



## Chapter 6: Administrative Management

(rev. Dec. 2014)

### 6.1 Introduction

This chapter addresses the daily operation of a National Science Foundation (NSF) Engineering Research Center (ERC). Suggestions are based on common experiences shared by existing centers, but there is no "right" way to manage an ERC. Major differences among institutions call for diverse management strategies; it is important to understand the institutional environment and then use the most relevant and helpful ideas. The lead institution of the ERC is responsible for administrative management, but the distribution of effort should be shared among the center's partner institutions. Specific tasks and responsibilities will change over time and may vary depending upon the management structure of the specific ERC, the university culture, and the experience and strengths of the leadership team. This chapter addresses the functions required to administer a diffuse enterprise with multiple academic partners, outreach institutions, industrial partners, faculty, professional and classified staff, and graduate and undergraduate students – across multiple time zones, cultures, and geographic areas. A new Administrative Director (AD) will discover that the most valuable resource is the vibrant and supportive community of ERC ADs that exists across the country. The Google Group site and listserv, the biennial NSF-ERC meetings, and the AD summer retreats all offer opportunities to collaborate with peers and build a network. A successful AD will utilize interpersonal, organizational, and management skills to facilitate the work of the center and foster an environment of collaboration and excellence.

#### 6.1.1 Structure and Organization

There is no ideal organizational scheme for an ERC; every center will be (and should be) unique. The creativity that the ERC team brings to the development of the center can serve as a model for future developments within the lead institution and the academic partner institutions as well. Managing such a complex enterprise requires a sophisticated administrative structure and resources which are not typically available to a standard university department or single-investigator project. Every center is required to create and update an organization chart which should reflect the role of the department chair, dean, and other university officials in the center's infrastructure. Keep in mind that the governing instrument for an ERC is the NSF Cooperative Agreement, which is a specific type of award that emphasizes substantial agency involvement. The ERC Annual Reports and Site Visit Reports are key components of this involvement and the NSF Program Officer (or Program Director) is the individual who helps to guide the center throughout the life of the project. NSF does provide a start-up visit for the leadership team and also offers a consultancy visit for the new AD to help get things organized.

[See Attachment 6.1 – Sample Organization Charts](#)

[See Attachment 6.2 – ERC Consultancy Guidelines](#)

#### **Critical Questions**

- Will the center be a financially autonomous unit with independent bookkeeping or will financial management be distributed?
- How is the university-sponsored research office organized? Does it have separate "pre-award" and "post-



award" units or are the responsibilities delegated by sponsor? Does the university offer training for sponsored-program management and accounting? Who is the Authorized Organizational Representative (AOR) for the lead institution?

- How will the partnerships with subcontractors be managed?
- How will the projects and thrusts be organized across multiple institutions to facilitate the implementation of the strategic research plan?

### **Key Definitions**

**Core Project (or center-controlled project)** – Projects that are supported with center-level funds from NSF and possibly other unrestricted funds under the center's control (e.g., membership fees from the Industrial Advisory Board) and in a center account. For reporting purposes, individual projects should be grouped together into clusters or thrusts that have multiple faculty members and a substantial budget.

**Associated Project** – A project that is central to either the research strategic plan or education strategic plan that is awarded to the home department of an ERC faculty member. Associated project funds are not controlled by the center and are reported as indirect sources of support. Only direct costs for these projects should be reported (no indirect costs or reserves remaining).

For associated projects whose funding is part of a larger award that includes faculty outside the center, include only the funding percentage that is directly in support of the center's strategic plan or vision, and only the percentage budgeted for the Current Award Year. It should be documented how this prorating was calculated. (This definition might be updated by NSF.)

**Sponsored Project** – Projects with a restricted or directed purpose that is specified by the funding source. Sponsored projects augment the center's core activities. The award goes directly to the center for a specific project and is classified as restricted cash. Examples of sponsored projects include Research Experiences for Undergraduates (REU) supplements, Defense Advanced Research Projects Agency (DARPA) awards to the center, and industry-sponsored projects with clearly intended outcomes or activities.

### **6.1.2 Role of the Administrative Director**

As a key member of the management team, the Administrative Director will serve the entire ERC as the guardian of resources, policies, and myriad detail. To be effective, the AD must have some knowledge of all center activities and maintain a big-picture perspective. The AD will need to consider the needs of all stakeholders (NSF and the ERC program, academic and industrial partners, funding sponsors, faculty, students, foreign collaborators, and staff) and balance potentially competitive internal resource demands among research, education, technology transfer, and management initiatives.

The AD needs to develop a strong and efficient infrastructure to enhance collaboration and facilitate the work of the center. The AD plays an important role in strategic planning by adding an operational perspective and by providing the "glue" that holds the various administrative functions of the center together. Below are some of the key characteristics of an effective Administrative Director:

- Executive mindset
- Optimistic and positive attitude
-



Organizational skills and attention to detail

- Strong interpersonal skills such as being respectful of differences in work styles, , diplomatic, and having a collaborative attitude toward meeting challenges Flexibility to respond to changing demands
- Financial management experience
- Ability to guide and advise the leadership team in a forthright manner and with clear and thorough information
- Ability to work independently and exercise good judgment and discretion
- Excellent problem-solving skills to address difficult, complex issues
- Ability to multitask, prioritize, and delegate
- Institutional knowledge and experience with sponsored research.

**Tip:** *It is recommended that the AD become actively involved in at least one professional organization that monitors changing standards, such as the National Council of University Research Administrators (NCURA), the Society of Research Administrators International (SRA), or the National Association of College and University Business Officers (NACUBO). These contacts and resources for continuing professional education are very valuable.*

[See Attachment 6.3 – Sample AD Job Descriptions](#)

### 6.1.3 ERC Operational Functions

The first order of business will be to review all the ERC operational functions and create a staffing plan in close cooperation with the leadership of the center. The administrative structure should be designed to support the strengths and expertise of all the team members. The AD will need to delegate tasks and responsibilities and establish priorities and goals for center administration. ERC operational functions typically include the following:

- Administrative coordination of center activities
- Program grant/contract administration and compliance
- Accounting/financial planning
- Human resources management
- Information Technology – systems development, database design, and management of data
-

Annual report production

- Communication and public relations
- Conference and events planning and management
- Facilities management.

## 6.1.4 ERC Life Cycle

ERCs attract creative, entrepreneurial individuals who are eager to build something new. An ERC continually balances a dynamic tension between creative change and organizational stability. The focus on innovation helps to explain the unique character of the NSF ERC, and management expectations will shift over time. The exciting bursts of activity required to do something for the first time are replaced by a heightened focus on longer-term goals so that delegation, collaboration, and teamwork become increasingly important as the center evolves. . An effective AD should be able to handle any of these challenges to help the center achieve its stated vision.

Major transition periods may be precipitated by NSF Annual and Renewal Site Reviews, industrial and advisory board input, construction of new facilities, major remodeling activities, physical moves, and the eventual phase-down of NSF support in the later years of the award. Centers will need to respond to significant changes affecting the university partners, government and industry. Changes in the leadership team, participating faculty, key program staff or University officials may also impact the strategic plans of the center. Management plans need to be flexible and responsive to these forces in addition to the evolving research. Figure 1 illustrates the key components of an ERC “year.”

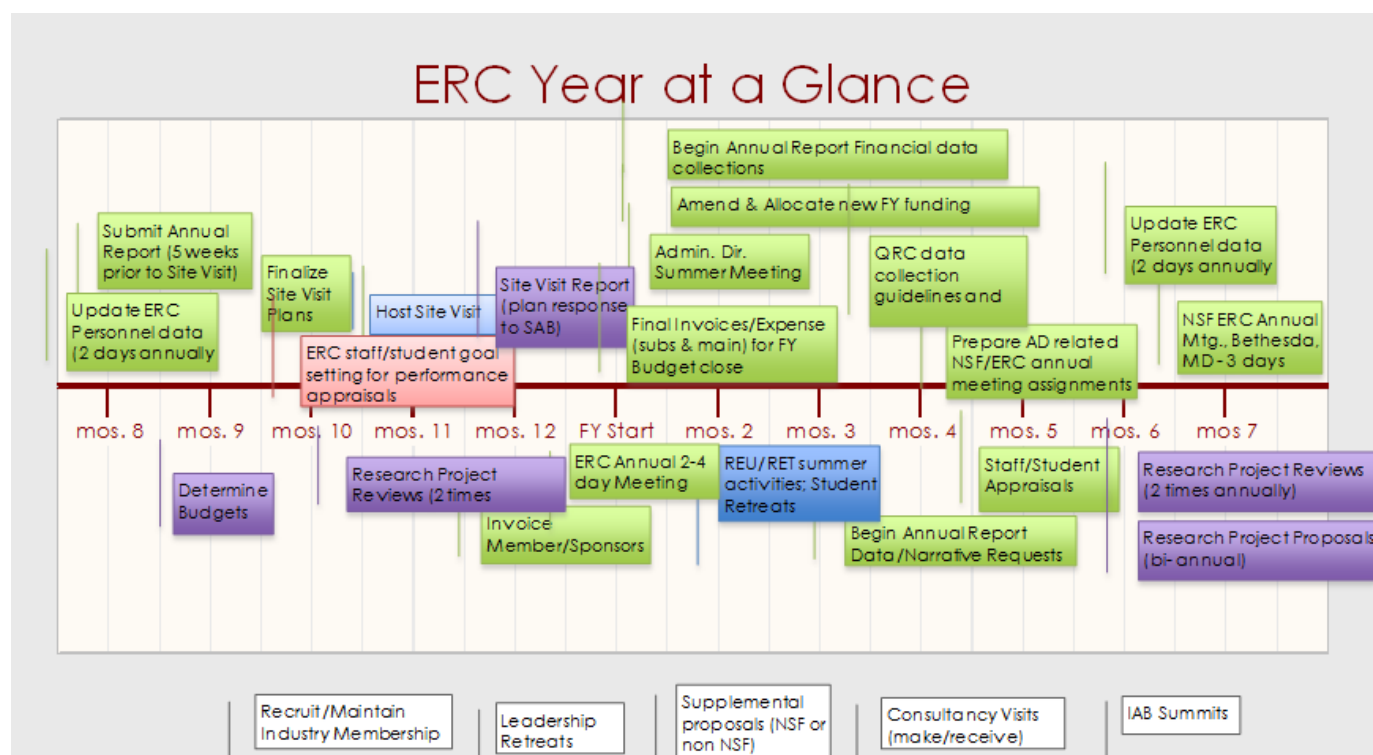


Figure 1. ERC Year at a Glance (Credit: Lisa Wissbaum, ERC for Compact and Efficient Fluid Power, University of Minnesota)



### 6.1.5 Reporting Time Periods

It is critical to understand the multiple fiscal and reporting time periods for an ERC. This information will guide the development of financial and management systems.

#### **Key Definitions**

**Award Year** – A 12-month period that begins on the date that the ERC first receives NSF funding, which is the official “award date.” The Award Year start and end dates remain constant throughout the life of the center.

**Reporting Year** – The ERC Reporting Year is a 12-month period established by the ERC Program Officer and the Center Director when the NSF Cooperative Agreement is awarded.

**Fiscal Year** – The Federal Fiscal Year runs from 10/1 to 9/30. Each partner institution’s Fiscal Year and State Fiscal Year can differ.

The term “year” may also refer to the Calendar Year or the term of an industrial partnership. In addition, the ERC program requires data based on the Prior and Current Reporting and Award Years as well as promised and actual funding information. These distinctions have a profound impact on management and reporting of budgets, revenues, and expenses. It is important to understand the ERC reporting requirements and the University’s financial system in order to generate reports for specific time periods, and it is usually necessary to create a shadow system. The [Guidelines for ERCWeb Data Entry](#) provide more detail.

## 6.10 Summary

“The goal of the ERC Program is to integrate engineering research and education with technological innovation to transform national prosperity, health, and security. ERCs create an innovative, inclusive culture in engineering to cultivate new ideas and pursue engineering discovery that achieves a significant science, technology, and societal outcome within the 10-year timeframe of NSF support.” [NSF 15-589](#)  
<https://www.nsf.gov/pubs/2015/nsf15589/nsf15589.htm>

It takes time to design an organizational structure that will facilitate achievement of these goals. The Administrative Director can lead the effort to provide stable yet flexible management systems, while working with and challenging existing institutional policies and procedures. In addition, the AD can play a key role in establishing priorities, managing conflicts, dealing with barriers and promoting the work of the Center. The ERC will evolve as the team is constructed and all members work together to integrate and implement the ERC key features of research, workforce development and innovation ecosystem development.

## 6.2 Program Administration and Compliance

It is important to work closely with the institutional sponsored programs offices to manage this large, complex cooperative agreement with many academic and industrial partners. ERCs push the envelope in regards to research, technology transfer, education and outreach, and administration as well. The AD should take the time to meet with the people who help manage proposals and awards and understand their roles in order to learn how to move things through the system. In addition, the AD should do the same with administrative staff at partner institutions, since most people feel excited and proud to be part of such a dynamic program. The AD will create a “win-win” situation by integrating administrative personnel into the project and inviting them to meetings and



reviews. The “Authorized Organizational Representative” (AOR) is usually the director of the institutional sponsored programs office, and the AD will interact with her/him throughout the life of the center. The goal is to fulfill the terms of the cooperative agreement while adhering to laws and rules of federal, state and local government, the academic institutions, the ERC program, and the NSF – this is not always straightforward. Understanding the rules and keeping good records is a shared responsibility between the lead institution and the academic partners.

**Tip:** Regular teleconferences with financial and sponsored programs staff at each partner institution can facilitate communication and minimize misunderstandings and problems.

### 6.2.1 Award Management Resources

It can be confusing to know where to look for information or guidance. The AD should become familiar with key award management reference documents and websites.

- **ERC Library** – This website is maintained by the developer (ICF International) of the ERCWeb Annual Report Data Entry System. The library contains Guidelines for Preparing Annual Reports and Renewal Proposals, Guidelines for ERCWeb Data Entry, Annual and Renewal Site Visit Guidelines, Performance Review Criteria and Protocol, Glossary of terms, and other useful ERC program specific documentation. <https://www.erc-reports.org/public/library>
- **ERC Association website** -This website is a resource for all those involved in the NSF ERC program. It contains information on the program, the individual centers, and their achievements, research initiatives, innovation ecosystem development, education programs, and the ERC Best Practices Manual. <http://erc-assoc.org>
- **Cooperative Agreement** – Each center’s official cooperative agreement with NSF can be found on the **NSF Fastlane** website under the Principal Investigator’s login. <https://www.fastlane.nsf.gov/>
- **NSF Award Conditions** [http://www.nsf.gov/awards/managing/award\\_conditions.jsp?org=NSF](http://www.nsf.gov/awards/managing/award_conditions.jsp?org=NSF)
- **Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards** 2 CFR Chapter I, and Chapter II, Parts 200, 215, 220, 225, and 230. This “omni-circular” or “supercircular” consolidates the regulations of eight OMB circulars (A-21, A-50, A-87, A-89, A-102, A-110, A-122, A-133) into one uniform set of regulations for all grant recipients. Effective December 26, 2014. [http://www.ecfr.gov/cgi-bin/text-idx?SID=1d6de4ac49815c17087194eb72498042&tpl=/ecfrbrowse/Title02/2cfr200\\_main\\_02.tpl](http://www.ecfr.gov/cgi-bin/text-idx?SID=1d6de4ac49815c17087194eb72498042&tpl=/ecfrbrowse/Title02/2cfr200_main_02.tpl)
- **Proposal and Award Policies and Procedures Guide** (includes Grant Proposal Guide (GPG) and Award and Administration Guide (AAG) [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=nsf14001&org=NSF](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf14001&org=NSF)

Circulars which will be replaced by the super-circular on December 26, 2014:

- OMB Circular A-21, Cost Principles for Educational Institutions-Relocated to 2 CFR, Part 220 (30 pages) [http://www.whitehouse.gov/omb/circulars\\_a021\\_2004/](http://www.whitehouse.gov/omb/circulars_a021_2004/)



- OMB Circular A-110, Uniform Administrative Requirements for Grants and Other Agreements with Institutions of Higher Education, Hospitals and Other Non-Profit Organizations - Relocated to 2 CFR, Part 215 [http://www.whitehouse.gov/omb/circulars\\_a110/](http://www.whitehouse.gov/omb/circulars_a110/)
- OMB Circular A-133, Audits of States, Local Governments and Non-Profit Organizations (includes revisions published in the Federal Register [http://www.whitehouse.gov/sites/default/files/omb/assets/a133/a133\\_revised\\_2007.pdf](http://www.whitehouse.gov/sites/default/files/omb/assets/a133/a133_revised_2007.pdf))

### **Key Definitions**

**Authorized Organizational Representative (AOR)/authorized representative** – The administrative official who, on behalf of the proposing organization, is empowered to make certifications and assurances and can commit the organization to the conduct of a project that NSF is being asked to support as well as adhere to various NSF policies and grant requirements. <http://www.nsf.gov/pubs/policydocs/pappguide/nsf14001/index.jsp#definitions>

**Cooperative Agreement** – Type of assistance award which should be used when substantial agency involvement is anticipated during the project performance period. Substantial agency involvement may be necessary when an activity is technically and/or managerially complex and requires extensive or close coordination between NSF and the awardee. Examples of projects which might be suitable for cooperative agreements if there will be substantial agency involvement are: research centers, large curriculum projects, multi-user facilities, projects which involve complex subcontracting, construction or operations of major in-house university facilities, and major instrumentation development. <http://www.nsf.gov/pubs/policydocs/pappguide/nsf14001/index.jsp#definitions>

### **6.2.2 Compliance Decisions**

Official guidance on grant compliance is contained in the Office of Management and Budget publication, 2 CFR Chapter I, and Chapter II, Parts 200, 215, 220, 225, and 230 [Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards](#). This “omni-circular” or “supercircular” consolidates the regulations of eight OMB circulars (A-21, A-50, A-87, A-89, A-102, A-110, A-122, A-133) into one uniform set of regulations.

Figure 2 illustrates the many factors involved in making grant management decisions. The NSF Cooperative Agreement is the ruling document for each center, but this document must be considered in relation to institutional policies and public laws, as well as the ERC Program Rules, the NSF Agency Terms and Conditions, and the OMB Circulars. It is always smart to document the reasoning behind complex decisions as the center works to establish clear and consistent policies.



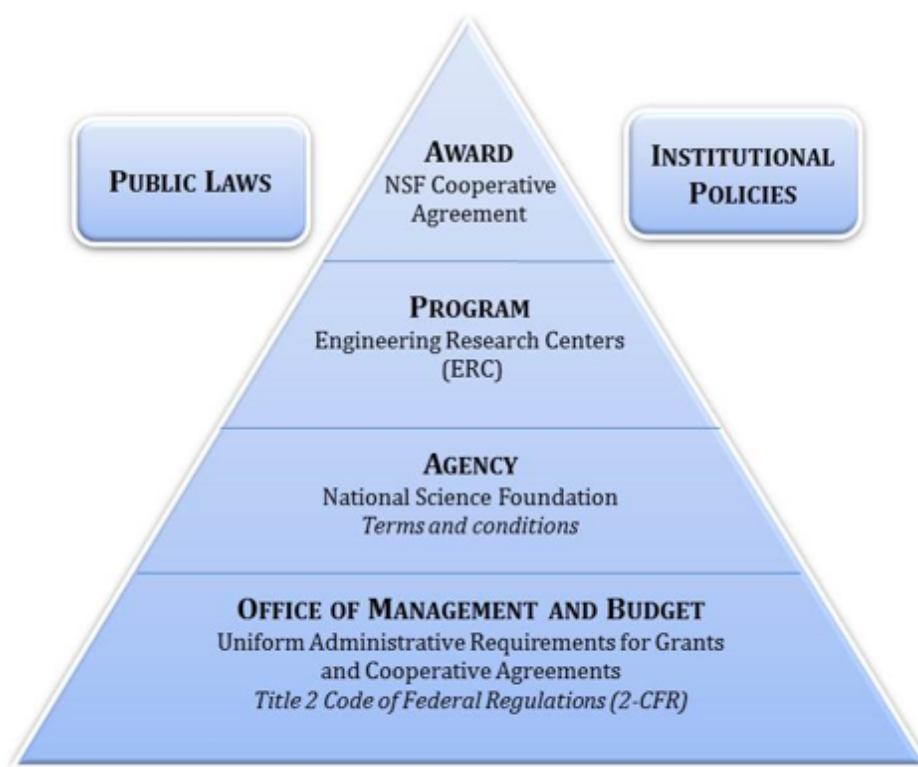


Figure 2. Compliance Diagram

### 6.2.3 General Cost Principles for Educational Institutions

Academic institutions will have procedures and policies in place to ensure that all costs charged to federal grants are allowable, allocable, and reasonable.

- **Allowable** – must meet the sponsor's definition of categories permissible to be charged to the project it funds
- **Allocable** – costs must be charged to a project in proportion to the benefit received
- **Reasonable** – the action that a prudent person would have taken at the time the decision to incur the cost was made.

This determination can be complicated however, especially since an ERC is charged with creating an innovative innovation ecosystem and must interact with industry and a Student Leadership Council in non-traditional ways. It can be challenging to characterize the various types of support such as grants, industrial membership fees, donations, gifts, and other contributions. Document the decisions and reasoning and be as consistent as possible.

### 6.2.4 Audits of Federal Awards

Annual audits of federal awards are conducted at each academic institution, and the NSF ERC program award may





be selected for audit at any time. Expenditures on federal awards must comply with the [Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards](#). Always check institutional rules and work with local accounting offices to monitor compliance; but some high-level guidance is provided below:

**Mandatory Cost Share and Matching Funds Information** – Closely monitor compliance with mandatory cost sharing obligations stated in the cooperative agreement and keep documentation. Committed cost share effort should also be tracked. Note that industrial membership fees are considered program income generated as a result of a federally sponsored project, making program income unallowable as eligible cost sharing

**Sub-recipient Monitoring** – PIs are required to monitor the activities of sub-recipients to ensure that performance goals included in the subaward are achieved and cost share commitments are documented. All sub-recipient invoices must be approved and signed by the PI attesting that charges are consistent with the scope of work and within the approved budget for the sub-recipient.

**Cost Transfers and Timeliness of Charges** – All charges and cost transfers should be processed within 90 days of the original transaction. Transfers exceeding the 90 day limit will usually require a detailed justification. All cost transfers require explanation of the original error and justification of transfer to the grant.

**Administrative and Clerical Salaries** – The salaries of administrative and clerical staff are not normally directly charged to a federal grant, but direct charging of these costs is allowed for major projects such as an ERC if the budget explicitly provides funds for administrative or clerical staff to complete specific tasks. New guidance suggests that administrative support that is integral to the project may be allowable.

**Administrative Supplies and General Purpose Equipment** – Administrative supplies (copy paper, toner, bottled water, etc.) and general purpose equipment (desktops and laptops, cell phone charges, fax machines, and copiers) are not normally directly charged to a federal grant unless there is a specific requirement in the grant for these items and the items are used primarily and directly for the project.

**Subsequent Changes in Level of Effort from Proposal** – PIs are required to notify NSF if their percentage of effort changes significantly from the level specified in the proposal.

**Program Income** – PIs should ensure that all program income is properly calculated, recorded and expended in accordance with program requirements.

**Disclaimers and Acknowledgments Contained in Publications** – PIs should ensure that all publications and presentations include proper disclaimers and acknowledgments of NSF support.

[See Attachment 6.4 – Sample NSF Acknowledgment Language](#)

**Timely Filing of Progress and Technical Reports** – PIs should ensure that the Annual Report is submitted to the NSF Program Officer, to Fastlane and Research.gov, and that print and CD copies are mailed to NSF by the required due date.

**Disposition and Transfers of Equipment** – Be sure to track the purchase, transfer, and disposal of all equipment. Equipment transfers to other institutions, changes in location and disposals of equipment need to be authorized and processed correctly according to the rules of the institution.

### 6.2.5 Responsible Conduct of Research (RCR)

Each academic institution is required to ensure that research is conducted in an ethical manner. Determine the institutional requirements and set up a plan to facilitate compliance. This can entail an online training program or a simple signed acknowledgement, but it is specific to each institution. Refer to Section 7009 of the “America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act (42 U.S.C. 18620-1).” This section of the Act requires that “each institution that applies for financial assistance from the Foundation for science and engineering research or education describe in its grant proposal a plan to provide appropriate training and oversight in the responsible and ethical conduct of research to undergraduate students, graduate students, and postdoctoral researchers participating in the proposed research



project." <http://www.nsf.gov/bfa/dias/policy/rcr.jsp>

### 6.2.6 Protection of Human Subjects

Each academic institution in the ERC will need to adhere to the [Code of Federal Regulations for the Protection of Human Subjects \(45 CFR 46\)](#)

There is usually an office on campus responsible for monitoring protection of human subjects and the center research may require approval of an Institutional Review Board (IRB). The experts on each campus can offer guidance to ensure compliance.

The NSF supports research involving human subjects when the project has been certified by a responsible body to be in compliance with the federal government's "Common Rule" for the protection of human subjects. The official NSF version of Code of Federal Regulations 45 CFR 690.101-124 is available at <http://www.nsf.gov/bfa/dias/policy/docs/45cfr690.pdf>. The regulations give grantee institutions the responsibility for setting up "Institutional Review Boards" (IRBs) to review research protocols and designs and ensure the protection of the rights of human subjects. <http://www.nsf.gov/bfa/dias/policy/human.jsp>

### 6.2.7 Effort Reporting

Effort reporting is the federally-mandated process by which the salary charged to a sponsored project is certified as being reasonable in relation to the effort expended on that project. Each academic institution establishes a process for effort reporting and the documented policies and procedures must meet the federal standards. Effort reporting is usually done on an annual basis, but it is important to understand the concept so that salaries can be apportioned appropriately throughout the year.

### 6.2.8 Conflict of Interest

Each academic institution will have a Conflict of Interest (COI) policy and will construct a management plan when a conflict is disclosed. An actual, potential, or appearance of conflict between the personal interests of the individual and the University or the public are addressed by a University Board or central administrative office. Financial conflicts of interest can arise in an ERC due to the involvement of industrial partners and the development of the innovation ecosystem. Refer to the Guidelines for Preparing Annual Reports and Renewal Proposals for specific reporting requirements and see Chapter 5, Section 5.3.4 of this Manual for further information.

### 6.2.9 Intellectual Property

ERC researchers work at the interface of discovery and innovation, and will therefore generate intellectual property and deal with technology transfer. Section 5.3.2 of the this Manual presents detailed information, but the Administrative Director should be prepared to work closely with the ERC's Industrial Liaison Officer and the lead and core partner institutional offices to facilitate transactions such as:

- Documentation of Invention disclosures
- Licenses
- Patent process



- Materials Transfer Agreements (MTAs)
- Confidential Disclosure Agreements (CDAs)
- Intellectual property clauses for Sponsored Research Agreements
- Industry membership agreements.

### 6.2.10 Sub-recipient monitoring

Academic partners of the ERC will have subcontracts (or subawards) that outline the responsibilities of each party. These institutions may be called sub-awardees, subcontractors, or sub-recipients. The technical and programmatic section of the contract will detail requirements for progress reports, deliverables, and milestones. The financial section will specify dollar amounts and invoicing procedures, and the contract will always follow the institutional policies and terms of the NSF Cooperative Agreement. The AD should work closely with the Sponsored Programs office to make sure that the means of monitoring activities and measuring compliance are appropriate.

## 6.3 Financial Management

Once the Cooperative Agreement award has been received and reviewed by the university research office, a notice of award is sent to the Principal Investigator. The notice should contain the award/proposal number, budget period, any cost-sharing requirements, a continuation statement, terms and conditions, the Principal Investigator and key personnel, the sponsor's code for type of funding, period of the award, report dates, and a copy of the full Cooperative Agreement. These are key documents for every ERC.

### 6.3.1 Developing a Financial Management System/Chart of Accounts

A new center then needs to establish a financial management system in order to allocate and disburse funds and begin work. The system should reflect the interdisciplinary nature of an ERC and the complex program reporting requirements, and should function in compliance with federal, state, and institutional regulations. It's important to work with the university accounting department to design a Chart of Accounts (COA) and determine how the shadow system will interact with existing institutional systems to manage all center sources of support and expenditures. Read the Guidelines for ERCWeb Data Entry to understand the level of detail required. Give careful thought to the coding system as well, since this is the heart of the center's internal reporting structure. For example, some centers establish a "parent-child" account relationship in order to maintain stronger control of subsequent resource distribution. The "parent" account(s) may be sub-divided into various "child" accounts for the purpose of distributing funds to the proper research thrust and sub-thrust areas. Keep in mind that "center control of funds" is a key ERC management principle and impacts reporting in all areas.

#### **Critical Questions**

- Does the university provide financial management information in a timely manner? Will reports reflect activity and encumbrances immediately and give an accurate report of funds remaining?



- Do the codes embedded in the university's central system include all of the expense and revenue categories required for ERC reporting?
- Does the general ledger system allow posting of "soft" money or "pre-encumbrances"?
- Is the system interactive or query-only? How are the parameters for queries set?
- Can the center's shadow system be linked with the university system? How will the ERC's system records be reconciled with the central ledger?

The center will need to develop the operating budget and then determine the schedule for routine and in-depth budget reviews. Periodic summary activity reports or spending projections may be required; their frequency will depend upon the complexity of the budgets and the needs of the center management team, thrust leaders, individual PIs, and the university administrators. Evaluate the system from each of these "customer" perspectives to see if the necessary detail is captured. The structure should help to organize, support, and enhance center activity, but not rule the strategic planning process. Ensure that all on the leadership team understand the center budget principles.

### 6.3.2 Time Periods

In establishing the system and developing budgets, it is essential to understand the reporting time periods (Award and Reporting Years; Current, Prior, and Proposed) and concepts such as funds that are "received" or "promised." Refer to the [Guidelines for ERCWeb Data Entry](#) and be sure to make use of the glossary. The Award Year will be based upon the award date of the NSF Cooperative Agreement and will be noted in all official correspondence. The Reporting Year is established by the center in the first year of operation to facilitate consistent data reporting due to the fact that the Annual Report is submitted before the Award Year is complete. Once set, these dates do not change over the life of the center. Other sources of funding may have different fiscal periods, and these differences will have an impact on the management of budgets, revenues, and expenses.

### **Critical Questions**

- Which funds can be "rolled forward"? (Must you "use it or lose it"?)
- How is "carry forward" calculated and managed? Is carry forward managed consistently at each partner institution and is it sponsor dependent? Clarification is needed to avoid reporting problems.
- Will you need to budget split fiscal years for revenues and expenditures? How will you reconcile different fiscal years in summary reports for all funds?
- How will you "close" your books at the end of each fiscal year? What steps are needed to ensure that internal re-budgeting decisions are posted within the central system?
- How will you manage grant close-outs and final reporting?



### 6.3.3 Financial Support

Financial support for the ERC comes from many sources, and the way the institution handles the funds might not match the way the support is reported to the ERC program. It is important to know the type, sector, location, and size of each organization that provides support. It is also necessary to understand the type of support and value of the support that is being provided. The institution may differentiate between grants, cooperative agreements, supplemental awards, contracts, gifts, and membership fees for account setup, and then the ERC program reporting will require additional specificity. Refer to the [Guidelines to ERCWeb Data Entry](#) for specific details.

#### **Key Definitions**

**Direct Costs** – Costs readily identifiable and related directly to the goods or service provided. Examples include salaries (including tuition remission), fringe benefits, general operating expenses such as materials and supplies, travel, facilities, and equipment.

**Direct Sources of Support** – Funds provided directly to the center and identified as either “Restricted Cash” (for a purpose specified by the sponsor such as an ERC sponsored project) or “Unrestricted Cash” (no specific purpose specified).

**Indirect Costs** – The overhead cost charged to a grant or contract by the institutional sponsored program’s office. Also referred to as “overhead” or “facilities and administrative costs.”

**Indirect Sources of Support** – Funding to an ERC faculty member’s department for a project that is vital to the ERC’s research and is in its strategic research or education plan. These projects are called “associated projects.” Only direct costs for associated projects should be reported (no indirect costs or reserves remaining). Indirect support is reported at the project level in Tables 2 and 11 and collectively in Table 9 on ERCWeb.

**Tip:** *Include specific language regarding how financial data should be reported in the subcontracts to partner institutions.*

**In-Kind Contributions and Gifts** – If the center is the beneficiary of in-kind support (new construction, new facilities, visiting personnel time, etc.), the value of these contributions or gifts will need to be determined and recorded. Become familiar with university policy and procedures for recognizing such gifts as revenue and recording them in the property inventory.

**Tip:** *Collect in-kind documentation throughout the year and, ideally, as soon as the contribution is received, but definitely before the end of the calendar year. Companies will want their records to accurately reflect contributions for tax purposes. Document the value with a letter signed by the contributor and verify the amount.*

**Cost-share** – It’s important to clarify terms such as “cost-sharing” and “matching,” as they may have different interpretations at the agency, program, and institutional levels. Cost-share requirements for the ERC program will be spelled out in the NSF ERC Cooperative Agreement, and the institutional policies will impact how cost-share is implemented and documented. Cost-share certification is required yearly, so it is useful to work with the Authorized Organizational Representative (AOR) of the lead institution to determine how this will be accomplished. The subcontract agreement should specify what is required of the partner institutions.

### 6.3.4 Budgets/Re-budgeting

An ERC must create and maintain budgets by expense category as well as by function, for reporting purposes and for center management across thrusts and institutions. The requirements are detailed in the Guidelines for ERCWeb Data Entry. Re-budgeting is often required in response to the annual site review or sponsor needs. Although the process can be time consuming and complex, it may be necessary as milestones are achieved, timelines fluctuate, and strategic plans evolve. Effective financial management strategies make best use of total resources and manage cash flow aggressively.



### 6.3.5 Expenditure Budget Categories

The ERC Expenditure Budget includes the expense categories that match the standard NSF Form 1030. Output of this information is displayed in Annual Report Table 10.

1.  
Salaries – Senior personnel
2.  
Salaries – Other Personnel
3.  
Fringe Benefits
4.  
Equipment
5.  
Travel
6.  
Participant Support
7.  
Other Direct Costs
8.  
Indirect Costs

### 6.3.6 Functional Budget Categories

The ERC Functional Budget is input to the ERCWeb on several screens and the output is displayed in Annual Report Tables 8 and 8c.

- Research Thrust
- Education Programs
- Pre-College Activities
- University Education
- Student Leadership Council
- Young Scholars



- REU
- RET
- Assessment
- Community College Activities
- Other (explain in narrative)
- General and Shared Equipment
- New Facilities/New Construction
- Leadership/Administration/Management
- Industrial Collaboration/Innovation Program
- Center-Related Travel
- Residual Funds Remaining
- Indirect Cost

**Tip:** It may be useful to develop initial budgets for each major funding source, documenting the intended use or purpose of separate funds and identifying any restrictions or cost-sharing requirements.

**Tip:** The return of Facilities and Administration (F & A) funds, also referred to as “overhead” or “indirect,” is a significant factor in the budget of some centers. Take the time to understand how this is calculated at your institution and incorporate this into the budget.

### 6.3.7 Leveraging Funds

The concept of "leveraged funding" is important for the achievement of ERC goals. By design, projects are highly interwoven and dependent upon one another, and the budget for an ERC does not come solely from NSF. The center's budget may be complex, reflecting multiple funding sources with different award periods and different expectations. Utilize funds to maximize the return on investment by each sponsor. A mixture of long-term and short-term awards means that the center budget may exceed the limited time frame set for most university budget development processes. Allocations will cross department, college, and institutional boundaries.

Reporting on Associated Projects can be complicated, as there is judgment involved in determining the percentage of the award that is applicable, and the start and end time periods will vary. If the award is split funded and treated as such in the University accounting system up front, then the center will have control of the funds and reporting is more straightforward. If not, then the rules for Associated Project reporting apply.





### **Key Definition**

**Associated Project** – A project that is central to either the research strategic plan or education strategic plan and that is awarded to the home department of an ERC faculty member. Associated project funds are not controlled by the center and are reported as indirect sources of support. Only direct costs for these projects should be reported (no indirect costs or reserves remaining).

For associated projects whose funding is part of a larger award that includes faculty outside the center, include only the funding percentage that is directly in support of the center's strategic plan or vision, and only the percentage budgeted for the Current Award Year. It should be documented how this prorating was calculated.

### **6.3.8 Financial Reporting**

The financial reporting for the center will be shaped by the ERC program requirements as outlined in the reporting guidelines and in conjunction with existing institutional policies and the center management needs. Work to understand the ERC program requirements and then determine what variations or additional information may be needed. Maintaining documentation is critical for audit purposes and the ERC leadership team should be able to justify and backup everything that is submitted in the Annual Report. Be sure to also follow institutional retention policies. The following information must be easily accessible either centrally or within the ERC:

- Proposals and revisions or amendments
- Award notice with terms and conditions
- Budget and expenditure detail
- Cost share documentation
- Subcontracts with all associated documentation
- Equipment requisitions
- Service agreements
- Financial reports, including narrative/technical reports
- Invoices
- Project/grant close-out documents
- Agreements and MOUs
- Checks received as payments



- In-kind donations documentation of value
- Industrial relationship correspondence if a membership agreement is not in place.

**Tip:** Remember that final reports may be required by the university as well as each sponsoring agency as part of the grant closeout requirements. Detailed information on expenditures, residuals, personnel (including person-months per category), technology licensed, patents, publications, and a research progress report may be needed.

### 6.3.9 Financial Accounting

Financial accounting functions may be performed by the university central accounting office, department and/or ERC staff. There are varying levels of authority required for transaction processing and approvals, so work to confirm institutional role expectations early on and create efficient procedures. Financial accounting tasks include:

- Account set up and maintenance
- Budget creation and maintenance
- Membership and service fee invoicing
- Accounts Payable
- Accounts Receivable
- Expenditure review and projections

### Key Definitions

**Cash Basis Accounting** – records revenue when received, records expenses when paid.

**Accrual Basis Accounting** – records revenue when earned (but not necessarily received), records expenses when incurred (but not necessarily paid for).

### 6.3.10 Pre-Award Spending Authorization

A PI may sometimes request authorization to begin spending before the official award has been received by the university. This will require sponsor confirmation of the award amount, start and end dates, and an estimate of when the formal award will be processed. It can be useful to set up accounts and begin spending as soon as notification is received, so look into the institutional requirements for pre-establishment of accounts. Pre-award authorization may also facilitate the distribution of continuation or renewal funds.



### 6.3.11 Human Resources

The financial management of human resources is integral to center operations. Personnel and positions change over time and the systems should be flexible.

#### **Key Considerations**

- Development of position descriptions
- Tracking staff appointments, changes, and terminations
- Payroll processing
- Effort reporting
- Compliance with union requirements
- Negotiation/processing of classified vs. professional positions
- Resolution of Visa/citizenship issues

**Tip:** Research universities are required to maintain an effort-reporting system that allows faculty, staff, and student employees to certify the portion of their total effort expended in support of each sponsored project. Be sure to understand the institutional effort reporting system when making appointments or salary commitments.

### 6.3.12 Purchasing

The university will have established policies and procedures for purchasing goods and services that adhere to federal regulations. The cost principles governing expenditures of federal funds and procurement procedures are contained in the Office of Management and Budget publication, [Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards 2 CFR Chapter I, and Chapter II, Parts 200, 215, 220, 225, and 230](#).

Design a system to support the acquisition of materials, supplies, and equipment in a timely and efficient manner. Determine responsibility for processing and tracking purchase documents, approval of acquisitions, and processing of payments. Centralized purchasing functions allow for strict monitoring and control of center funds. Decentralized systems may seem more efficient, but may not facilitate collaborative research as effectively. Decisions regarding purchasing strategies should be made early on and communicated to the entire center leadership team.

If funds are available for physical plant/infrastructure needs, the center will need to manage the funds and be responsible for inventory records and property accounting. In some cases the expenditures for physical plant will also meet cost-sharing commitments. Refer to institutional policies regarding depreciation of equipment, as this is often handled differently at each university.

### 6.3.13 Audits



The center is subject to both internal and external audits. Audits may be financial and/or operational and the purpose is to show that the ERC is well managed and in compliance with the institutional policies and federal regulations. An auditor may review all records, processes, and purchases. See Compliance section.

**Tip:** *There isn't adequate time to organize your records during an audit; be prepared from the first day of the award setup. Retain as much detailed information as possible.*

### 6.3.14 Proposals and Supplemental Funding Requests

Each university has a proposal submission process that complies with sponsor requirements and state and federal regulations. This is usually managed by the sponsored programs office. An ERC will submit renewal proposals in Years 3 and 6, and may also submit proposals to other sponsors or request supplemental funding from NSF throughout the life of the project. Each of these requests for funding will be managed according to sponsor and institutional requirements. There might be a published solicitation with very specific guidelines, or the funding opportunities might be more open-ended and flexible. Sponsors can include federal, state, or local government agencies, industry, academia, foundations, or non-profit entities. An ERC is expected to supplement the main award with funds from multiple sources, so submitting proposals and managing new awards and supplements is an ongoing activity which ramps up as plans for self-sufficiency develop.

## 6.4 Human Resources

NSF expects the ERC to rest on a culture of inclusion where faculty, students, and staff from all backgrounds have an opportunity to succeed in research, education, innovation, and administration. Thus, the leadership team, faculty, students, and staff involved in an ERC will be diverse in their experiences as well as diverse in gender, race, and ethnicity—i.e., women, African Americans, Native Americans, Pacific Islanders, Alaskan Natives, Hispanic Americans, or persons with disabilities who are U.S. citizens or permanent residents. The ERC also will be multicultural through the involvement of faculty and students from other countries by virtue of their role as faculty or students in the center's domestic institutions. The ERC may also include veterans as faculty, students, and staff, as well as members of the ERC's RET teacher corps. The goal is to have broad participation of groups underrepresented in engineering that exceeds the academic engineering-wide national averages and continues through time on an upward slope in relationship to those national averages. See the discussion under Infrastructure in the Gen-3 ERC solicitation: <http://www.nsf.gov/pubs/2013/nsf13560/nsf13560.htm>.

This diversity is expected of the participants from the lead and each of the partner academic institutions. While one of the partner institutions must serve large numbers of students majoring in STEM fields who are from groups underrepresented in engineering, that institution cannot be the only contributor to the diversity of the ERC. Collaborating foreign faculty are expected to respect the diversity of the ERC's faculty and students and provide inclusive research and education environments. Because of the multicultural nature of the ERC, the participants have to be mindful that the language of discourse in the ERC's laboratories will be English to maintain an inclusive environment for all. The lead and domestic partner universities are likely to have programs—some of them NSF-funded (e.g., ADVANCE, etc.)—and offices that are established to impact a culture of inclusiveness at the respective campuses. These programs and offices must be leveraged by the ERC. Annual reports will include quantitative information on the demographics of the ERC personnel, benchmarked against engineering-wide averages. Reports also will include information on progress and impacts in developing a culture of inclusivity and success for all of the ERC's faculty and students.

### 6.4.1 ERC Functions/Staffing Plan

To cover the required functions of an ERC, each center will need to develop a staffing plan based on existing talents, available resources, and priorities; and this plan will change over time. An informal study of 17 ERCs during the 1990s indicated that center support staff ranged in number from 3 to 19. The average number of administrative support staff was 7 FTE (full-time equivalents). The center's position in the ERC life cycle from startup to maturity will affect staff size and demand for support may be especially high during start-up and key transition periods. Effective staffing is essential to the success of the ERC; yet the pressures of starting a new center may lead to hurried hiring. Take the time to perform an analysis of the necessary functions, budget, and space available. Consider the use of temporary vs. permanent employees, student assistants, and outsourcing to university and



external services or consultants. Remember the need for flexibility in managing ERC resources. Review the ERC's master planning calendar and evaluate peak periods and functional conflicts. In drafting employment agreements, be prepared to balance the pressures of ERC growth and new program development against a simultaneous need for downsizing and reorganizing due to program shifts and funding changes over time. Understand that orientation and training for all personnel is an ongoing task and facilitates the development of a cohesive team. Below is a general outline of ERC functions to help guide the process.

General Management/Administration – The Director, Deputy Director, and Administrative Director work together with the research leadership team to manage center operations and execute the mission of the center.

Responsibilities include:

*Program Grant/Contract Administration and Compliance* – Work with central university offices to comply with institutional regulations and to establish supplemental center policies to ensure compliance with NSF Cooperative Agreement terms and conditions.

*Finances/Accounting* – A dedicated staff position will be needed to provide sound financial management of the ERC. Development of budgets and management of the sources of support and expenditures are critical functions and are immediately necessary. Establish a financial reporting system that reduces risk and enables proactive management. Include staffing to handle high-volume, routine tasks such as daily accounting, purchase orders, invoice processing, data base upkeep, and payroll operations. Determine how financial reports and projections will be produced; internally, at the department level, or by central staff.

*Human Resources* – There are frequent organizational and personnel changes during the life span of the center, and it is an ongoing task to manage hiring, employee supervision, and delegation of responsibilities.

*Information Systems* – Staffing this function adequately is pivotal to a smooth-running center. As an ERC matures, computer systems save valuable time and enable a small, coordinated ERC team to handle growing demands and constant change. Some centers have added system administrators to their staff. Others rely on faculty, students, or existing staff to introduce new technology and train others. Find the expertise to design databases, develop management systems, collect data for reporting, and maintain a website. The lead or partner institutions may provide resources, or the center may need to hire external vendors.

*Communication* – There is a great deal of variability among existing centers in staffing this area. All centers must write, edit, and produce general and technical materials. Some centers have dedicated positions devoted to graphics, editorial, and/or multimedia/computer systems support, while others outsource the production of publications. Often, there are many professionals within the ERC able to make creative contributions to center publications.

*Conference/Event Planning and Management* – Site Visit, Research Retreats, planning and Advisory Board meetings all require extensive advance planning and attention to detail.

*Infrastructure/ Facilities* – Procuring and managing the physical space for the center is an intense startup activity but also an ongoing responsibility.

*Administrative Assistance* – Whether in a one-person office or a large staff, the individual who answers the phone and greets guests is the face and voice of the center. This first point of contact is tremendously important and the position demands professional judgment. Administrative assistance is required for all center functions and there are a multitude of routine tasks. Many centers have experienced problems in trying to find and keep good people in these posts; one solution is to supplement regular staff with student help.

**Tip:** *When university students are employed, the center must determine what constitutes appropriate student involvement that does not interfere with their educational objectives. Duties vary from routine office tasks to dissemination of information on the web; technical assistance; coordination of REU and other educational outreach activities; and computer support.*

Research Thrust Leaders – The leadership team includes faculty members from across the domestic partner



universities responsible for leading and managing major research thrusts and testbeds of the ERC.

Industrial Collaboration and Innovation Ecosystem – The director for this function should be a staff member at the lead university who is responsible for developing the ERC's innovation ecosystem, marketing the ERC to industry/practitioners, gaining their financial support, developing and coordinating industrial/practitioner involvement with faculty and students, and managing the other partnerships for innovation and the translational research program.

University Education Program – The director of this function is a faculty member who is responsible for the development and execution of the ERC's university education program and is supported by other faculty, students, and staff in the execution of the program.

Student Leadership Council (SLC) – A student President and a student co-President lead the SLC, which is comprised of undergraduate and graduate students from all the partner universities. The SLC is responsible for coordinating activities in support of the ERC research, education, and technology transfer agenda.

Pre-College Education Program – The director of this function is a faculty or staff member who is experienced in pre-college education and is responsible for development and execution of the pre-college education program. The position is supported by faculty, students, and staff.

Diversity – The director of this function is a staff or faculty member who leads the development, implementation, and assessment of the center's diversity strategic plan. This person will have proven success in recruitment and retention of underrepresented groups in engineering or STEM fields. This may be the sole role of this person within the ERC's Leadership Team or he/she may hold another role in the ERC as well.

### **CASE STUDY: How we staffed our administrative office**

*The ERC was in its first year when the AD began work nearly four months in. At that time, she was the only person doing all the administrative tasks associated with running the center. This situation was untenable. She worked with the Center Director to develop a strategy for effective staffing to manage the tasks. They reviewed the functions required to separate and identify the various categories and tasks. One of the most important and time-intensive functions was managing the expenditures. It was decided that the second admin person would maintain shadow budgets, manage expenditures, make and monitor purchases and invoices, provide financial reporting to the AD, university officials, and NSF, and provide database management and support. The AD would continue to work on all other administrative functions of the center. At that time, the University was going through a hiring freeze. Therefore, they were able to upgrade an existing position for someone already working with the Director on another grant as admin assistant. They worked with the university's Human Resources office to work this out and after some time, were able make this arrangement official. This position was supported by the College of Engineering and served as part of the institutional commitment.*

*(Submitted by Lois Dalton Deve, AD, NSF Engineering Research Center for Revolutionizing Metallic Biomaterials, at North Carolina Agricultural and Technical State University)*

### **6.4.2 Position Descriptions**

Many centers have found that existing university personnel titles and pay scales are outdated and do not fit their needs. It is smart to take the time to explore alternative titles and options, rather than accepting the most commonly used classifications. Review overall center functions and tasks before finalizing position descriptions. Institutional personnel experts should be able to offer guidance on employment categories/titles and they will ensure that the university complies with laws and regulations regarding recruiting, hiring, conditions of employment, and termination. The university's personnel policies should also address regulatory issues such as equal employment opportunity, nondiscrimination, conflict of interest, sexual harassment, and drug and alcohol abuse. Determine essential qualifications before you begin to recruit and screen individuals.

**Tip:** *If you are having difficulty with your university's Human Resources or Compensation offices in classifying positions or allowing appropriate salaries because there are few, if any, similar positions on your campus, check*





with the ADs at existing ERCs. They may be able to provide you with comparable job descriptions or salary ranges in order to help you convince your university of the appropriate levels of compensation to match ERC needs.

**Tip:** Include allocations for both staff development and computer upgrades in the management budget. Be sure to stay within university guidelines in rewarding or paying center staff; don't develop your own pay scales outside these guidelines.

### 6.4.3 Departmental Interaction and Coexistence

Establishing the center's identity as a unique entity on campus is important. Problems can arise when both the home department and the center vie for individual loyalties, resources, or recognition. The ERC must build a separate identity, without competing with participating departments. Initial decisions regarding financial management and accounting, paperwork flow, and the levels of responsibility and interaction with departmental administrative staff will set the tone for the establishment of the center on campus. Alternative appointment strategies may need to be considered, since most of the ERC funding is considered "soft" (not backed by continuing state allocations or private endowments). Decisions regarding new hires of tenure track faculty will require cooperation and management of cost share. The department, the center, and the university should understand that NSF will ask each center to examine the progress of young faculty towards tenure. The center may have the option to appoint non-faculty staff directly within the ERC or through participating academic departments. Consider which approach will better enhance cross-disciplinary cooperation within the institution and evaluate the operational and resource issues. Also keep in mind that the ERC can be a powerful mechanism for fostering interdisciplinary research at the lead and partner academic institutions.

### 6.4.4 Personnel Records and Reports

A system to collect demographic and other personnel data over the life of the center is essential. A database is the easiest way to maintain the information, create historical reports and upload yearly statistics to the ERCWeb database. Affiliations and classifications change over time, so the system should be flexible and indicate start and end dates for each person. Remember that all demographic data must be submitted voluntarily by the individual and treated as confidential. Each institution will have policies in place regarding compliance matters such as Effort Reporting, Conflict of Interest, and Responsible Conduct of Research and it's important to understand those requirements.

**Tip:** Keep updated lists of personnel you interact with at each institution. These lists should include financial, sponsored programs, departmental staff, and higher-level administrators such as Department Heads, Deans, Chancellors, and Provosts.

#### Key Definition

**ERC Personnel** – individuals who are directly involved in executing activities funded by the center. They may be paid or unpaid and there are no minimum time requirements, but the type of involvement must be documented.

Take the time to make sure all participants understand the definition of ERC Personnel and provide them with an easy way to keep the information up to date. Below is the minimum required information needed for each individual:

Table 1. ERC Personnel Data Requirements

First Name
Last Name





Email address
Citizenship/Country
Institution/Organization
Role – Thrust and Project Association, NSF Classification and Personnel Type
Department
Discipline
Title within Institution
Gender
Disability status
Ethnicity
Race

[See Attachment 6.5 – ERC Classification/Personnel Types](#)

**Tip:** Respect the confidentiality of personnel data and indicate that the information you collect will be used only in the aggregate for NSF reporting purposes. Explain that statistical reports do not include data about any particular individual, and that the information is available only to administrative staff.

Be sure to track the employment history of ERC students when they graduate. Maintain a database or spreadsheet with the following additional fields for students:

*Table 2. Additional ERC Student Data Requirements*

Student Faculty Advisor
Student Graduation Date – Year
Student Graduation Date – Month



Degree Type-BS
Degree Type-MS
Degree Type-PhD
Name of Hiring Organization
Type of Hiring Organization
ERC Member Firm
Other US Industry
Other Foreign Industry
Government
Academic Institution
Other
Undecided or Still Job Hunting

**Tip:** Record the home institution for REU students, rather than the institution where they are conducting research.

**Tip:** When initially collecting demographic data, include a statement requesting permission to contact participants in the future for program evaluation and study. This is referred to as “future use consent.”

#### 6.4.5 Advisory Boards

Each ERC is supported by advice or guidance from external and internal boards and councils and the leadership team works to create and maintain relationships with the following boards:

**Scientific Advisory Board:** The Scientific Advisory Board (SAB) is comprised of outside experts who are selected by the ERC Leadership Team and meet collectively as a board at least once a year with the center.

**Industrial/Practitioner Advisory Board:** The Industrial/Practitioner Advisory Board (IPAB) will be comprised of 10 representatives of member companies/agencies/hospitals who meet collectively as a board twice a year to advise the ERC's leadership team and meet with the NSF site visit team. The IPAB will have a chair who organizes the board's activities in coordination with the Industrial Collaboration and Innovation Ecosystem Director and the Center Director.



**Internal Academic Policy Board:** Administrators from the lead university, including the Dean of Engineering, who meet collectively as a board with the ERC Director to coordinate ERC plans and policies with departmental and university leaders.

**Council of Deans:** Led by the Dean of Engineering from the lead university, the Council of Deans from the lead and partner academic institutions meets collectively as a board to provide administrative support of the ERC and to help facilitate the ERC's research, education, and innovation efforts across the lead and partner campuses.

## 6.5 Information Technology and Management

As early as possible, the ERC should design a systematic process for collecting and storing the large quantities of information needed to manage a multimillion-dollar operation. It is a challenge to determine the most effective and cost-efficient way to gather data across the institutions and miles. Be open to developing multiple strategies for data collection and reporting. A comprehensive, all-encompassing system might seem ideal, but designing such a system requires a level of experience and understanding that takes time to acquire. It may be best to begin with a step-by-step approach while simultaneously planning for a long-term solution. Be sure to consider user needs and ease of use for all participants. Determine how to leverage existing institutional information systems and collaborate with personnel from the accounting, grants management, and IT departments to come up with the best solution. Collect and maintain information on the activities of the center for multiple users and purposes, as is detailed below.

### 6.5.1 IT Requirements

Annual Report Data – The NSF ERC program requires extensive and detailed reporting. Key reference documents are online in the [ERCWeb library](https://www.erc-reports.org/public/library) <https://www.erc-reports.org/public/library>. The Guidelines for Preparing Annual Reports and Renewal Proposals and the ERCWeb Data Entry Guidelines are updated yearly on October 1 and contain detailed information regarding data that need to be collected and the tables and figures that will be produced for the Annual Report. The general categories are:

- Support
- Academic Institutions
- Personnel
- Research
- Budgets
- Outputs and Impact

Website/Intranet – Each ERC must design and maintain a website for outside constituents. Many centers will simultaneously design an intranet for center participants, specific research groups, and industrial or advisory partners. Other centers may instead use existing institutional software to facilitate online collaboration, or they may purchase and maintain their own collaboration tools.



**Mailing Lists** – Useful lists include: all center participants; participants by institution or organization, individual working groups, or project teams; and personnel categories such as faculty, staff, graduate students, undergraduate students, administrative support staff, and program or thrust leaders. Copy the ERC Leader or designate with updated Center mailing lists.

**Calendar** – An online resource that is easily updateable by select participants at each institution.

**Agreements and Certifications** – Work with the sponsored programs, accounting, and technology transfer offices to determine how to maintain official documentation. Be sure to track the NSF cooperative agreement base award and amendments, as well as supplemental and other grant proposals and awards.

**Inventory** – Hardware and software licensing details are usually required by each institution.

**Financial Records** – Maintaining and communicating accurate financial records is crucial. Ideally, new centers should meet with the sponsored programs and/or accounting offices in the first months of operation to find out how well the university system will support the NSF annual financial reporting requirements. Many ERCs create shadow systems using spreadsheets or databases. Every ERC should expect to be audited and must maintain documentation to verify all data submitted in the Annual Report. As noted above, the Guidelines to ERCWeb Data Entry contain detailed information regarding financial data that need to be collected and the tables and figures that will be produced for the Annual Report.

***Tip:*** *You will need to manipulate data by month and by cluster, thrust, and project level to develop the ERC's functional budget as required by NSF. Design a flexible system to accommodate that need.*

### 6.5.2 System Design

The IT system must allow for multi-platform access, which is why a comprehensive web-based system can be so useful. Be sure to document system development so that modifications can be made as needs and requirements change. Design a flexible, user-friendly system so that data input and output tasks can be delegated as warranted.

#### **Key Considerations**

- Hardware and software acquisition and maintenance
- Integration with University information systems
- Institutional IT policies
- Security
- Integration with the [ERCWeb Annual Report Data Entry System](#)

Look for technical expertise within each academic partner institution and utilize the skills and strengths of the ERC team members. It may be necessary to hire outside consultants or pay for in-house system development; but in any event, significant time and resources will be required. Consider how to integrate with existing institutional systems, since much of the needed information might already be available.

The ideal system will be easy to use and maintain. The goal will be to accommodate the needs of all users and to educate them on the value and use of the system. Much of the data will be collected to meet ERC and institutional



reporting requirements, but it's also important to support center-wide policies and goals. When designing the system, consider the multiple users of the data:

- National Science Foundation
- Academic Institutions – lead and all partners
- Center personnel – faculty, research staff, administrative staff, students
- Sponsors – industry and other organizations
- Advisory Board Members

**Tip:** Some centers have worked with a vendor to customize an open-source, web-based data collection system using Drupal. This system was originally developed in conjunction with the [Synberc Engineering Research Center](#).

### 6.5.3 Electronic Tools and Resources

Centers use a wide variety of tools to enhance collaboration and collect data. There is a cost involved with updating and change, so plan for testing, user education, and rollout tasks when considering upgrades or the purchase of new software. Email, word processing forms or templates, spreadsheets, online survey and questionnaire software apps may all be useful for different purposes. Examples:

- [Cisco WebEx](#) – meetings, webinars
- [Citrix GoToMeeting](#) – meetings, webinars
- [Dropbox](#) – online collaboration tool, file sharing
- [Survey Monkey](#) – questionnaire
- [Survey Gizmo](#) – questionnaire
- [Google Apps](#) – suite of collaboration tools
- [Doodle](#) – meeting scheduler

### 6.5.4 External Systems



The ERC Administrative Director will need to use a number of government and external systems for proposal and award management. Here is a partial list:

- [Grants.gov](http://www.grants.gov/web/grants/home.html) – Federal government centralized location for grant seekers to find and apply for federal funding opportunities: <http://www.grants.gov/web/grants/home.html>
- [NSF Fastlane.gov](https://www.fastlane.nsf.gov/) – NSF proposals, awards, and status: <https://www.fastlane.nsf.gov/>
- [NSF Research.gov](http://www.research.gov/) – NSF grants management system upgrade to Fastlane. Use to submit Annual Report: <http://www.research.gov/>
- [ERCWeb](https://www.erc-reports.org/public/login) – ERC Program Annual Report Data Entry System: <https://www.erc-reports.org/public/login>

## 6.6 Annual Report

The Annual Report presents a comprehensive picture of the strategic scope of the research, education, and inclusive ecosystem for interdisciplinary and industrial collaboration and innovation at the ERC. The report includes details about individual research projects and how each is integrated with the center's vision, as well as information on milestones achieved and future plans. Data is collected and benchmarked against other ERCs in multiple sectors and national diversity statistics are referenced. The process of writing the report can be a useful exercise, since all ERC participants are involved and the report serves as a foundation for the upcoming Site Review, but it is definitely a major undertaking. Keep in mind that there are multiple audiences for the report including NSF personnel (ERC program officers and staff); external reviewers; institutional administration, faculty, and staff; ERC personnel; and industrial and advisory board members.

Key reference documents are available in the [ERCWeb library](#). The Guidelines for Preparing Annual Reports and Renewal Proposals and the Guidelines to ERCWeb Data Entry are updated yearly on October 1 and contain information regarding data that needs to be collected and the tables and figures that will be produced for the Annual Report.

Production of the Annual Report requires extensive and detailed project planning and is a year-round, ongoing activity. The report consists of two volumes and specific requirements for each are detailed in the guidelines. It is important to thoroughly read and understand these guidelines, use the glossary, and then devise a project plan.

### 6.6.1 Project Planning

Many ADs find it useful to create their own outline of required components after studying the guidelines. The next step is to develop a timetable and production schedule and then assign responsibilities. Project management software can be very useful, if there's time to train key users. An alternative is to create a spreadsheet or Word document to develop the project management plan that can be shared with the management team.

In setting up a schedule, be sure to set reasonable deadlines and notify all authors of the general plan. Be clear about assignments and share relevant guidelines with all contributors. It's important to strike the right balance with the amount and type of communication; be as concise and efficient as possible. Allow time to validate information and also for integration, editing, review, and proofreading. The Annual Report is complicated to produce, since the time between the end of the Reporting Year and the due date is very short. There are multiple contributors and all will want to present the very latest results, which means that authors will resist deadlines. Be sure to have reliable administrative collaborators at each institution to help collect data and drafts.



Consider the sequence: Volume II project summaries provide research detail, so these can inform the Volume I narrative sections. Stand-alone documents such as “Current and Pending Support” and “Biographical Sketches” are low-hanging fruit, so collect these as early as possible. It is smart to complete the ERCWeb data entry immediately following the Reporting Year end date, since these metrics will help to tell the center’s story. The ERCWeb tables and figures are referred to and explained in the Volume I narrative, so they need to be complete and accurate before writing begins. Certifications need multiple signoffs, so they too should be among the first tasks.

**Tip:** Give the many contributors time (24 hours) for one final review of the entire report, to ensure that there are no major errors and to get their sign-off and buy-in on the report. Allow access to a non-editable pdf, and stress that only critical errors will be corrected in this final draft.

### 6.6.2 ERCWeb Data Collection

Gather information continuously and systematically all year round. Refine processes and systems as the center evolves, but try to limit new or complicated ways of doing things. Documentation of any data submitted to ERCWeb must be procured and maintained for audit purposes. Be sure to allow plenty of time for entering and validating data, as there is a significant amount of finely detailed information that is input to multiple screens. Expenditure Budgets as well as Functional Budgets must be prepared and it is sometimes tricky to validate all the numbers. Note that the lead institution is responsible for reporting and obtaining certifications for the entire center. Begin gathering this information early in the process since some require multiple signoffs at each partner institution. The Authorized Organizational Representative (AOR) is usually the Director of Sponsored projects at the lead institution. A scanner will be needed.

**Tip:** Try entering some initial financial data early in the process to test how the different tables validate.

#### Key Definitions

**Award Year** – A 12-month period that begins on the date that the ERC first receives NSF funding, which is the official “award date.” The Award Year start and end dates remain constant throughout the life of the center.

**Reporting Year** – The ERC Reporting Year is a 12-month period established by the ERC Program Officer and the Center Director when the NSF Cooperative Agreement is awarded.

**Fiscal Year** – The Federal fiscal year runs from 10/1 to 9/30. Each partner institution’s fiscal year and state fiscal year can differ.

The term “year” may also refer to the calendar year or the term of an industrial partnership. These differences will have a profound impact on management and reporting of budgets, revenues, and expenses. You will need to understand the ERC reporting requirements and your University’s financial system in order to generate reports for specific time periods.

### 6.6.3 ERCWeb Data Categories

Below are the categories of data submitted to ERCWeb which produce the ERCWeb Tables and Figures that are inserted in the Annual Report:

- 

**Support** – financial and in-kind support from the National Science Foundation (including but not limited to the ERC program), other federal agencies, organizations such as industrial/practitioner members, innovation partners, funders of sponsored and associated projects, contributing organizations, state and local agencies, and other sources.

- 

**Academic Institutions** – name, location, and additional detail on those academic institutions and diversity alliances executing ERC research, tech transfer, and education programs.





- **Personnel** – demographic and occupational data on those individuals directly involved in executing activities funded by the center.
- **Research** – research effort reported in terms of project, thrust, and cluster.
- **Budgets** – annual expenditures, functional and educational budgets.
- **Outputs and Impact** – quantifiable outputs such as publications, technology transfer (invention disclosures, patents, and licenses), and educational outputs of the center.

### 6.6.4 Data Collection Challenges

Faculty – Most Administrative Directors agree that collecting information from faculty is a significant challenge during the early years of a new center. Remember that faculty time is a scarce resource and most center participants are highly accomplished experts with multiple commitments. Start by gathering what is already known, and request updates to that information. It's helpful to get to know assistants, post-docs and grad students; these people are VIPs in the administrative network. Multiple strategies will be required; use the online system, email, voicemail, texts and in person visits. Peer pressure is a strong motivational strategy. Remind participants that their contribution to this prestigious project is valued and needs to be showcased in the group report.

Tech Transfer – Work closely with the center Industrial Liaison Officer to collect technology transfer data. Develop a strategy for capturing information on company visits, student and faculty time at companies, technology transferred, success stories, technical and economic challenges affecting your industries, as well as the required data elements listed in the Guidelines to ERCWeb Data Entry.

Demographics – It can be difficult to capture information on diversity (gender, ethnicity, race, citizenship, and disability status) from a busy, dispersed group of individuals who may be reluctant to share this information. Develop a standard format (online, distributed by email, or paper) that all ERC personnel can use to voluntarily self-disclose this demographic data. The center is not authorized to make judgments about where a person fits in these categories. Emphasize to users that the data will be reported only in the aggregate to NSF, when encouraging them to share this information.

Students – Keep track of program alumni at graduate, undergraduate, REU, and RET levels from day one. It will be important to know what happens to them, where they go, and how to reach them throughout the life of the center and beyond. Design the information collection process to capture information on alumni systematically at the end of each university term. Get to know the department staff responsible for processing graduating students, since they can be an invaluable source of information. Have a plan for how to communicate with alumni, and do so at least two or three times each year. It is effective to use resources such as [Facebook](#) or [LinkedIn](#) to keep up with students.

### 6.6.5 Annual Report Volume I

The Center Director/Principal Investigator is the person responsible for the Annual Report, yet many authors contribute content. Each Director will approach this task differently, but presenting a cohesive narrative is always the goal. Progress in the current year toward achieving the center's vision in comparison with state of the art advances external to the center should be clearly indicated by milestones achieved and by key barriers overcome



along critical path activities. . These milestones constitute “Highlights of Significant Achievement and Impact” which are especially important, so all should be aware of the guidelines and requirements for writing these.

Advances in thrust area research that overcome critical gaps in the field should be linked strategically to the center vision and calibrated vs. state of the art as well as vs. testbed-driven needs, using quantitative metrics. It is important to emphasize synergies from interdisciplinary and cross-institutional interactions that support metrics and milestones and deliverables anticipated by the center in its lifetime. A professional document with self-consistent, accurate, up-to-date data reflects the high quality and standards of the work performed by all members of the center, so take the time to set up templates and design style guidelines. Determine how to share document drafts and encourage all ERC personnel to participate in the development and production of the report

**Tip:** Allow time to format the ERCWeb generated Tables. They must be readable and it can take considerable time to tweak the format and integrate the ERCWeb tables into the report.

### 6.6.6 Annual Report Volume II

Volume II is comprised of the following components:

1. Table of Contents
2. List of ERC Projects
3. Project Summaries
4. Associated Project Abstracts
5. Data Management Plan
6. Biographical Sketches
7. Current and Pending Support (only required for renewal proposals)

The Project Summaries make up the bulk of the Volume and typically are drafted by grad students, project leaders, and thrust leaders. Allow time in the schedule for writing, editing, and formatting, as information in these summaries will be used to write the Volume I narrative. The data management plan, associated project abstracts, biographical sketches, and current and pending support forms usually just need updating rather than original content, so it's smart to collect them early.

**Tip:** Provide online or word templates which will minimize the formatting time needed during final production.

### 6.6.7 Renewal Proposals

Renewal proposals have all the same requirements as Annual Reports, but include additional detail regarding plans for the future and multi-year budgets.

### 6.6.8 Annual Report Production and Submission

Formatting and compiling all the report components is a time-intensive activity. Bring in temporary help and utilize



all resources as the deadline approaches. Work with a printer to create a timetable for submitting files, draft review, and final editing. Time for mailing the printed copies should also be built into the schedule.

There is detailed information in the guidelines regarding submitting the report electronically to Research.gov, the NSF ERC program staff, and to the reviewers. Five printed copies are also required. One additional important step is to certify Cost Share in Fastlane. This is a task for the lead institution's Sponsored Programs Office. The center needs to gather accurate certified information from all the subcontractors in a format that will allow the lead institution to submit this information, so it's important to work this out ahead of time.

## 6.7 Communication and Public Relations

Internal and external communication initiatives require constant effort and attention in the complex ERC structure. Participating individuals are geographically disbursed and they often have differing loyalties and priorities. Consensus building takes considerable time and effort, but is essential to realizing the center's vision. There are many electronic tools available to facilitate communication, but there is no substitute for "in-person" interactions. Research retreats, industrial meetings, advisory board meetings, budget conferences, and the annual Site Reviews all offer opportunities to solidify the team.

***Tip:** Consider including staff from your business or sponsored program office at some of these events so they can develop a personal connection and investment in the center's success.*

Public relations are important as the center works to build an industrial membership program and procure additional funding to support the mission. Centers do vary considerably in how they view publicity. Some desire maximum exposure, while others find these activities to be a drain on time and resources. Strike the right balance, develop a policy, and readdress it as the center evolves.

### **Key Considerations**

Technical and graphic design expertise is required. Look to individuals on the ERC team, in the department, college, institution, or industry consortium, or external vendors to meet the needs of the center. Students can be an excellent resource.

Publications reflect the high standards of the center. Take the time up-front to design a professional logo, slide template, and web site.

Develop a website that will serve the ERC participants, industrial partners, other researchers and professionals, potential sponsors, and the general public as well. Review the websites of other ERCs at the Engineering Research Centers Association site. <http://erc-assoc.org>.

Create a communications team to oversee publications and posters and contribute editorial feedback. Some centers work with individuals from advisory boards to add a professional perspective.

Be sure to include the appropriate NSF acknowledgement language on all publications. Educate all ERC participants and provide easy access to sample language for this purpose.

Purchase camera equipment (video and still) to document events and activities. Create a central archive for documents, photos, and video footage. Institutional shared space may be available or explore options such as Google Sites, Google Groups, or Picasa.

Brochures, newsletters, fact sheets, pop-up banners, and stands can all be useful for the ERC. Some centers also prepare an executive summary version of the Annual Report to use for marketing purposes. Keep in mind that producing a newsletter or other printed materials can be a time-intensive activity. Make realistic staffing plans and periodically evaluate the cost-effectiveness of these efforts, as this will change over the life of the center.

Recruitment of companies, students, and sponsors is more successful if the entire team is aware of and supportive of these activities. Target audiences for public relations materials might include:



1.  
Companies, including prospective members
2.  
Prospective students and ERC alumni
3.  
National Science Foundation and other federal agencies
4.  
State legislators and personnel working on economic development
5.  
Partnering university VIPs and participating departments
6.  
External universities
7.  
Other ERCs
8.  
Local and national press
9.  
National legislators, the general U.S. public, and international interests.

Maintain a Calendar of meetings and events online and make sure that key participants from each institution can easily update the schedule.

Connect with individuals from the news office at each institution in order to present a cohesive message and to be able to quickly respond to breaking news and events.

Facilitate virtual meetings with video or teleconferencing capability. There are many low- or no-cost options available such as:

- [Free Conference](#) – conference calling
- [Google hangouts](#) – video, voice conversations
- [Cisco WebEx](#) – meetings, webinars
- [Citrix GoToMeeting](#) – meetings, webinars

Work toward use of a common language. Use the ERCWeb Glossary and take every opportunity to educate all participants on key definitions.

Consistently use the appropriate qualifier for the word “**Year**” – Reporting Year, Award Year, Calendar Year, Federal, State and Institutional Fiscal Year, Prior Year, Future Year.



Consistently use the appropriate qualifier for the word “**Tables**” –NSF Tables, ERCWeb Tables, Microsoft Word Tables.

## 6.8 Event Management

Meetings play a vital part in the life of an Engineering Research Center. During the course of a year, a typical center will host industry meetings, external research reviews and retreats, advisory board meetings, faculty and staff meetings, seminars, workshops, short courses, and the all-important Annual/Renewal Site Review. Detailed planning and organization can contribute to a successful outcome and can also illustrate the professionalism of the center at all levels. The Guidelines for the Annual/Renewal Site Visit are in the [ERCWeb library](#) and they contain detailed information and a useful checklist.

[See Attachment 6.6 – Site Visit Checklist](#)

### **Key Considerations**

**Date/Location** – Set the date early to ensure there are no major conflicts with the ERC schedule, university academic calendars, major professional meetings, or holidays. Check on possible locations to ensure there is adequate space and availability to meet the objectives of the meeting. [Doodle](#) is a useful tool to poll your leadership team at each partner campus. Many centers find it useful to coordinate the timing of ancillary events with their main industrial meetings or with the Annual Site Review. This increases attendance and saves money and time.

***Tip:*** Consult with your NSF Program Officer months in advance to set the Site Visit date and be sure to check the schedule of Deans, Chancellors and Provosts at each institution.

**Attendees and Speakers** – Determine who should be invited and estimate numbers. If the center sometimes pays expenses for external speakers, clarify expectations in advance. Note that NSF and industry have placed growing emphasis on presentations by students and young faculty. Identify speakers, communicate expectations, and issue invitations as early as possible to ensure good attendance.

***Tip:*** Collect business cards during key events. This is an excellent way to update your mailing list, including new titles, e-mail addresses, and other contact information.

**Vendors** – If available, it is ideal to work with the campus conference planning office to organize large meetings. Identify campus departments and external vendors for services such as catering, audiovisual, computer support, and transportation providers and reserve meeting rooms as soon as the date is set. Outside vendors may require significant lead time, so secure contracts and inquire about preferred and/or negotiated rates. Site reviewers and industrial personnel appreciate access to labs and students, so keep this in mind when considering location for meetings that include those individuals.

**Agenda** – Encourage faculty and industry leaders to collaboratively plan the purpose and agenda for meetings when possible. This will increase buy-in and participation. Consider travel time and the meeting objectives when choosing a location and developing the agenda. It's best to send a final version to all attendees as early as possible and minimize distribution of draft versions.

***Tip:*** Be sure to include breaks between sessions, where participants from several thrust areas can meet together. Some of the best interactions happen during the breaks!

**Budget** – Confirm the budget, including funding expectations for meals, travel, and supplies. Ascertain the availability and necessity of discretionary funds for payment of honoraria and determine if a registration fee is required. Alcohol is not an allowable expense, so look into options for industry sponsorship or a cash bar if this is important for your meeting.

**Timetable** – Create a project plan with a timetable for any major meetings. Identify tasks and deadlines, assign responsibilities, and decide if rehearsals or dry runs are required. Be sure to distribute the timetable to the appropriate participants and schedule regular check-ins. A written checklist is invaluable and it's also important to



plan backup systems and reconfirm all arrangements a day or two before the event.

**Tip:** *You can never have too many helping hands at a large event or meeting. Faculty, staff, and students can all play a role in organizing and executing an event. A well-chosen graduate student escort can often make a great impression on an industrial or NSF site visitor.*

**Handouts** – Prepare and distribute general logistical information, information packets, public relations materials, copies of slide presentations, attendee lists, and name tags as warranted.

### 6.8.1 Site Visit Tips

In addition to the responsibilities noted in the guidelines –

- Be sure to offer a healthy and varied selection of good food and accommodate special preferences.
- Don't minimize the importance of comfortable chairs.
- Cohesive presentations may require a red team and IAB or SAB review – build time for this into the schedule.
- Plan for a “dress rehearsal” in the actual space if possible and test the AV equipment, the timing, and the order of the presentations.
- Set a deadline to collect all final slide presentations in order to print and make copies for the Site Review Team.
- Stock up on supplies and be sure to have extension cords, power strips, USB sticks, and even umbrellas available.
- NSF site review teams will ask to meet privately with students and advisory boards (i.e., industry, scientific, professional). Make sure that all understand their role within the ERC.

### 6.8.2 After the Meeting

Allow time for the natural “letdown” after a major event, but do plan for a post-meeting wrap-up session with staff. Gather feedback and note suggestions for future meetings and document details. Don't let down the meeting momentum until all of the following tasks have been accomplished:

- Pay speakers and reimburse faculty and staff.
- Edit and distribute minutes (or other follow-up materials).
- Update databases (industry, students, etc.) with appropriate information.
-



Prepare final expense report and update the budget for future events.

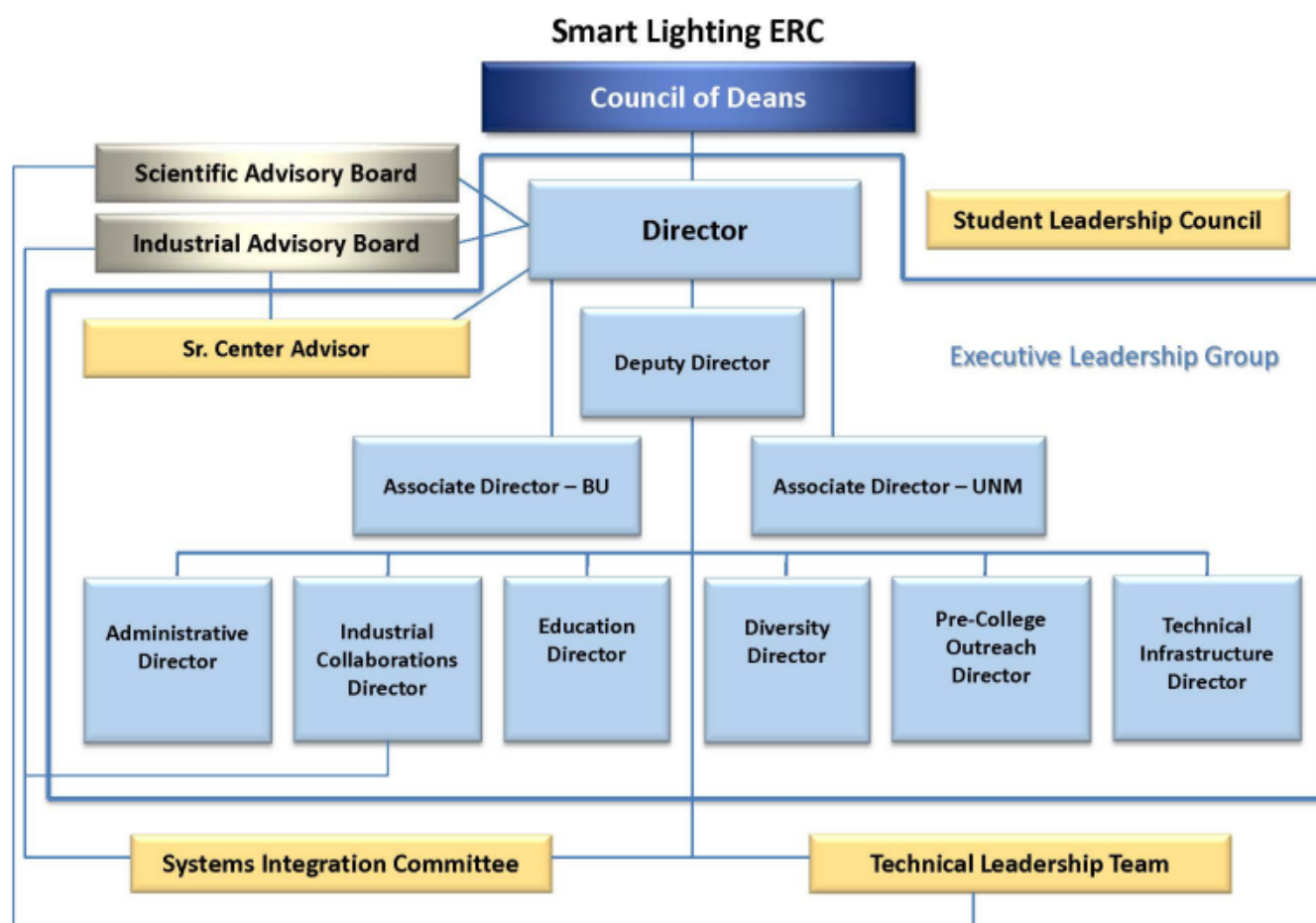
- File all copies of meeting information and handouts in the master files.
- Send thank-you notes – acknowledge those who did an excellent job.

**Tip:** It's useful to keep final versions of the agenda, participants list, handouts, minutes, venue information and prices, etc., for each major meeting. This allows you to delegate more effectively the next time around.

## 6.9 Facilities Management

### Attachment 6.1: Example ERC Organizational Charts

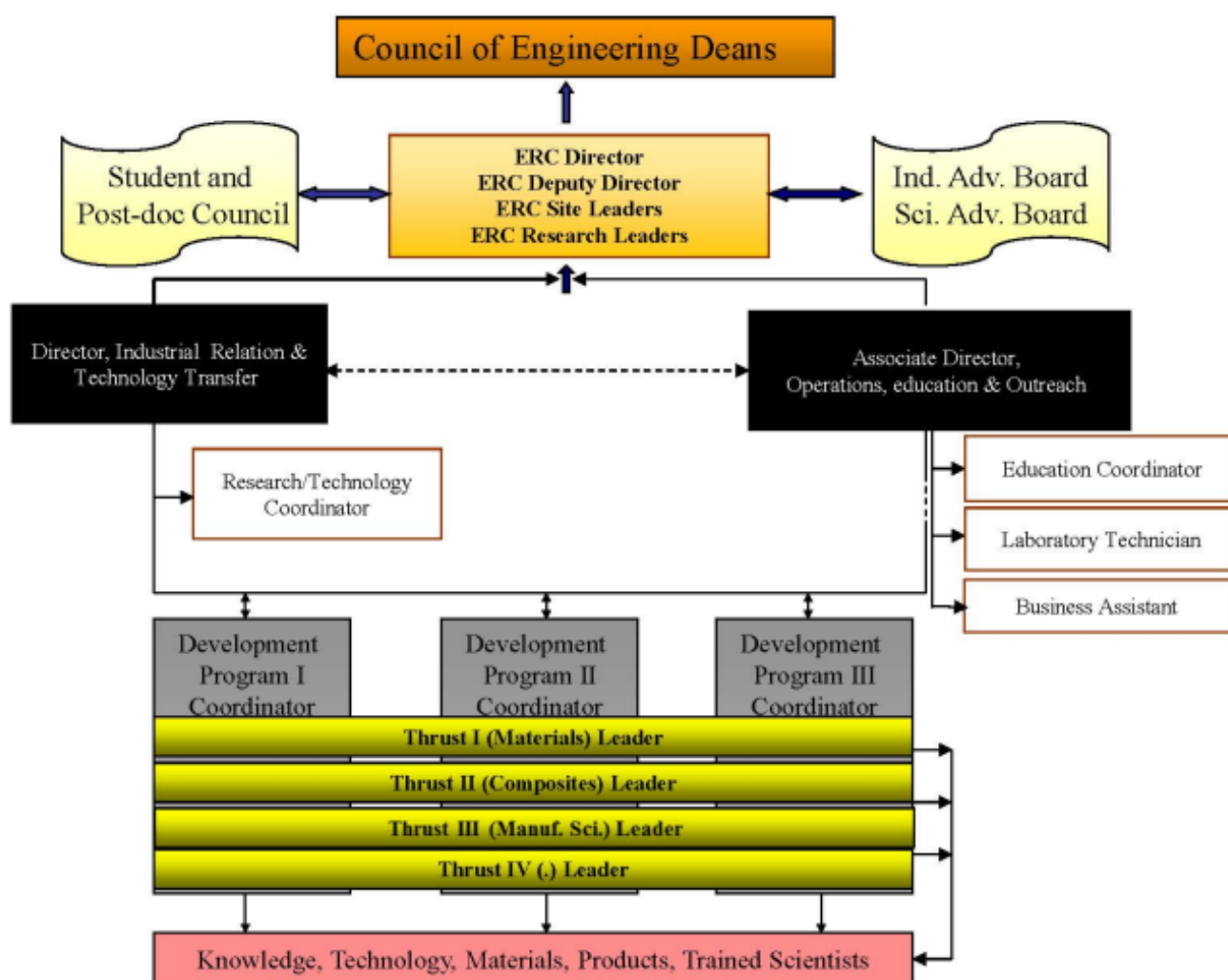
Example 1: Smart Lighting ERC



Example 2: Center for Structured Organic Particulate Systems



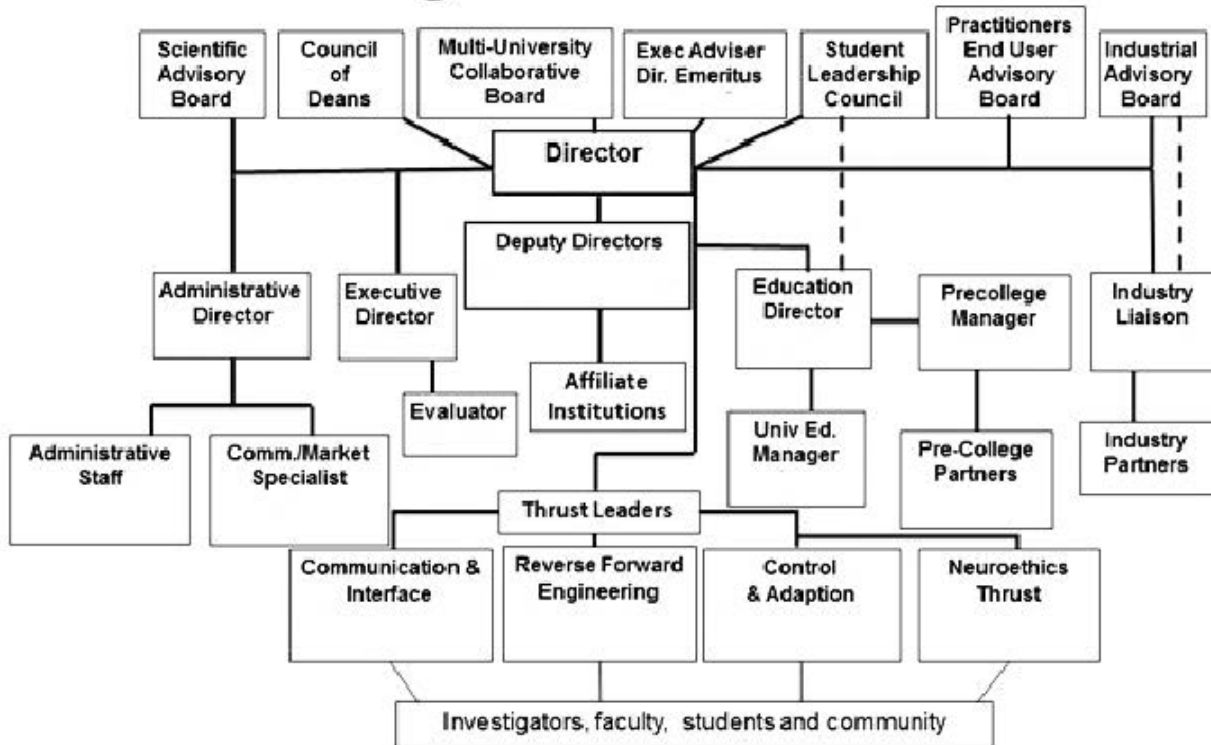
## Center for Structured Organic Particulate Systems



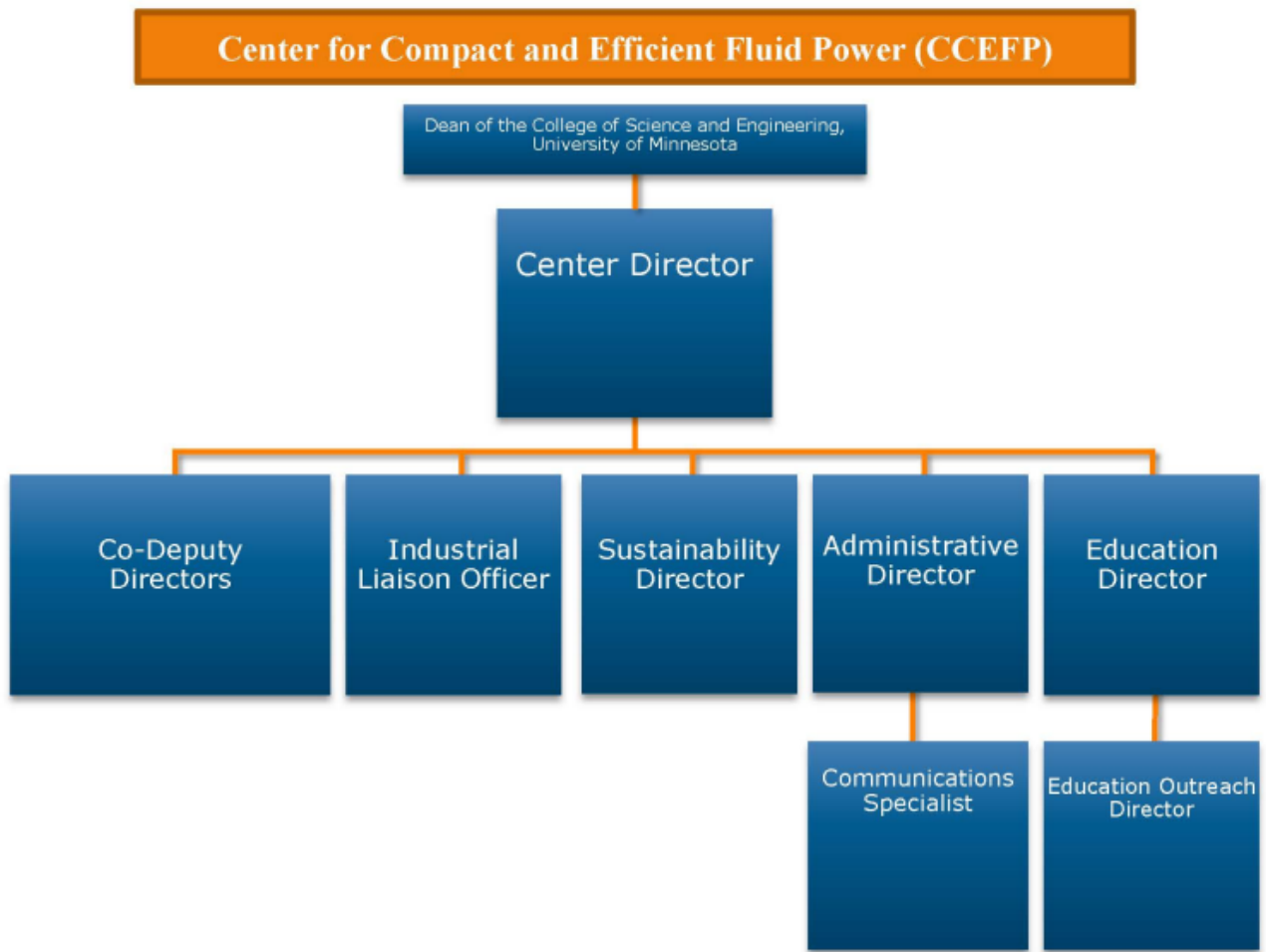
### Example 3: ERC for Sensorimotor Neural Engineering

## ERC for Sensorimotor Neural Engineering (CSNE)

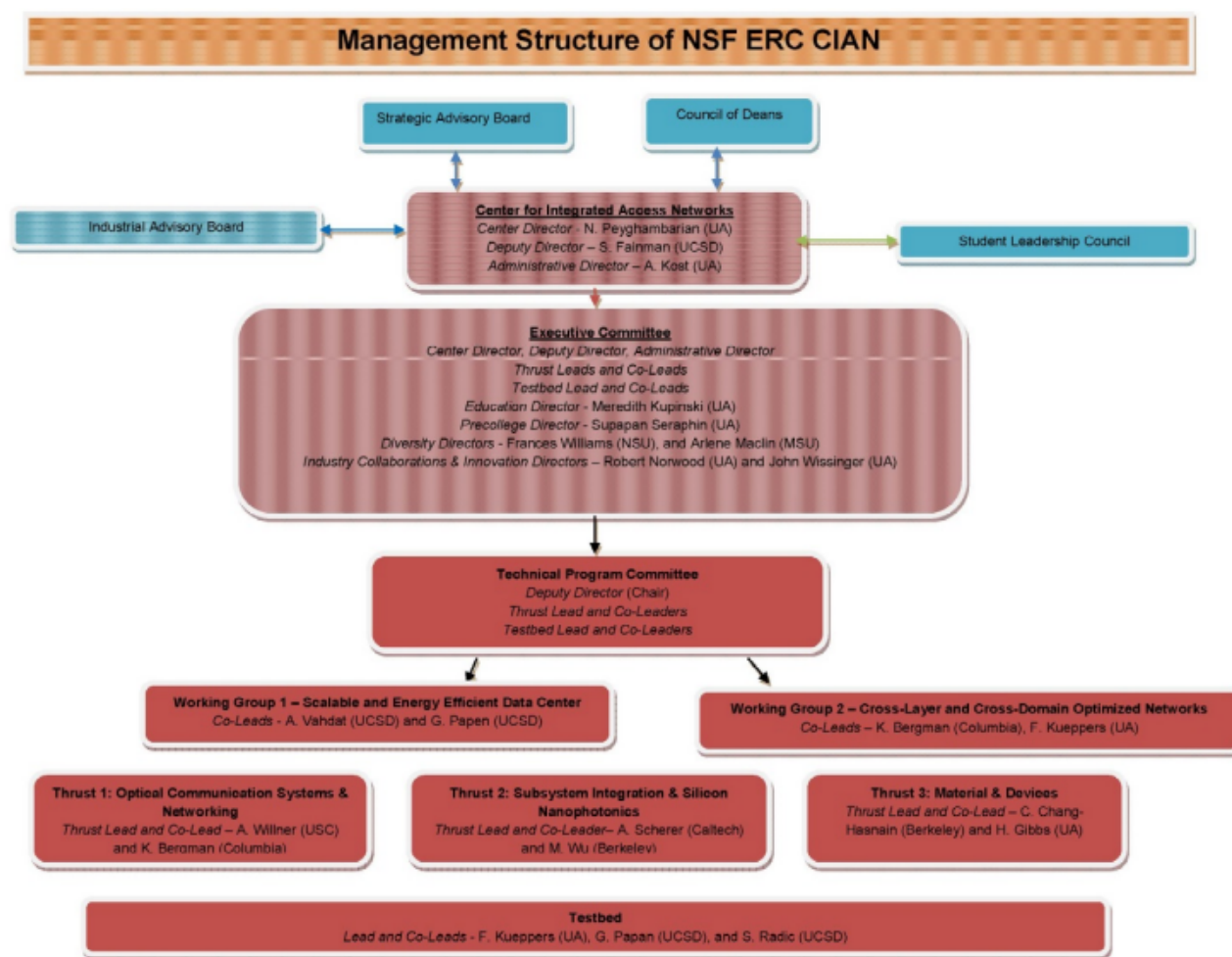
### Organizational Chart



**Example 4: Center for Compact and Efficient Fluid Power**



### Example 5: Center for Integrated Access Networks



## Attachment 6.2: Administrative Director Consultancy Visit Guidelines

### Administrative Director Consultancy Visit Guidelines

#### National Science Foundation Engineering Research Centers (ERC) Program

#### Introduction

The purpose of the Administrative Director (AD) Consultancy visit is to provide support and management insight to the new Engineering Research Center AD and leadership team. Two experienced ADs travel to the ERC Lead Institution to review best practices and offer suggestions for efficient Center administration and management. The timing of the visit is important, and it should be scheduled a month or two after the cooperative agreement is awarded and prior to the first Annual Report due date for new Centers. Existing Centers may experience AD staff turnover, and in that case, one additional visit may be scheduled at a time that is convenient for the Center.

The new AD should develop the agenda in conjunction with the consultants during an initial conference call and then follow up regarding logistical details. The visit should be tailored to the needs of the Center and the experienced ADs can then serve as a resource during the life of the Center.



### Participants

It is critical to include a meeting with the Center Director (and the Deputy Director or Executive Director) when planning the agenda for the Consultancy Visit. Additional participants could include other members of the leadership team involved in management systems such as the, Industrial Liaison Officer and the Education and Outreach Program Director. Since institutional support is so important to an ERC, it might also be useful to schedule time with Sponsored Programs or business office staff.

### Agenda

The one day agenda should accommodate the needs of the Center. The new AD should set the priorities as far as timing, participants and topics so that immediate concerns of the new Center can be addressed.

Typical issues include:

- Authority and Responsibility of the Administrative Director
- The Role of the Administrative Director in the ERC's Leadership Team
- The AD community – Google groups listserv
- Management functions, staffing and workload
- Resources and references
- Accounting and Financial Management
- Management of sub-awards
- Contract administration and compliance
- Data Collection and ERCWeb
- Annual report planning and guidelines
- Acronyms and definitions
- Site Visits and event planning



### Reporting

The consultants will provide a feedback report to the ERC's Program Director, Director of the ERC Program and the Manager of the Post-Award Oversight System. However, this report is not an evaluation or a review. Observations, suggestions, challenges will be noted and the report can be shared with the Center Director if requested.

## Attachment 6.3: Example ERC Administrator Job Descriptions

[Note: These descriptions were current as of July 2014]

### Example #1

#### ERC for Structured Organic Particulate Systems (C-SOPS)

#### Instructions for Submitting via Applicant Tracking System (ATS)

The Classification and Recruitment form (CARF) is submitted to initiate the recruitment and/or classification process for all bargaining unit and administrative/professional/supervisory (A/P/S) position requests at the university. **Please attach the completed form as indicated in ATS.**

**To fill A/P/S vacant position that does not need to be classified (the key duties of the job have not changed), complete:**

Section 1 Job description and requirements section. Please attach a current organization chart.

(Existing job descriptions can be substituted for section 1).

**COLT Vacancy** - Simply enter the job class code of the vacancy when you submit your request. You do NOT need to complete the CARF.

**To classify or reclassify a position (whether it is new, vacant, or encumbered), complete:**

Section 1 Job description and requirements section. Please attach a current organization chart.

Section 2 Position detail section. The questions cover many different types of positions across the university. If a particular question is not relevant to the position under review, please indicate N/A (not applicable).

Section 3 Business/Accounting addendum. (ONLY FOR A/P/S BUSINESS, ACCOUNTING AND FINANCIAL POSITIONS).

Section 4 Information Technology addendum. (ONLY FOR A/P/S INFORMATION TECHNOLOGY POSITIONS).

**Current Title & Grade: Business Specialist**

**Proposed Title & Grade: Administrative Director**

---

### SECTION 1 - JOB DESCRIPTION AND REQUIREMENTS

---



### 1. Position Summary

Provide a brief summary that expresses the primary role or reason the job exists

Administrative Director(AD) will serve the entire ERC as the guardian of resources, policies, and myriad detail. The operative word is service. Working closely with the Director, s/he must consistently maintain a "big picture" perspective. The Director and the AD must consider the needs of all stakeholders (NSF; member companies; the university; other funding agencies, including foundations, state or other government agencies; center faculty; students; and other staff). The AD usually provides the "glue" that holds the various administrative functions of the center together. The AD is apt to wear many hats.

The AD usually:

- Assists the Center Director in the overall management of the ERC;
- acts as guardian of rules, regulations, and policies;
- serves as the information "gatekeeper" and resource for all members of the center; and
- is the center's financial and personnel manager.

---

### 2. Job Description

Briefly list and describe in order of importance, the key duties for this position. For each key duty state in a few words:

- What are the expected outcomes
- How are the key duties performed

Please identify the percent of time spent on each.

1. Administrative Coordination of Center Activities

NSF Engineering Research Centers are dynamic organizations serving industry, university, and government needs in rapidly changing high technology areas. A complex organization, the ERC has multiple missions (research, education, and service) and is accountable to multiple funding sources (federal, state, local, university, and private). The AD reports directly to the Center Director and will manage multiple fiscal years; many different sets of rules and regulations; an annual budget of \$15 million; an average of 227 full-and part-time researchers, faculty and students; and supervise a staff of 7.

2. Financial Management

Responsibility for budgeting, accounting, and reporting in order to maximize efficient use of funding, while ensuring compliance with rules and regulations.

3. Liaison with University/Sponsoring Agencies





Guardianship of university and agency system requirements (federal regulations, proposal processing, etc.) and responsibility for networking with university administration and NSF to keep abreast of latest changes.

4.  
Information Management and Communication

Information System Management: Oversight of management information system and report generation process (multiple reports to sponsoring agencies, university) and response to requests with accurate and timely information in format required.

5.  
Personnel Management and Other Duties As Assigned

Hiring, supervision, and development of center administrative personnel and management of documents/human resource policies for academic, research, and student appointments in compliance with university personnel regulations.

Event management, communications, and public relations, as assigned.

---

### 3. Education, Experience, Skills, and Special Conditions:

Please state the minimum level of education, experience, licenses, certifications, specialized training, additional skills, abilities, physical, environmental, or special conditions required to successfully perform the key duties for the position.

Requires a minimum of a bachelor's degree in accounting, finance, business administration, or related field; and five years of related professional experience in a financial/accounting function in a leadership or managerial role of increasing responsibility. Also requires skills in planning and organizing, integrating information, making decisions, and attaining results; excellent communication skills; and computer literacy.

Please state any education, experience, certification, licenses, knowledge, skills, or abilities that are not essential to the position but preferred.

### Example #2

### Center for Sensorimotor Neural Engineering (CSNE)



### ADMINISTRATIVE DIRECTOR

#### Professional Staff

##### Job Duties

#### Personnel

- Coordinates activities by scheduling work assignments, setting priorities, and directing the work of at least two direct subordinate employees.
- Evaluates and verifies employee performance through the review of completed work assignments and work techniques.
- Identify staff development and training needs, ensuring appropriate training is obtained.
- Ensure appropriate university, state, federal, and union labor relations and conditions of employment are identified and maintained.
- In association with Center leadership, plan and forecast staffing needs, develop job descriptions, and oversee the recruitment, hiring, and termination of personnel.
- Manage payroll function, including distribution changes, separations, new appointments and hourly timesheet approvals.
- Encourage effective performance and high morale throughout center

#### Facilities

- Evaluate Information Technology and physical space needs and develop plans to meet center staffing and work needs
- Negotiate with university and outside vendors to obtain needed facility and I.T. repairs, services, and improvements
- Organizes and directs records storage and maintenance in accordance with NSF, state and university regulations

#### Fiscal

- Develop and evaluate center-wide budget as well as individual budgets for each funding source and center project in order to maximize efficient use of resources and ensure compliance with appropriate rules and



regulations.

- Supervises the receipt and distribution of supplies and equipment, the maintenance of inventories, and the control of purchases and supplies.
- Develops bid specifications, then coordinates and monitors vendor contracts.
- Create and revise fiscal policies and procedures in accordance with university, state, NSF and donor regulations
- Develop and lead an effective working relationship with sub-contracted universities, monitoring budgets, spending and cost-share commitments.
- Review and approve monthly reconciliation, Procard, and CTA reports, as well as travel and reimbursement requests
- Prepare and distribute specialized financial reports as required by center leadership.
- Manage university and funding source fiscal reporting requirements such as cost sharing, FEC, and GCCR.
- Assist in the creation and submission of new grants.

### Annual Report

- Lead and manage data collection process from all center members and partners
- Oversight of management information system and report generation process (multiple reports to sponsoring agencies, University) and respond to requests with accurate and timely information in format required
- Manage shared folders, grant access to mailing lists and secure documents
- Collaborate with Center Director and Center Executive Director to complete required narrative sections
- Lead and manage data collection process (e.g., abstracts; personnel information; CVs, etc.) from all Center members across all partner institutions
- Enter data into ERCWeb for institutions, organizations, personnel, outputs, research and money
- Draft management, infrastructure and facilities sections of annual report
- Create all tables for annual report (Center-produced and ERCWeb)



- Following NSF protocol layout and organize all NSF required reports
- Responsible for all fiscal reporting for annual report
- Create glossary, list of acronyms and table of contents
- Collect and certify items for appendices
- Sole authority to submit annual report
- Submit Annual Report and required support documents to NSF FastLane

### Communications

- Serve as point of contact for external and center individuals and organizations, referring issues as appropriate
- Attend NSF and university workshops and conferences as required
- Represent the center to other ERC administrators throughout the nation.

### Other

- In association with Program Coordinator, oversee all center events, workshops, meetings and seminars.
- Manage all Human Subject applications, approvals and reporting.
- Contribute to strategic planning of the center
- Initiate and implement improvements in all areas of center administrative operations to encourage greater efficiency and success of center priorities.

### **Job Responsibilities and Duties**

#### **Administrative Director (AD)**

The position coordinates a large NSF-funded center that spans the three largest colleges at the university and several national and international partner institutions. It has a very high profile with impact to educational, research and IP dimensions of the university. The Administrative Director reports directly to the Center Director and will



manage multiple fiscal years; many different sets of rules and regulations; an annual budget of \$3.5 million; an average of 80 full-and part-time researchers, faculty and students; and supervise a staff of 4. Administrative duties include any or all of the following areas of expertise.

### Financial Management

The AD serves as central fiscal/operations administrator for the Center, acting within the policies and procedures of the University, and the National Science Foundation Cooperative Agreement, to achieve Center goals. A complex organization, the ERC has multiple missions (research, education, and service) and is accountable to multiple funding sources (federal, state, local, university, and private).

- Financial management of the Center grant totaling over \$25M over a five year period plus 30% University cost share and industrial sponsors
- Responsible for independently budgeting, accounting and reporting to maximize efficient use of funding, while ensuring compliance with rules and regulations
- Approve expenditures; allocate resources according to funding type and purpose; alert project leaders of concerns in spending patterns
- Manage fiscal personnel at partner institutions; host and/or lead orientation and training sessions
- Administering multiple subcontracts to partner institutions, reviewing invoices and ensuring spending is done in timely manner
- Reporting and tracking complex cost-sharing commitments from a variety of sources, including Provost, departments, and industry
- Administer funds to campus departments (sub-budgets) and allocate according to internal call for proposals for Center funds
- Supervise and oversee the work of a fiscal specialist
- Forecast and advise directors on budgetary issues
- Create budgets for proposals that will add to the sustainability of the Center
- Oversee, manage and monitor the 30% NSF-mandated cost-sharing obligation
- Create budgets in varying formats for executive review
- Manage Partner University funding and invoicing
- Review and approve all Pro-card spending for the Center



- Create and update eGC1s
- Approve expenditures
- Manage faculty's student funding plan and advise on budgeting
- Work closely with partner institutions to administer subcontracts, collect data for reports and monitor spending and compliance issues
- Create and maintain systems for purchasing, reimbursements, travel and human subject payment

### Annual Report

The annual reporting is an extremely complex process that involves an average of three months of work, culling data from hundreds of participants and ensuring that all ongoing projects are appropriately aligned with research thrusts, clusters and testbeds. The AD is responsible for creating/implementing a system to track/compile the complex data and produce the annual report with all necessary elements for the annual site visit.

- Direct faculty, staff and students to meet targets and maintain timely reporting
- Oversight of management information system and report generation process (multiple reports to sponsoring agencies, University) and response to requests with accurate and timely information in format required
- Manage shared folders, grant access to mailing lists and secure documents
- Collaborate with Center Director and Center Executive Director to complete required narrative sections
- Lead and manage data collection process (e.g., abstracts; personnel information; CVs, etc.) from all Center members across all partner institutions
- Enter data into ERCWeb for institutions, organizations, personnel, outputs, research and money
- Draft management, infrastructure and facilities sections of annual report
- Create all tables for annual report (Center-produced and ERCWeb)
- Following NSF protocol layout and organize all NSF required reports
- Responsible for all fiscal reporting for annual report
-



Create glossary, list of acronyms and table of contents

- Collect and certify items for appendices
- Sole authority to submit annual report
- Submit Annual Report and required support documents to FastLane

### Personnel Management

Responsible for hiring, supervision, recruitment and development of center administrative personnel and management of human resource policies for academic, research and student appointments in compliance with university personnel regulations.

- Make formal decisions regarding hiring, terminations, promotions, reclassifications, salary adjustments and handling of complaints and employee performance problems
- Train and mentor on the specific requirements of the ERC program and work to integrate those with University policies
- Write job descriptions, research appropriate salary and job classifications; coordinate with department HR administrators
- Direct reports include up to 2 staff plus 1-3 temporary staff
- Approve leave requests for staff; conduct performance evaluations and professional development planning
- Advise Center Directors of ongoing changes to HR and Union policies
- Serve as chief personnel of operational control for the Center
- Manage payroll for Center, including distribution changes, separations, new appointments and bi-monthly payroll approval
- Regularly review staffing needs with Director and Exec Director and revise staffing plan as needed
- Post open recruitments
- Organize and schedule interview teams for open positions
- Work closely with Human Resources and compensation offices to get positions approved





- Post job advertisements to external vendors as needed

### University/Sponsors/Partners Liaison

The AD serves a key role as liaison between the director, center personnel and partner institutions to assure the goals of the research and educational projects are met and meet expectations of NSF and advisory committees. This person is responsible for coordination of issues between the Center, sponsor agencies, and University offices.

- Guardianship of university and agency system requirements
- Networking with University administration and sponsor to keep abreast of latest changes
- Field questions from partner institutions regarding budget issues, personnel, upcoming events
- Advise sponsor regularly of progress, news and any issues with the operation of the ERC
- Train partner institution representatives on best practices for reporting and documentation

### Scheduling

Handles Center-related scheduling needs for the Director

### NSF-related Duties

The AD must navigate the sometimes competing demands of both the ERC and University policies and procedures. The AD participates in training, evaluating the operations of other ERCs, and moderating panels and the participation in the annual ERC meeting in Washington, DC.

- Attend annual conference and other NSF required meetings
- Represent Center at annual ERC Administrative Director Retreat and annual ERC meeting
- Consult regularly with other ERC ADs across the nation and present at all ERC faculty/staff meetings on best practices
- Keep up-to-date on all policies and procedures (Annual report, PAPP. .)
- Maintain thought knowledge and uphold Cooperative Support Agreement
- Go-to person for NSF-related questions regarding the Center
- Interface regularly with funding agencies, responding to requests for information or updates.



- Collaborate with Center Director, Administrative Director, Deputy Directors, Thrust Leaders, Lab Directors and students to ensure a successful annual site visit (e.g., collection of information/data; posters; presentations)

### Events/Operations/Facilities

The AD will administratively manage the operations of three major research thrusts involving over 100 faculty and graduate students, a growing industrial member program with 30+ members participating at varying levels.

- Create innovative solutions for all ERC problems that arise with respect to communication, information, efficiency and compliance
- Plan meetings, including those involving teleconference and videoconference needs
- Work with campus facilities to ensure proper safety measures are taken and areas are regularly serviced
- Manage outside vendors to ensure safety and security of building and that work is performed satisfactorily
- Work with a wide range of faculty and staff to find meeting times and locations
- Plan site visits, annual meetings, workshops and other events related to the Center
- Work with vendors to make decisions on venues, hotel room arrangements, catering, A/V and other details while staying within budget
- Work with Center Executive Director and Fiscal Specialist to develop and enforce Center policies and procedures
- Work with Center Director, Executive Director and Fiscal Specialist to maximize use and efficiency of Center facilities (e.g., videoconferencing system, computers, space, and equipment)

### **Example #3**

#### **Administrative Director for Engineering Research Center Center for Integrated Access Networks (CIAN)**

**To be considered for this position, please mail three letters of recommendation to:**

Dr. Robert Norwood  
c/o Rick Franco  
University of Arizona  
College of Optical Sciences  
1630 E. University Blvd.  
Tucson, AZ 85721



### Position Summary

Recognized internationally for its strong research programs, the University of Arizona College of Optical Sciences is considered a national asset for technical leadership in all the sciences related to optics and the technologies and industries enabled by optics and photonics.

The mission of Optical Sciences is to provide the State of Arizona and the nation with the internationally preeminent program in education, research, and outreach in all aspects of the science and application of light.

The College of Optical Sciences at the University of Arizona invites applications for the position of Administrative Director of the NSF-funded Engineering Research Center for Integrated Access Networks (CIAN). The Center encompasses research, education, technology transfer and outreach and is comprised of 9 participating universities of which the University of Arizona is the lead. The chief responsibility of the incumbent will be to serve as central administrator and manager for the Center, acting within the policies and procedures of the University and the National Science Foundation Cooperative Agreement, to achieve Center goals. The Administrative Director is the primary interface between Center research, educational and diversity personnel and the Director. Specific responsibilities include Center-wide coordination of activities, financial management, budget preparation, facilities support, proposal preparation, grant administration, human resources, general administration and resource allocation.

Outstanding UA benefits include health, dental, and retirement plans, life insurance, disability programs and investment plans, paid vacation, sick leave, and holidays; tuition reduction for employee and qualified family members, Qualified tuition reduction U of A/ASU/NAU and access to UA recreation and cultural activities, plus more.

### Duties and Responsibilities

Assists the Center Director in the overall management of the ERC

Develop and recommend, and once approved, administer program policies and budgets.

Establish policies, methods, procedures and work rules for Center administrative staff.

Interview and recommend selection of applicants, conduct training, assign and schedule work, act upon leave requests, conduct annual performance evaluations and recommend disciplinary actions.

Assure that Center programs conform to institutional and departmental policies and regulations.

Oversee the administrative and management functions of the Center, including day-to-day management of Center grant totaling \$18.5M plus university cost share and industrial sponsorships.

Supervise professional staff while coordinating the efforts of numerous other professionals and staff employed by partner and participating universities.

In coordination with the CIAN Management Team, update the Center's Strategic Plan as needed and ensure this plan is carried out effectively

Serve as liaison with University departments, NSF and a broad spectrum of Center partners.

Oversee and coordinate Center website development, internal database and communications.

Coordinate annual NSF Site Visit and other Advisory Board and Oversight Committee meetings.

Work with Center's Education and Diversity Directors to ensure planned goals and programs are carried out according to established timelines.

Work with Center's Industrial Collaboration and Innovation Director and Associate Director for Industry Collaboration to ensure efficacy of IP Management Agreement and servicing of tech transfer needs within the



Center.

Prepare annual report and contribute to proposal writing for external funding.

Lead overall compliance with NSF Cooperative Agreement.

Assume other duties as requested by the Director.

### Minimum Qualifications

Ph.D. in a scientific field and 5 years of experience in a scientific research or academic setting

Proven leadership, communication and team building skills

Experience with a research institute or academic institution, working within a scientific research setting, dealing with research-related administrative matters will be given priority.

Demonstrated ability to effectively address complex administrative issues

Highly developed ability to prepare written communications

Proven administrative, organizational and problem-solving skills

Demonstrated competence in budget management, large event planning and coordination and facilitation of substantive research through administrative means

Demonstrated experience coordinating projects involving many individual and institutional participants

Experience with initiatives aimed at enhancing diversity is desirable

**What kind of criminal background check is required for this position?** This position is security sensitive based on the job duties and requires a finger-print criminal background check

To apply for this position use the link below

[www.uacareertrack.com/applicants/Central?quickFind=197229](http://www.uacareertrack.com/applicants/Central?quickFind=197229)

### Example #4

#### **Administrative Director, Center for Compact and Efficient Fluid Power**

##### *Fiscal Responsibilities:*

- Responsible for overall center budget, including \$3 million in National Science Foundation (NSF) funds, \$700,000 in industry member funds, and \$180,000 U of M cost-share funds.
- Work closely with center director in development of overall center budget.
- Manage long-range fiscal planning.



- Responsible for managing budgets of all center sub-awards.
- Ensure that invoicing/reporting from all sub-awards complies with federal regulations.
- Responsible for reporting to NSF regarding all financial aspects of the multi-institutional center, including expenses incurred for all sub-awards, tracking of funds, functional budget costs, and costs incurred by project.
- Work closely with sponsored projects grants administrator on all accounts associated with the center and administering sub-award contracts.
- Authorize payments for all sub-awards.
- Manage membership agreements with industry partners, including all financial aspects.
- Track and process industry dues.
- Authorize and implement University of Minnesota expenditures.
- Track all University of Minnesota expenditures using shadow system. Familiarity with EFS and ability to run various financial reports required.

### *Administration Responsibilities:*

- Develop and implement processes by which partner institutions can comply with reporting.
- Serve as point-of-contact with NSF regarding changes in reporting regulations, proposal processing, and other issues as needed.
- Serve as point-of-contact with all partner institutions regarding reporting regulations and financial matters of Center.
- Advise faculty on reporting requirements.
- Hire personnel for Center and oversee human resource/payroll issues, including write and post job descriptions, ensure accuracy of faculty and student appointments, and supervise student workers.
- Oversee compilation of Center annual report, including collection of all data required by NSF. The annual report is a 450 + page document. Compilation includes analyzing and assessing data from over 30 faculty at seven institutions, working with the NSF-aligned contractor on system output, collecting bio sketches, program summaries and financial information, obtaining all certified documents needed, formatting entire report, and working closely with printer to ensure job is completed on time.
- Represent the unit to other administrators and outside agencies with regard to business and administrative policies and procedures.



- Handle all facilities, procurement and office service operations for the center.
- Manage yearly NSF “Site Visit” which includes hotel contract, catering, agenda and tracking of all attendees.
- Coordinate travel arrangements for center staff for several trips through out the year.
- Order office supplies for the Center.
- Reconcile purchasing cards for center-related purchases.

### **Example #5**

### **Center for Compact and Efficient Fluid Power (CCEFP)**

### **Executive Office and Administrative Specialist**

### **(Working title: Administrative Specialist)**

#### **Required Qualifications:**

- Knowledge of University fiscal and administrative policies (e.g., effort certification, purchasing, travel, professional services, payroll).
- Experience with University of Minnesota’s business procedures including functional use of UM Reports.
- Knowledge of the U’s policies and procedures relating to grant administration.
- Finance and accounting experience both inside and outside of an academic setting.
- Computer skills, including knowledge of Microsoft Word, Excel, Adobe, and University applications (EGMS, E-Cert, PeopleSoft, EFS).
- Excellent oral and written communication skills. Knowledge and/or demonstrated ability needed to perform administrative, event planning, education program support in a fast-paced environment.

#### **Summary of Tasks:**

#### **Budget/Financial (33%):**

Assist Administrative Director in overall Center budget operations  
Complete timely and accurate account reconciliations

---



Compose and distribute non-sponsored and sponsored reports to PIs on a regular basis  
 Review budget justifications for consistency, accuracy, and completeness Prepare Center financial reports for management review  
 Create PeopleSoft (PS) friendly budgets and re-budgets  
 Review purchase orders and employee reimbursements  
 Prepare budgets for grant proposals  
 Reconcile P-Cards  
 Submit PRFs  
 Handle facilities, procurement, and office service operations for the Center

### **Administrative (33%):**

Assist Administrative Director in HR/Personnel tasks  
 Track NSF and Industry Invoices  
 Forward invoices to SPA  
 Handle offer letters  
 Handle Industrial Membership letters and payments  
 Handle Annual Membership Fees/Invoices/Thank you letters  
 Track In-kind Donations  
 Take minutes on Executive Committee Conference Calls  
 Assist in annual report coordination  
 Update procedure manual

### **Event Planning/Project Coordination (33%):**

Plan travel arrangements  
 Organize events such as the faculty retreat and NSF site-visit  
 Coordinate the SLC Travel and Project Grant program  
 Update Facebook and Twitter regarding upcoming events

### **Example #6**

Center for Subsurface Sensing & Imaging Systems (CenSSIS)

## **JOB SCOPE DESCRIPTION**

For Administrative/Professional Jobs

### **Job Title**

Director

### **Date Prepared**

Finance and Operations

7/13/2000

### **Department / College**

Center for Subsurface Sensing &  
 Imaging Systems (CenSSIS) / College  
 of Engineering





**Employee's Name**

Jacquelyn L. Wheeler

**Number of Employees  
in Job**

1

**Manager's Name & Title**

Michael B. Silevitch

Director

**Please:**

- Focus on the important end-results for the job rather than on tasks.
- Ensure that the completed description provides a clear picture of why this job exists.
- Indicate the minimum level of job qualifications for successful performance of the job.

### **1. Job Summary (This section will be used to post this job.)**

Provide a brief statement indicating the basic mission of the job as well as any special problems and unique challenges of the job.

Northeastern University will be the fiscal agent and lead partner of a new National Science Foundation (NSF)-supported Engineering Research Center (ERC) for Subsurface Sensing and Imaging Systems (CenSSIS). The initial five (5) year NSF grant will be \$16.2 million which does not include other sources of funding anticipated to exceed \$3 million per year, totaling \$30+ million over the next 5 years. Winning an Engineering Research Center award from the NSF is a cornerstone of Northeastern's Strategic Plan for positioning the University to move from a Tier 3 level to a Tier 2 level institution and for the College of Engineering to become ranked as one of the top 50 in the nation.

CenSSIS is a multi-constituent, distributed "enterprise," composed of: four (4) Academic Partners – Northeastern University, Boston University, Rensselaer Polytechnic Institute, and the University of Puerto Rico at Mayagüez; four (4) Strategic Affiliates - Brigham & Women's Hospital, Massachusetts General Hospital, Lawrence Livermore National Laboratory, and Woods Hole Oceanographic Institution. This partnership incorporates eight (8) academic disciplines, and over fifty (50) faculty and research staff. In addition, affiliated students are anticipated to number seventy (70) undergraduate and forty (40) graduate students in the first year of the ERC. Industrial and government supporting organizations are expected to number over twenty-five (25) by the end of the first year.

The Director of Finance and Operations is responsible for all non-scientific aspects of this multi-University Center. This includes financial oversight, operations, and administration management. The Director is a major contributor to the marketing and strategic planning of CenSSIS, and is a member of the multi-university Senior Management Team and various ad hoc groups, e.g. Computer Infrastructure, Space Planning, and Financial Planning and Control. The Director attends the NSF Annual Meeting of ERC's, ERC Administrative Directors' Meetings, and other NSF-related meetings, such as NSF Administrative Consultancy and NSF ERC Start-up Meeting. The Director oversees and attends the annual NSF Site Visit to the ERC, the CenSSIS Semi-Annual Research Review / Industrial Meetings of approx. 150 attendees. The Director of Finance and Operations plays a critical role in planning, control, and communication, thus providing the essential "glue" to enable a complex Center to achieve



its goals and effectiveness. This position is equivalent to at least that of a Vice President of a small business with 50-100 employees, requiring autonomy of action and decision-making responsibility at a senior level.

### 2. Key Responsibilities & Accountabilities

Please identify each key responsibility, in 3-4 sentences, required to complete the important end-results of the job and the typical amount of time required for each responsibility (please limit your response to the four most important responsibilities of the job in addition to Customer Service).

- Customer Service

30%

% of

Interfaces with multi-constituencies: university senior management, faculty, staff, undergraduate, graduate students at Northeastern University, partner institutions / affiliates, industry /government organizations, etc.

Total Time
- Financial Planning, Monitoring & Control

30

% of

In concert with the Division of Sponsored Project Administration (DSPA), develops systematic methods for reporting, tracking, and monitoring fiscal elements of the Center. This includes multiple funding “sources,” multiple funding “uses” (subcontracts, numerous projects within Northeastern and with partner and other institutions).

Total Time
- Marketing, Marketing Communications, and Strategic Planning

20

% of

Makes recommendations on Marketing, Marketing Communications and Strategic Planning to the CenSSIS Director and Senior Management Group; e.g. coordinating with Public Relations Department, speech writing. Oversees the planning and execution of major Meetings & Special Events.

Total Time
- Office Management & Hiring

20

% of

Oversees the Office Management of CenSSIS Headquarters including: coordination of hiring for CenSSIS staff appointments and graduate students; space planning; day-to-day operations; supervision of support staff.

Total Time

### 3. Financial Measures

This section helps to provide perspective on the financial responsibility of this job. Please provide relevant data to the extent it is available.

- Annual Operating Budget



that the job manages (excluding payroll, one-time supplements or temporary expenditures such as capital equipment). **Explanation:**

**While the Center technically does not have an Operating Budget, sources of funding for the Center approximate \$8-10 million / year. Funding sources include: the National Science Foundation, Industrial / Government organizations, both as members of the Center and through proprietary Center research projects. There also is internal cost sharing of \$ \$500,000 per year committed to the Center by the University. In addition, subcontracts to partner institutions must be monitored in conjunction w/ the Division of Sponsored Project Administration to be in accordance with NSF requirements.**

- **Other Relevant Quantitative Information** (e.g., monetary programs such as fundraising, financial aid, tuition revenues, project size or costs). **Explanation:**

**Managing NU CenSSIS Renovation Budget of \$500,000.**

#### 4. The Organization (Please attach an organization chart for this area)

- **Title of the immediate manager:**

Director, Center for Subsurface Sensing and Imaging Systems (CenSSIS) and

Professor, Electrical and Computer Engineering

- **Other jobs reporting to the same manager:**

**10 person Multi-University Senior Management Team including: Deputy Director, Co-Principal Investigators, Research Co-Leaders, and Industrial Liaison. Other non-CenSSIS personnel include 1 principal Research Scientist, Director Project SEED.**

- **Number of employees reporting directly to this job:**

Professional and  
Administrative (Exempt)

Office / Support and Technical  
Staff (Non-exempt)

Co-op Students

Other Students

(Graduate Assistants)



2

3

From College of Business & College of Engineering

### 5. Knowledge, Skill Sets, and Experience

Provide the minimum level of qualifications required for an employee to succeed in this specific job.

- Masters degree in Business (MBA) or comparable degree
- Substantial business management experience and acumen in:
- Operations and planning for complex corporate and academic environments
- Accounting, preparation and analysis of financial statements / budgets;

Financial planning and control monitoring

- Client account management and customer service for interfacing with diverse constituencies at all levels externally and internally, such as: various levels of the NU community, University Administrators, faculty/researchers and students at partner universities, industrial partners, prospects & friends
- Management and Supervision of a multi-task office environment
- Strategic marketing, marketing communications experience for external and internal promotion of Center activities and to enhance effectiveness of Center's strategy; strong communication skills, both oral and written, with the ability to articulate Center's mission, policies, and write varied types of communications.

2.

**Signatures:**



2.

Employee

2.

Date

2.

Manager

2.

Date

### CHECKLIST

**Please take a moment to review this checklist:**

- Have you responded fully to each item?
- Do your responses focus on the important end-results for the job rather than on tasks?
- Does the completed Job Scope Description provide a clear picture of why the job exists?
- Do the job qualifications reported reflect the minimum level for successful performance rather than the Employee's personal background and profile?
- Have you limited your responses to the space provided?
- Have you attached a copy of an organization chart for your area?

**Thank you for taking the time to complete this Job Scope Description in a thoughtful manner.**

### **HUMAN RESOURCES MANAGEMENT**

#### **Example #7**

Confir  
med

Returned

Date

ER  
Code

(The above section will be completed by the Compensation Unit following review



of job mapping recommendations)

5/27/2008 4:42:55 PM

### **Synthetic Biology Engineering Research Center (SynBERC)**

#### **Academic Program Mgt Officer 4**

#### **Job Description**

#### **Instructions:**

1. The “track changes” feature has been activated in this job description template.
2. Edit all pre-filled information below to specifically reflect the employee's current responsibilities, with the exception of the following sections which do not change: Job Title, Job Field, Job Family, Job Category, Job Level, Generic Scope.
3. Provide a copy of the most current department organization chart.
4. Keep the “track changes” functionality activated in the final submitted copy

**Name:** Employee ID:

**Department:** QB3 /SynBERC **Division:** Current

**Payroll Title:** Sr. Admin. Analyst

**Job Title:** Academic Program Mgt Officer 4

**Recommended**

**Working Title:** Administrative Director

**JobField:** Research Administration **JobFamily:** Academic Program Management

**JobCategory:** Professional **JobLevel:** Advanced

**Supervisor**

**Name:**

**JobMapping**



**SubmissionDate:** 11/18/2008

**1. Job Summary** (Purpose of the Position – please give a brief description of the overall purpose of the position. “Why does this position exist?” The Job Family Summary has been provided as a starting point.)

The Administrative Director (AD) serves the entire, multi-institution ERC community as the guardian of resources, policies, and process. Working closely with the Director and research leaders, s/he serves as the primary point of contact in the day-to-day operation of the center, assists in the overall management and development of the ERC, and serves as manager for finance, HR, IT, contracts/grants, and student services. General management includes long and short range strategic planning in determining the mission and directing all activities of multi-disciplinary departments through subordinate management staff. The AD is the primary liaison between the center and external agencies (including NSF), promotes and participates in strategic proposal and program development, and is primarily responsible for executing the center's internal and external communications.

## 2. Scope

**Generic Scope** (Uniform across all jobs at this level - do not modify): Technical leader with a high degree of knowledge in the overall field and recognized expertise in specific areas; problem-solving frequently requires analysis of unique issues/problems without precedent and/or structure. May manage programs that include formulating strategies and administering policies, processes, and resources; functions with a high degree of autonomy.

**Custom Scope:** Independently oversees a moderately sized academic or research program and represents the program to outside organizations. Oversees all administrative operations, finance, human resources and facilities for program. Designs and develops major program components, and administers the full range of the program's operational requirements. Works with faculty on formulating short-term planning and procedures. Develops and organizes conferences and other public forums. Works under direction of Principle Investigator to establish center agenda, funding, objectives.

**3. Key Responsibilities** (Indicate key functions and the estimated percentage of time spent performing each function. If there are more than 10 key responsibilities, some of the similar functions may be grouped together and an estimated % applied. Please indicate which responsibilities are considered "essential" to the successful performance of the job as defined by the Americans with Disabilities Act. Visit the Career Compass Glossary for an explanation of essential functions:

<http://careercompass.berkeley.edu/jobstandards/resources/glossary.html>)

If applicable, describe the position's role in planning the programs, functions, activities, and processes of the organizational unit to achieve unit goals and objectives.

%

**of time**

Essential Function (Yes/No)

## Key Responsibilities

(To be completed by Supervisor)

25 Directs and administers an independent program with complete administrative, financial and programmatic responsibility.

25 Participates in the program budgeting and accounting processes to support financial infrastructure of program. Manages, plans, and administers a full range of reporting functions where the operations are significantly complex in terms of budgetary funding, number of faculty, staff and students, and/or are broad in scope due to focus of operations or under requirements.





10 Identifies and pursues funding opportunities and revenue streams.

10 Assists in developing research by serving on committees representing the program, participating in short term and long term planning. Assesses program's effectiveness, and recommends changes to program's content, policies and procedures accordingly. Provides post-award financial administration and management for research funds in accordance with campus policy and agency requirements.

10 Develops and implements programs, events and/or communication strategies designed to inform external constituencies of institutional programs, activities, and practices; constituencies may include the general public, prospective students, parents, donors, campus visitors, government and/or community representatives. May provide presentation of course or program.

20 Researches, develops, and implements electronic and traditional media (including content and design) designed to inform external constituencies of institutional programs, activities, policies, and practices; constituencies may include the general public, prospective students, funding agencies, campus visitors, and/or community representatives.

**0% (To update total%, enter the amount of time in whole numbers (without the % symbol- e.g., 15, 20) then highlight the total sum (e.g., 1%) at the bottom of the column and press F9. The total sum should add up to 100%.)**

#### 4. Knowledge and Skills (typically required of the position)

- Academic background and experience in selected area of research.
- Advanced knowledge of administrative, budgetary, human resources and financial principles and practices.
- Advanced oral and written communication skills.
- Advanced ability to think creatively and independently on concepts requiring advanced analytical skills.
- Advanced interpersonal skills and ability to work with diverse groups to achieve results.
- Advanced ability to work collaboratively with internal and external peers and managers.
- Highly skilled fundraising experience.

#### 5. Education and Training

If needed, edit the pre-filled information below.

##### Education/Training:

Advanced degree in related area and/or equivalent experience/training

##### Licenses or certifications, if any:

#### 6. Problem Solving

*Please provide 2-3 examples of problem solving for this position as described below (please be brief: 1-3 sentences).*

##### Common problems solved by the employee:

- Change of subcontract scope of work and budget



- Reconciling cost accounting for multi-university center

### Unusual or complex problems solved by the employee:

- Developing small (less than \$100k), non-technical project proposals
- Developing web-based project data collection and reporting

### Problems/situations that are referred to this employee's supervisor:

- Funding agency criticism of center's strategic plan
- Significant changes in budgeted versus actual costs for center

### 7. Supervision (NOTE: Complete this section ONLY if the incumbent in this position, in addition to the personally performed duties, performs at least 3 of the following):

- Independently selects subordinates OR participates in the interviews and recommends who should be hired;
- Independently determines subordinates' performance ratings OR recommends performance ratings;
- Independently decides within budgetary limitations the amount of subordinate merit increases, whom will be selected for promotional opportunities, and whether to request the reclassification of a position, OR recommends these actions;
- Has independent authority to issue written warnings and suspensions and determines what discipline should be imposed upon a subordinate OR recommends such actions;
- Has independent authority to resolve grievances or complaints OR formulates and recommends a resolution to grievances or complaints.

"Recommendations" are customarily given substantial weight by higher-level supervisors/managers and are typically accepted. Positions that give work assignments to other employees and review their work products, but do not perform at least 3 of these functions are typically LEAD positions, not supervisory positions.

*Indicate employees supervised, job title and FTE.*

### **Employee Supervised Job Title FTE**

**Please follow your department's or division's procedures for management review and then submit it to your Department HR Manager.**

### **Document Retention**

**Review the job description with the employee before submitting it and annually thereafter at the time of the employee's performance evaluation. Sign and date below and place a copy in the personnel file.**

**(Signature below is only required for hard-copy retention within the department. Electronic submission does not require signatures.)**



**Supervisor Name:**

**Employee Signature:**

Date:

**Supervisor Title:**

**Supervisor Signature:**

Date:

### Attachment 6.4: Sample Acknowledgement of NSF Support

(Check individual Cooperative Agreements for specific language requirement)

The Awardee is responsible for assuring that an acknowledgment of NSF support is made:

1. In any publication (including World Wide Web pages) of any material based on or developed under this Agreement; and
2. During all news media interviews, including popular media such as radio, television, newspapers, and newsmagazines.

This acknowledgment of NSF support through the Engineering Research Centers Program must appear or be stated in publications, presentations and interviews resulting from ERC-supported activities, using one of the following statements:

Either: *"This work was supported primarily by the Engineering Research Centers Program of the National Science Foundation under NSF Cooperative Agreement No. xxxxxx. Any Opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect those of the National Science Foundation."*

Or: *"This work was supported in part by the Engineering Research Centers Program of the National Science Foundation under NSF Cooperative Agreement No. xxxxxx. Any Opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect those of the National Science Foundation."*

For research supported by other sources but making use of ERC Shared Facilities, the following statement should be used:

*"This work made use of Engineering Research Centers Shared Facilities supported by the National Science Foundation under NSF Cooperative Agreement No. xxxxxx. Any Opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect those of the National Science Foundation."*



## **Attachment 6.5: NSF Classification\Personnel Types**

## **Attachment 6.6: Site Visit Checklist**

**Source URL:** <https://legacy.erc-assoc.org/content/chapter-6-administrative-management>