate (PhD) — in order to enable their eventual introduction in NaUKMA. Project participants presented their ideas on PhD programs in the form of informational-instructional material or conceptional positions, which were then published as "Doctoral Programs in Europe and Ukraine: International Conference Proceedings". This material and recommendations for implementation of the European higher education area third cycle in Ukraine were presented by NaUKMA to the Cabinet of Ministers of Ukraine, the Ministry of Education and Science of Ukraine, and the Higher Attestation Committee of Ukraine. The Ministry of Education and Science of Ukraine approved the initiative of NaUKMA and has delegated responsibility for the establishment of Ukraine's first Doctoral School to NaUKMA, and has tasked this institution with the implementation of European-model structured doctoral (PhD) programs which began in September 2008.

**The Doctoral School at Kyiv-Mohyla Academy is an educational and research unit of Kyiv-Mohyla Academy that provides training through traditional post-graduate**

**programs (“aspirantura” and “doktorantura”), and through newly founded, EHEA-compliant, structured PhD programs.**

The Kyiv-Mohyla Academy Senate approved the Statute of the Doctoral School in May, 2008, and admission to the first PhD programs began in September, 2008: “Finance”, “Mass Communications”, and “Public Health Administration”. Two more PhD programs were launched in September, 2009, titled "Philosophy of Literature" and "Biology and Biodiversity" and in 2010 the doctoral program “History” was added.

Creation of the Doctoral School in NaUKMA was made by the reorganization of the existing department which administrated traditional post-graduate studying (“aspirantura” and “doktorantura”). That’s why the Doctoral School at Kyiv-Mohyla Academy is responsible for the following:

- administration of traditional post-graduate and doctoral programs (“aspirantura” and “doktorantura” )
- implementation and administration of structured PhD programs at NaUKMA according to the Statute of the Doctoral School approved by the Kyiv-Mohyla Senate
- design of a best-practice model for the reform of Ukraine’s system of post-graduate research training according to the model of the third cycle of education proposed within the European Higher Education Area (EHEA)

Now some words about traditional Ukrainian “aspirantura” .

### **7.1. Aspirantura: brief characteristic**

NaUKMA has been educating highly qualified science and research professionals in “aspirantura” post-graduate programs since 1997. Studies may be funded by the state or contracted (and thus funded by individuals or by legal entities). Individuals who hold a higher education degree of the level of Specialist or Master may be admitted into the “aspirantura” on a competitive basis passing exam. Each “aspirantura” student is appointed an academic supervisor – a doctor of sciences or candidate of sciences. The supervisor supervises the process of dissertation writing, verifies the fulfillment of the student’s individual work plan, and is personally responsible all deadlines, and for the quality of the final dissertation.

The “aspirantura” study term should not exceed 3 years. An “aspirantura” student should work according to his/her individual working plan, and report on its fulfillment to his/her department at faculty meetings once a year. Requirements to the “aspirants” are the following:

- passage of **qualification exams**: subject proficiency exams, English language and philosophy exams, and if necessary – any additional exams that are required by the specialized board of the institution that will hear the candidate’s dissertation defense;
- conduct of a scientific research project;
- publication of articles (*mandatory minimum is 5*) in accordance with **the requirements of the Higher Attestation Commission of Ukraine**. (*There is a special list of scientific journals approved by the Higher Attestation Commission where results of the investigation must be published before the thesis defense.*)



- participation in scientific conferences (*mandatory minimum is 3*)
- preparation of a dissertation text according to **the requirements of the Higher Attestation Commission** of Ukraine
- public defense on the Specialized Council for Defense. Such councils are formed in research institutes of the National Academy of Science and/or in institutions of higher education by the **Higher Attestation Commission** of Ukraine. Council usually consists of 25 – 30 members who have scientific degree “doctoral of science” in the council’s specialization. The council after secret voting make a decision to award /or not award the scientific degree “candidate of science” and then send dissertation with all supporting documents to the **Higher Attestation Commission** for approval
- The final decision concerning awarding the scientific degree of the “candidate of science” is made by the **Higher Attestation Commission** of Ukraine. This Commission has its own specialized expert committee for expertise thesis. The diploma of the “candidate of science” is issued by the **Higher Attestation Commission** of Ukraine.

“Aspirantura” students participate in departmental seminars, report on their participation in conferences, research trips, and internships to departmental colleagues during meetings of the relevant department or research center.

“Aspirantura” students in their 3rd year of studies should present a dissertation (and its abstract) for discussion at the relevant department / research centre meeting not later than a month before the end of their “aspirantura” study term. The procedure of dissertation defense together with a previous to defense requirements (amount of published scientific articles, reports on scientific) is very complicated and takes a lot of time.

## 7.2. Structural PhD programs in NaUKMA

The study process of structured doctoral programs differs from the training system of the traditional “aspirantura”.

According to the basic principle of “education through research” all doctoral students of PhD programs are engaged in Kyiv-Mohyla scientific research work. In addition, the new structured PhD programs require their students:

- to undertake a number of interdisciplinary and thematic courses
- to carry out an individual and original research project, the results of which are considered by the scientific community to represent an essential contribution to knowledge in a particular field
- to publish their research results in international or Ukrainian peer-reviewed journals
- to present their research results at international and Ukrainian conferences, forums, symposia
- to teach courses and/or seminars for students of bachelor programs
- to write a dissertation (PhD thesis) based on individual research project
- to defend their thesis before a dissertation commission composed specifically for this purpose that includes specialists from the research field of the candidate’s thesis

- the final decision on awarding PhD degree is made by the NaUKMA.

### 7.3. Requirements for Doctoral Degrees at the George Mason University

According to the George Mason Graduate Policies candidates must satisfy all applicable university degree requirements and all requirements established by the doctoral program faculty. Departmental degree requirements are listed under the respective doctoral programs in the GMU's catalog. Programs may impose more stringent requirements.

- **Admission.** Students must have been fully admitted into degree status.
- **Credit Hours.** Candidates must earn a minimum of 72 graduate credits, which may be reduced by a maximum of 30 credits from a completed master's degree or other suitable, approved transfer work.
- **Degree Credit.** The remaining 42 credits for students with a master's degree may apply only to the doctoral degree and not to a second master's degree.
- **Credit Level.** Only graduate courses may apply toward the degree.
- **Institutional Credit.** More than half of all credits applied to the doctoral degree (minimum 72) must be earned at Mason or in the case of programs offered through joint, cooperative, or consortium arrangements, at the participating institutions.
- **Residency.** More than half of all credits (minimum 72) must be taken in doctoral degree status, after admission to the degree program.
- **Candidacy.** Candidates must pass a written or oral doctoral candidacy (qualifying) exam, or both.
- **Dissertation.** Candidates must complete a minimum of 12 credits of doctoral proposal (998) and doctoral dissertation research (999), including at least three credits of 999. A maximum of 24 credits of 998 and 999 may be applied to the degree.
- **Defense.** Candidates must pass a final public defense of the doctoral dissertation.
- **Quality.** Candidates must have a minimum GPA of 3.00 in course work presented on the degree application, which may include no more than 6 credits of C. (Grades of C+, C-, or D do not apply to graduate courses. The GPA calculation excludes all transfer courses and Mason extended studies or nondegree credits not formally approved for the degree.)

#### Time Limit

Doctoral students **have six years from the time of first enrollment as a degree-seeking student** to advance to candidacy. Students have five years from the time of advancement to candidacy to graduation.

#### Doctoral Research Skill Requirements

Some doctoral degree programs require demonstration of proficiency in a research skill, including knowledge of the research literature in a foreign language, computer language, statistical methods, or a research tool specific to the discipline. Research skill requirements are included with the degree requirements for the specific doctoral degree. Where

demonstration of research skills is required, certification that this requirement has been met must be completed for advancement to candidacy.

### Program of Study

Usually before the end of the second year of graduate study but no later than consideration for advancement to candidacy, doctoral students must submit a program of study for approval by the dean or director of the college, school, or institute. The program of study must include major courses and supporting courses to be completed, research skills required, subject areas to be covered by the candidacy exam, and a proposed date for the candidacy exam. Program of Study Forms are available from each program's doctoral coordinator. Any changes in the programs of study must be documented with an amended Program of Study Form.

### Advancement to Candidacy

Advancement to candidacy implies that a doctoral student has demonstrated both a breadth and a depth of knowledge in the field of study and is capable of exploring problems on the boundaries of knowledge, and has identified a research area that is likely to lead to a successful dissertation. The candidacy exam includes a written part and may include an oral part, depending on the particular doctoral program.

Before doctoral students may be advanced to candidacy by the unit dean or director, they should have completed all course work required by the program faculty, been certified in all doctoral research skills required, passed the candidacy exam, and been recommended by the doctoral supervisory committee or program coordinator.

### Dissertation Committee

Before a doctoral student is advanced to candidacy, the dean or director of the school, college, or institute or its designee (as specified by the school/college/institute) appoints a dissertation committee upon recommendation of the student's dissertation chair. Students work collaboratively with the program director and faculty to form the dissertation committee, with the understanding that some areas of research may be impossible to support due to available faculty expertise.

All dissertation committees must consist of at least three members of the graduate faculty, at least two of whom must be from the student's academic unit or program faculty. The committee consists of a dissertation chair, typically a graduate faculty member from the department or program of the student's field of study and at least two other members of the graduate faculty. Only a graduate faculty member with a full-time appointment at George Mason University may serve as dissertation chair. Other Mason faculty, as well as individuals from outside the university, may be appointed as additional members to the committee. Such appointments are made where the additional member's expertise and contribution add value to the dissertation, but appointment does not require graduate faculty status.

Student-initiated changes in the composition of the dissertation committee may occur only with the approval of the dean or director of the school, college, or institute or its designee in consultation with the committee. Faculty may resign from a dissertation committee with appropriate notice by submitting a written resignation.

### Dissertation Registration

All registration for doctoral dissertation research must be planned with the dissertation director and approved by the dean or director of the school, college, or institute. Dissertation research is open only to doctoral students who have advanced to candidacy.

### Doctoral Dissertation

A dissertation is required for the doctor of philosophy degree and most professional doctoral degrees. The dissertation is a written piece of original thinking that demonstrates doctoral candidates' mastery of subject matter, methodologies, and conceptual foundations in their chosen field of study. This is generally achieved through consideration of a problem on the boundaries of knowledge in the discipline.

The director of the dissertation committee is primarily responsible for directing the doctoral candidate's research and guiding the preparation of the written dissertation. After the dissertation committee is appointed, the student should begin discussions with the director to define a suitable problem for the dissertation. Before the student may enroll in doctoral dissertation research, the dissertation proposal must be approved by the dissertation committee and evidence of approval sent to the unit dean or director for approval. Before that time, the student may enroll in proposal research.

### Doctoral Defense

As soon as all degree requirements have been satisfied, including completion of the doctoral dissertation, the doctoral candidate may request a doctoral defense. Approval for the defense is given by the doctoral dissertation committee, department or program chair, and relevant dean or director of the school, college, or institute. Notice of a defense must be circulated to the university community two weeks before the defense date. The public defense should demonstrate the candidate's maturity of judgment and intellectual command of the chosen branches of the field of study.

At the close of the final defense, the dissertation committee makes final judgments for approving the dissertation. The doctoral candidate is responsible for making all required changes promptly, submitting the original and required copies, and obtaining signatures. Final approval for the dissertation is given by the doctoral dissertation committee, department or program chair, and the relevant dean or director of the school, college, or institute, all of whom must sign the final copy.

For a dissertation to be approved, all members of the committee must sign. If a committee member refuses to do so, the student or any member of the committee may petition the unit dean or director for a review and ruling. The dean or director may seek the advice of outside reviewers to provide an assessment of the work. The final decision is that of the dean or director, and is not subject to appeal.

The issues concerning reform of the Ukrainian system of post-graduate studies merits a special case study. Nevertheless, as results of studying graduate policies and GMU's administrative structure together with interviewing Mason's faculty and staff I understood the

principal differences between “aspirantura” (the old soviet system of post-graduate study) and PhD programs in USA.

In the USSR scientific investigations essentially were carried out in the research institutes of the Academy of Science. The main task of the universities and the institutions of higher education were teaching and training. Thus these functions and their funding were separated. The Academy of Science got the majority of the state budget for research and the Ministry of Education for teaching. The institution of “aspirantura” was a kind of post-graduate studies with the length of three years which was completed by writing a thesis and its defense. It didn’t include a program of study but only passing qualifying exams. Thus, the scientific degree of the candidate of science was based on the evaluation of the obtained research results only. All procedures connected with “aspirantura” were handled by a special state board, the Higher Attestation Commission, and have nothing to do with the Ministry of Education.

In the USA and many others countries research essentially takes place in the universities. As a result the PhD programs aren’t separate from studying. The PhD students have an obligatory program of study and get experience not only in carrying out investigations but in teaching as well. For example, at the George Mason University, candidates can occupy the position of graduate teaching assistance (GTA) or graduate research assistance (GRA). PhD programs are handled exclusively by the university and the PhD academic degree is awarded solely by the university. Thus, doctoral programs are the highest level of a university’s degree granting function and PhD degree confirm an excellent knowledge in specialty and research methods.

Ukraine inherited from the USSR: the gap between research and higher education; the institution of “aspirantura” as well as the Higher Attestation Commission as the ultimate authority in decision of awarding the scientific degree “candidate of science”. Unfortunately after signing the Bologna agreement, Ukrainian government did nothing to bridge higher education with research. The creation of the consolidate Ministry of Science and Education in fact does not conciliate universities and the institutes of the National Academy of Science.

Now after studying the graduate policies at the George Mason University and analyzing the legislative regulations in Ukraine, I have evidence that the decision of NaUKMA’s team to implement PhD program parallel to “aspirantura” was optimal. It shows the way for an evolutionary reforming of the system of post-graduate education traditionally tied to the Academy of Science. The realization of post-graduate educational reform faces legal obstacles and is met with skepticism from state authorities (i.e. the Higher Attestation Commission or “VAK”). Nevertheless the PhD programs in NaUKMA continue their development.

## **8. The Volgenau School of Information Technology and Engineering**

For the past 25 years, the Volgenau School of Information Technology and Engineering has been Virginia's premier destination for graduate studies in information technology-based engineering. Being the constituent of the George Mason University the School is seated in the center of Northern Virginia's IT corridor within the Washington, D.C., metropolitan area. As a partner with the Northern Virginia IT industry, the Volgenau School produces research and

quality graduate education that have garnered national attention and draw students for its educational offerings from around the globe.

The Volgenau School of Information Technology and Engineering is composed of 6 Academics Department:

- Applied Information Technology
- Civil, Environmental and Infrastructure Engineering
- Computer Science
- Electrical and Computer Engineering
- Statistics
- Systems Engineering and Operation Research

Close to 4.000 students are studying in the Volgenau School and 1.800 of them are graduate students.

The school offers the following undergraduate degree programs:

- Applied Computer Science,
- Civil and Infrastructure Engineering,
- Computer Engineering,
- Computer Science,
- Electrical & Telecommunications Engineering,
- Information Technology,
- Systems Engineering.

The Volgenau Graduate School has industry-engaged focus on practical knowledge and helps its students to learn theories and methodologies they can apply in the workplace, and increase their value to the area's leading employers in order to boost their career potential.

The graduate school offers the following MS degree programs:

- Applied Information Technology,
- Civil and Infrastructure Engineering,
- Computer Science,
- Computer Engineering,
- Computer Forensics,
- Electrical Engineering,
- Information Security & Assurance,
- Information Systems,
- Operations Research,
- Software Engineering,
- Statistical Science,
- Systems Engineering,
- Telecommunications.

The five PhD programs and the Engineer in IT degree programs are briefly described below.

### Ph.D. in Computer Science

This nationally ranked program is run by the Computer Science <sup>[6]</sup> department and offers research opportunities in many different areas including Algorithms and Theory of Computation, Artificial Intelligence and Robotics, Computer Vision, Computer Science Education, Databases, Data Mining, Graphics and Image Processing, Information Systems, Languages, Parallel and Distributed Computing, Software Engineering, Security, and Systems and Networking.

### Ph.D. in Electrical and Computer Engineering

This program is run by the Department of Electrical and Computer Engineering (ECE)<sup>[7]</sup>. The goal of the program is to prepare students to perform independent and original research in their areas of interest. There are currently five areas of active research in the ECE Department: communications and computer networks, computer engineering, control systems and robotics, signal processing, and microelectronics.

### Ph.D. in Information Technology

This program is run by the office of the Senior Associate Dean. Students may conduct their doctoral research under the supervision of any eligible faculty member of any of the school's departments. A student may select to obtain this degree without a specific concentration or in one of the following concentrations: Civil and Infrastructure Engineering, Information Security, Information Systems, and Software Engineering. Choosing a concentration may impose additional requirements and may reduce the program flexibility.

### Ph.D. in Statistical Science

This program is run by the Department of Statistics. Research areas of key departmental faculty in the program include statistical signal processing, biostatistics, statistical genetics, statistical graphics, and data exploration. The Department has had a history of producing top quality Ph.D. students from the former Information Technology program; many of them are employed in academia, the federal government, and technology firms. The terminal degree "Ph.D. in Statistical Science" represents the highest academic attainment for a statistician, and as such, requires in-depth knowledge of modern statistical theory and practice.

### Ph.D. in Systems Engineering and Operations Research

This newly approved program is offered by the Department of Systems Engineering and Operations Research. The PhD in SEOR curriculum offers a unique integration of systems engineering and operations research. This integration affords students a strong analytical and computational capability on the one hand and an overarching systems perspective that is well-grounded in application of the other.

### Engineer degree in information technology

This program is run by the office of the Senior Associate Dean. This is not a doctoral degree, but it allows students to combine advanced course work of the Ph.D. degree in Information Technology with an applied project. Students may conduct their project under the supervision of any eligible faculty member of any of the school's departments.

Seven research centers play key roles in the School's scientific life and shape its image as a research institution "where innovation is tradition".

- Center of Excellence in Command, Control, Communications, Computing and Intelligence (C4I)
- Center for Air Transportation Systems Research
- Center for Distributed and Intelligent Computation
- Center for Secure Information Systems
- Center for Smart Power Grids
- E-Center for E-Business
- Intelligence and Security Research Center
- Learning Agents Center.

Besides the School has research laboratory. Their charters do not need procedure similar to the research center, they are set up by the decision of the Senior Associate Dean.

- The Communications and Networking Laboratory (CNL) in the Department of Electrical Engineering (School of IT&E)
- The Computer Vision and Neural Networks Laboratory (CVNN)
- Cryptography and Network-Security Implementation Lab
- The Machine Learning and Inference (MLI) Laboratory (this laboratory is a part of GMU C&I Center).
- The Sensor fusion laboratory in the Department of Systems Engineering and Operations Research
- The System Architectures Laboratory, as part of the Department of Electrical and Computer Engineering
- Waves and Fields Laboratories.

Each spring the Volgenau School of Information Technology & Engineering at George Mason University hosts an annual Awards Gala. This event is an outstanding opportunity for the School to celebrate excellence among their students, faculty and alumni and to recognize loyal corporate supporters. The following awards are invested at this annual ceremonial reception

- Outstanding Undergraduate Award
- Outstanding Graduate Award
- Outstanding Teaching Award
- Outstanding Adjunct Faculty Award
- Outstanding Research Faculty Award
- Outstanding Alumna of the Year
- Departmental Staff Recognition Award



- Dean's Corporate Recognition Award

Collaboration and innovation are at the heart of the School's efforts and serve to encourage the study of science and technology in today's youth. Through the Volgenau School's outreach programs and strong collaboration with local industry the young people are encouraging to pursue careers in information technology and engineering. Many corporations, alumni, and friends have invested in scholarship support to help the School attract top students into their programs. Thanks to the significant relationships the Volgenau School have established with the business community throughout the years, their students are fortunate to have access to premier employers in the region for research and employment opportunities.

## 9. Conclusions.

The results of this case study show the importance for a research university of the following structures: research centers, graduate programs (namely, PhD) and research administration.

The relationships among them are supported by the research administration which has to provide the following functions:

- Management of the internal selection process for limited submission grant opportunities (those where the agency limits the number of proposals from a single institution).
- Coordinates institutional activities to identify funding information from outside entities and disseminates this information to the units. Coordinates university-wide funding activities with outside entities such as Strategic Partnerships.
- Offers a variety of seminars and workshops that focus specifically on grant development and management for faculty and graduate students.
- Support cooperative and collaborative research activities.
- Offers individualized consulting sessions to faculty and research staff on the identification of funding opportunities and advises on appropriateness of funding sources and strategies for interactions with agencies.
- Maintains the web-site of the Research Department, particularly, the English web-site.

The existent structure of the Research Department in the NaUKMA is unable to carry out all these functions and requires creation of an office within Research Department for accomplishing all of the above mentioned tasks. This office according to its functions would be similar to the Office of the Research Development in the George Mason University.

So the main idea for my pilot project proposal would be to create in the NaUKMA's Research Department an office of research development.

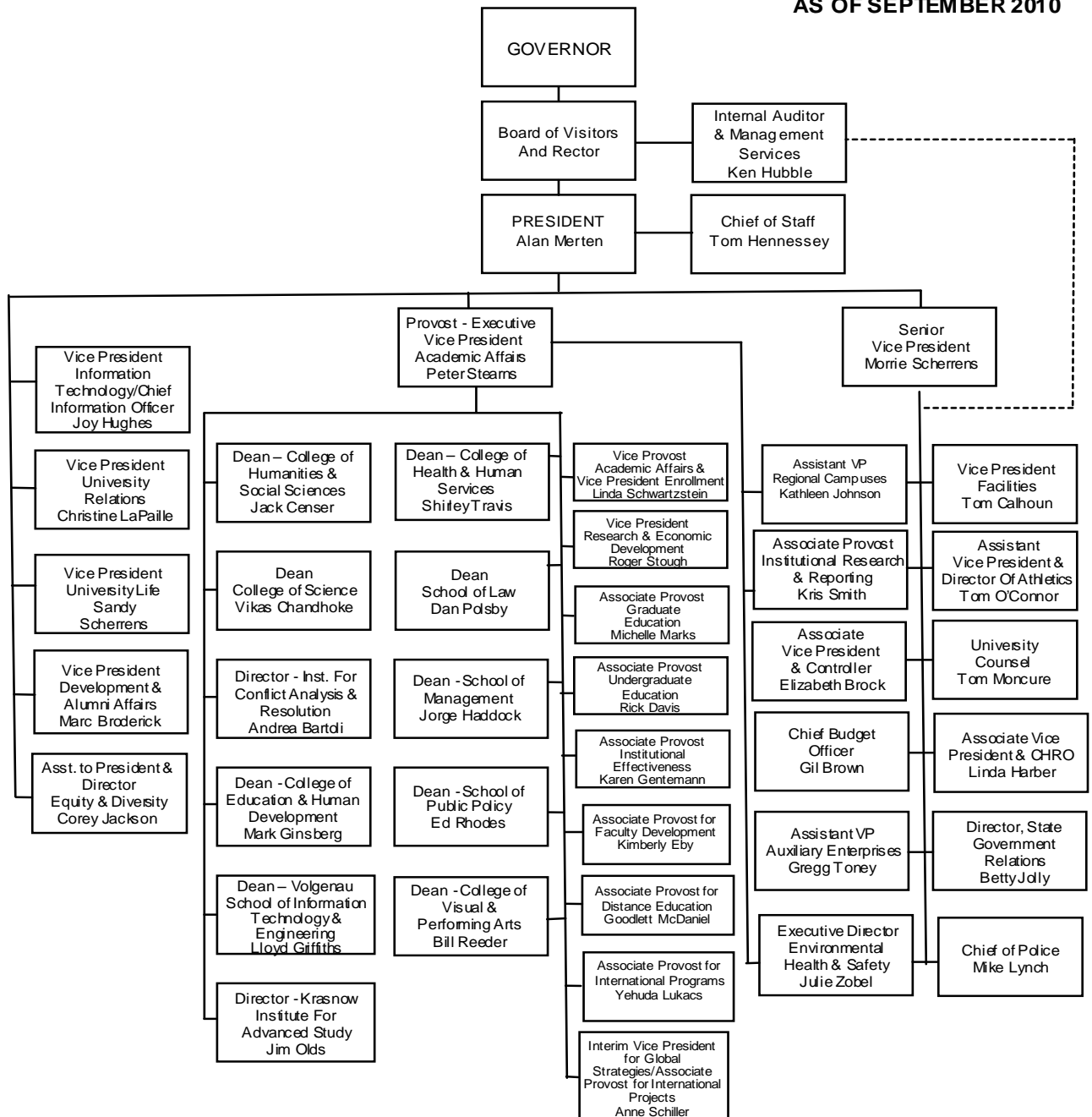
## 10. Literature

1. "How to Write a Good Case study"  
<http://www.gttp.org/docs/HowToWriteAGoodCase.pdf>
2. "Writing Guide: Case Study" <http://writing.colostate.edu/guides/research/casestudy/>
3. "Introduction to the case-study method"  
[www.uiweb.uidaho.edu/ag/agecon/391/casestudmeth.html](http://www.uiweb.uidaho.edu/ag/agecon/391/casestudmeth.html)
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<http://www.ischool.utexas.edu/~ssoy/usesusers/l391d1b.htm>
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<http://catalog.gmu.edu/content.php?catoid=15&navoid=1172>
16. "The Volgenau School of Information Technology & Engineering"  
<http://volgenau.gmu.edu/>

# Appendix 1.

## ADMINISTRATION

### ADMINISTRATION ORGANIZATIONAL CHART AS OF SEPTEMBER 2010



## OSP Pre-Award Flow Chart

