



2.2 Vision and Center-Level Strategic Planning

2.2.1 Creating the Vision

How are the themes and vision for a prospective new ERC developed? It begins with a challenging and timely problem of great societal importance for which no single institution or discipline can overcome the technical, social, and economic barriers to achieve workable solutions. Every investigation or research agenda is based on a "genealogy," or cumulative body of knowledge or thought, upon which the researchers base their current understanding of a field and from which they draw a vision of how the current state of knowledge might be advanced.

Based on the historical developments in the field, each center creates a vision of what can be accomplished within 5- and 10-year horizons. Such a research vision should be based on realistic resources and the need for bringing various aspects of a particular field together to create the needed critical mass of interdisciplinary effort. The vision must be unique, or it will not strike a responsive chord in the NSF site review team that makes the initial recommendation for approval. The uniqueness of the vision will have educational ramifications both for the ERC and for achieving breakthroughs of sufficient intellectual weight to alter basic concepts in the field in which it originated, which will lead to educating a new type of graduate. However, the vision must also be industrially related and of sufficient practical importance to favorably affect the competitiveness of this country, if it is to gain the imprimatur of the ERC Program.

Since the main mission of the ERC Program is to make a positive impact on the U.S.' competitiveness in the global marketplace, it is important to understand and articulate the potential commercial impact of an ERC, if it is to be successful in achieving its goals. One way to make a case for the significance of the impact is to start with an extensive market analysis showing the size (current or potential) of the industry affected. If successful, will it impact systems integration and new ways of doing business? Will it help address the social dimensions of change? Will it create a major new industry? Is there an existing major industry in which the ERC expects to stimulate technical advancement and growth? Will the role of this ERC be central in the future of that industry? These are all elements of the center's vision.

Here the research thrust area^[1]* leaders, center associate directors, and key industrial representatives usually have input into the development of the vision and achieve consensus regarding it. Although the broadest possible "buy-in" to the vision is considered essential, it is difficult to involve more than this group of key individuals in these discussions. In many cases an incoming Director will have formed very strong working relations with a few key individuals. These persons believe passionately in the vision on which the center is based, and in the objectives of the ERC Program. This group must forsake the security of the successful, well-funded Principal Investigator (PI) format of traditional research grants.

A consensus vision statement is now prepared that is shared with center faculty, students, the university hierarchy, and industrial representatives. Each vision statement should identify the overall goals of the center, not only in research but also in education and industrial interaction. Among the most challenging tasks is to build a sense of "community" among ERC researchers, who are spread among different campuses and different universities.

As the originator and/or custodian of the vision of the ERC, the Director must be prepared to articulate this vision, in verbal and written form, to a wide variety of audiences ranging in sophistication from local agencies to an NSF site review team. The Director is responsible for "tracking" the vision of the ERC and working with the Deputy Director in its evolution and execution to guarantee that the center is always at the cutting edge in research and at the forefront in the articulation of the perceptions that form the vision. The Director ultimately will be held responsible if the ERC is ever eclipsed or surpassed in any major component of the vision on which it is based. Consequently, a Director must maintain continuously a clear perception of the linkages between the vision of the center and its research, education, and industrial activities and progress within them.

Since it is essential that all participants in an ERC buy in to the vision once it is articulated, it is useful to examine the sub-elements of the vision in the form of the strategic plan and thrust area research plans at regular intervals so that the faculty, students, and industrial members of an ERC community have the opportunity to become engaged with the vision and subscribe to it. In ERCs that are narrowly based on specific, fast-changing technologies, it may actually be imperative that the basic vision of the center be examined periodically, in cooperation with industry, and altered to suit the advancing state of the art. However, most ERCs are based on much broader visions, and here



the role of the Director is pivotal. Strategic plans are just that—strategies. The thrust areas of the ERC can assume a life of their own and begin to consume their leaders' scientific and engineering passions, but thrust areas are only more valuable than the sum of the efforts of individual PIs if they contribute to achieving the center's vision. It is the task of each Director to ensure that the vision is clearly seen and well served by the center through integrated research and education. In fact, it is a requirement of the ERC Program that the integrated whole of the center be greater than the sum of its individual parts.

2.2.2 Pursuing the Vision: The Strategic Plan

The ERC now must develop a broad strategy for achieving its vision. How can a cross-disciplinary center take advantage of the opportunity envisioned? This is its mission. Is it realistic? Does the ERC have the necessary intellectual horsepower to achieve success in this area?

One way to answer these questions is to form a "blue ribbon" panel of objective outside experts to evaluate the plans and personnel of a proposed ERC. If the answers are encouraging, then the next step is to develop a strategic research plan to achieve the vision and mission. In this chapter we will focus on the overall strategic plan for a new center. Chapter 3, "Research Management," describes the process for development and updating of the strategic research plan.

In contrast to the process of originating the center's vision, the process of strategic planning is more democratic. In some centers the initial planning is done by an executive committee consisting of the Directorate (including associate directors, if any), thrust leaders and/or senior faculty, and key staff such as the education and outreach directors. A smaller group allows faster convergence on the initial plan. But in most centers the process involves, either at the outset or subsequently, discussion and input from all faculty members and research staff. (At one center the plan is posted electronically for criticism by all center participants; commentary is circulated via e-mail until all issues are resolved.) Usually the plan is reviewed and discussed at least annually by the Industrial Advisory Board (or equivalent). It can be tricky to avoid the natural tendency of industry to direct the details of the plan toward areas of short-term interest; the Director must be vigilant to filter out such influences and absorb them in the higher aims of the plan.

However, as with all proposals, once the center looks like it will be funded the faculty will ask "what's my role and funding?" This is especially challenging for ERCs, because typically a small, dedicated core of faculty may have actually written much of the proposal and the research thrusts and themes are usually written around teams, not individuals. Thus, the individual roles of faculty and students may not be well defined. For this reason, a center-wide retreat very early in the life of ERC is important—perhaps even prior to the actual funding start date—to develop a coherent vision and remind all participants about the various components of a viable ERC.

The first kick-off meeting would be the starting point for the review of the strategic plan for the ERC. Later on, it will also provide a benchmark for assessing the progress of the center and the value added to the field by its activities. No strategic plan is static, and prior to each annual report the plan should re-visited and refined. Often some topics that seemed important at the proposal stage will seem less critical as new ones emerge and the ERC team begins to pursue its research and outreach agenda. It is unwise to conduct a wholesale revision of the strategic plan. Rather, it's more like mid-course adaptations to experiences and "boots on the ground" realities, and responding to initiatives that may evolve from close collaboration with IAB members.

The Director, with key leaders of the ERC, may engage in "thought pieces" in influential feature articles or editorials about the domain in which they work. This will help articulate where the field is going and, by implication, how the strategic activities of the ERC map onto this comprehensive view.

[1]A cluster of research projects managed as an integrated group to achieve one component of the center's overall strategic plan.

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