

PLANNING THE GEN-3 ERCs

Questions Posed at the 2004 ERC
Program Annual Meeting in Lynn
Preston's Plenary Presentation

Examine Underlying ERC Program Assumptions and Changes Needed for 2020

Assumption 1. -- To succeed in academe cross-disciplinary, team research needs to be motivated by a vision, strategically planned, and organized by a center construct, with sustained large-scale funding.

- Can cross-disciplinary research and its impact on education flourish in academe without centers?
- Should the ERC model be expanded to encompass smaller groups with shorter funding horizons?
- Should there be variability in the time-scale of funding depending upon the complexity and challenge of the vision?
- What's the impact of the multi-university model on academe and NSF?

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Assumption 2: ERCs should be focused on engineered systems of major national and industrial importance.

- | Is focus on engineered systems still relevant to industrial needs?
- | Should ERCs focus solely on transforming technologies?
- | Or, should there be a combination of incremental and transforming foci within an ERC and among the ERCs?

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Assumption 3: ERCs are needed to provide a platform for undergraduate and graduate students to integrate fundamentals across disciplines, engage in the design and proof-of-concept of new technologies, and integrate technologies into systems

- | Is there a significant difference between the typical ERC and non-ERC graduates in terms of their productivity in industry?
- | If there is still a need for ERC funding to generate this type of graduate?
- | What additional characteristics will be needed for the future, especially in a global economy with an open labor market?
- | Should there be more emphasis on education for innovation?
- | How can the ERC model for education be further extended to undergraduate engineering education for all?

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Assumption 4: Partnership with industry based on memberships enables ERCs to meet industry's needs, define new opportunities, and speed technology transfer

- ❑ Centralized R&D in large firms in 1985 to evolved to distributed innovation by small firms in 2005....how does this impact the ERC model for industrial collaboration?
- ❑ What is the most effective way to speed technology transfer, especially in emerging fields?
- ❑ Have other nations developed more effective modes of industrial partnerships that ERCs should explore?
- ❑ Does industry still need ERCs to be focused by systems goals?