

# Discovery Research PreK-12

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## Discovery Research PreK-12 Program

Current Solicitation:  
NSF 20-572

Submission deadline:  
05 Oct 2022

All proposals must be  
submitted using  
[Research.gov](https://www.research.gov) or  
[Grants.gov](https://www.grants.gov)

The DRK-12 program seeks to significantly enhance the learning and teaching of science, technology, engineering, mathematics and computer science (STEM) by preK-12 students and teachers, through research and development of STEM education innovations and approaches.



# Overview of the Session

- Describe NSF Policies and Procedures
- Describe the DRK-12 Program & Project Expectations
- Proposal Preparation and Review Process
- Further Information and Resources
- Final Questions



# NSF Policies and Procedures

## Proposal and Awards Policies and Procedures Guide (PAPPG)

- Updated annually, so attend to the one that is in effect at the time of submission.
- Sets all policy for submitting proposals to NSF. Solicitation supersedes the PAPPG.

**NSF 22-1 is currently in effect.**

## SAM.gov Unique Entity Identifier (UIN)

- All submitting organizations must have active registrations
- The General Services Administration (GSA) is currently experiencing a backlog in validation requests.

**New organizations are advised to register as soon as possible.**



## How to submit

- DRK-12 now requires the use of:
  - Research.gov
  - Grants.gov
- Submissions via Fastlane ***are no longer accepted.***

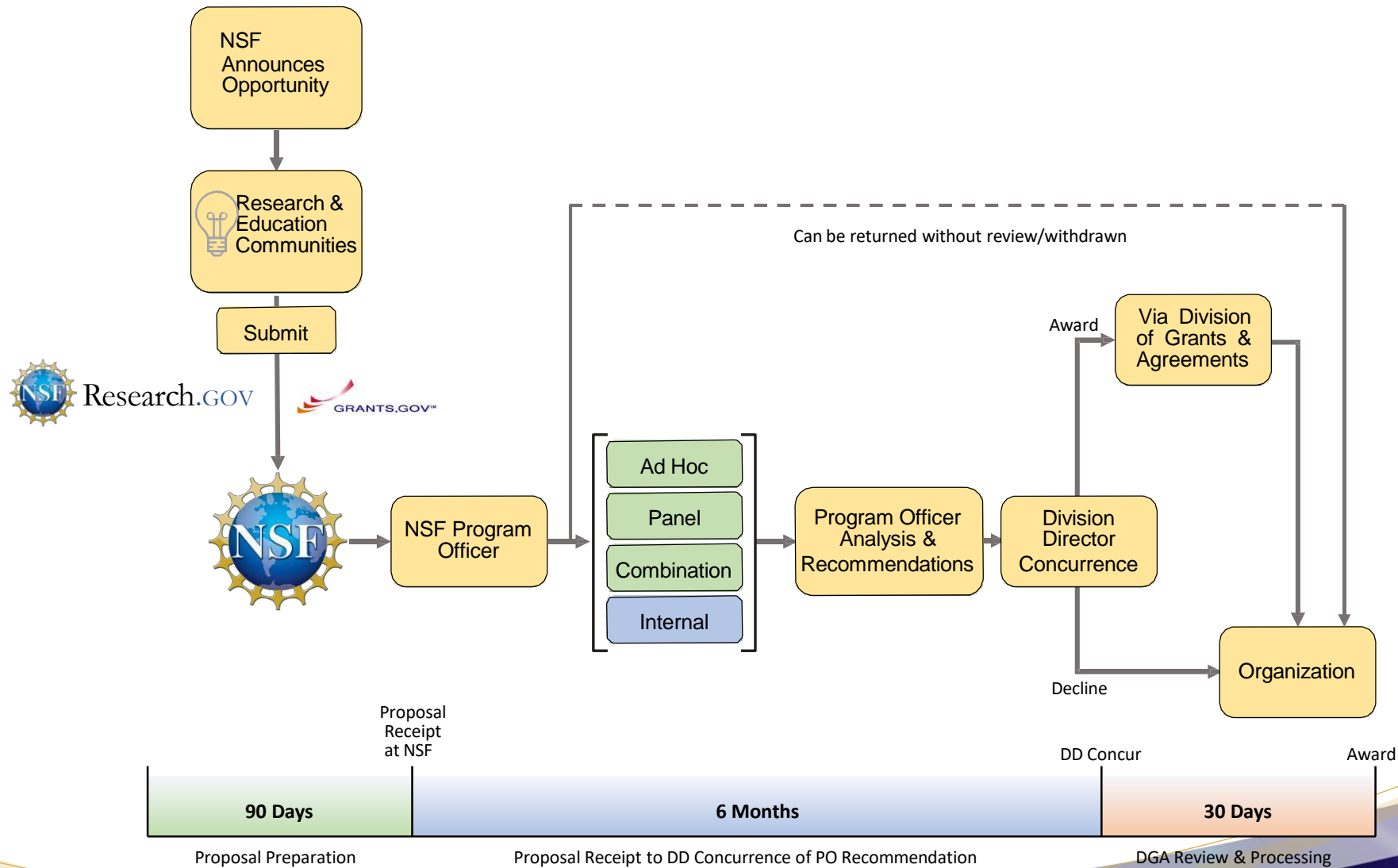


# NSF as a Funding Agency

- Field-driven funder
- DRL funds STEM education in any area of science and/or engineering supported by the agency
- Program Directors are part of the decision-making process, so can only give limited feedback to PIs



# Proposal Review Process and Timeline



# Eligibility

(Ch. 1 of PAPPG)

- Any organization is eligible to apply. Individuals cannot apply for DRK-12 funding.
  - Must be registered in the SAM.gov system
- Must demonstrate acceptable accounting mechanisms in place to be recommended for funding.
  - Prospective new awardee guide [https://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=pnag](https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pnag)
  - Pre-award reviews <http://www.nsf.gov/bfa/dias/caar/index.jsp>
  - Federal requirements for awards <http://www.nsf.gov/bfa/dias/caar/fed.jsp>





# Dear Colleague Letters

- **Not** new funding opportunities
- Call the field's attention to existing funding opportunities that will accept proposals in an area
- Example:
  - Dear Colleague Letter: Supplemental Funding Requests for Grade 6-12 Data Science Education (**NSF 22-071**)



# Other DRL-based programs

- Advancing Informal STEM Learning (AISL)
- EHR Core Research (ECR)
- Innovative Technology Experiences for Students and Teachers (ITEST)
- Computer Science for All (CSforAll)
- Research on Emerging Technologies for Teaching and Learning (RETTL)
- Racial Equity in STEM Education (EHR Racial Equity)



# Goal of the DRK-12 Program

Catalyze research and development of (STEM) education innovations or approaches that can serve as models for use by the nation's formal STEM education infrastructure (e.g., schools, districts, states, teachers).



# DRK-12 Funded Projects

You can find examples of DRK-12 funded projects that will give a sense of what is fundable and their outcomes at the DRK-12 webpage.

[https://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=500047](https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=500047)



# Discovery Research PreK-12 Program

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# Anatomy of the DRK-12 Program

- STEM education focus
- Formal (classroom) educational settings

## Strand

Assessment

Teaching

Learning

## Project Type

Exploratory

Design & Development

Impact

Implementation & Improvement

Synthesis

Conference

## Funding Level

I: \$450,000, 3 years

II: \$3,000,000,  
4 years

III: \$5,000,000,  
5 years

Syn: \$600,000,  
3 years

Con: \$100,000,  
1 year

# Exploratory Studies

- Establish the basis for the design and development of an intervention
  - Explore relationships among design features and outcomes
  - Must have a conceptual framework or theory of action
- Needs to provide evidence of factors associated with learning outcomes



# Design and Development

## Goals

- specify the practical problem the project intends to address;
- justify the importance of the problem;
- describe how your idea differs from existing practice
- why your ideas are likely to lead to improvements in practice, teaching, learning, etc...

## Theory

- strong theoretical and empirical justification for the proposed approach;
- compelling rationale for how features/components are expected to achieve intended outcomes
- include a well-explicated theory of change or logic model





# Design and Development

## Methods

- the methods for developing the innovation to the point where it can be used (the iterative development process);
- methods for collecting evidence related to feasibility;
- methods for obtaining pilot data on the promise for achieving the expected outcome.

## Stage (early vs. late)

- Both types must be clear on the iterative development process described previously;
- If there is an existing early version/prototype, then it is likely a Late Stage proposal;
- Late stage proposals should provide estimates of effect sizes (by the end of the project).



# Impact, Implementation and Improvement

## Impact

- Efficacy or effectiveness studies
  - Efficacy: impact under ideal conditions
  - Effectiveness: impact under “normal” conditions
- Should include evidence from experimental or quasi-experimental designs

## Implementation and Improvement

- Focus on how to make innovations succeed when implemented at scale
- Rapid, iterative, context-expanding research cycles
- Focus on understanding the conditions under which an intervention works



# Synthesis and Conference

## **Synthesis**

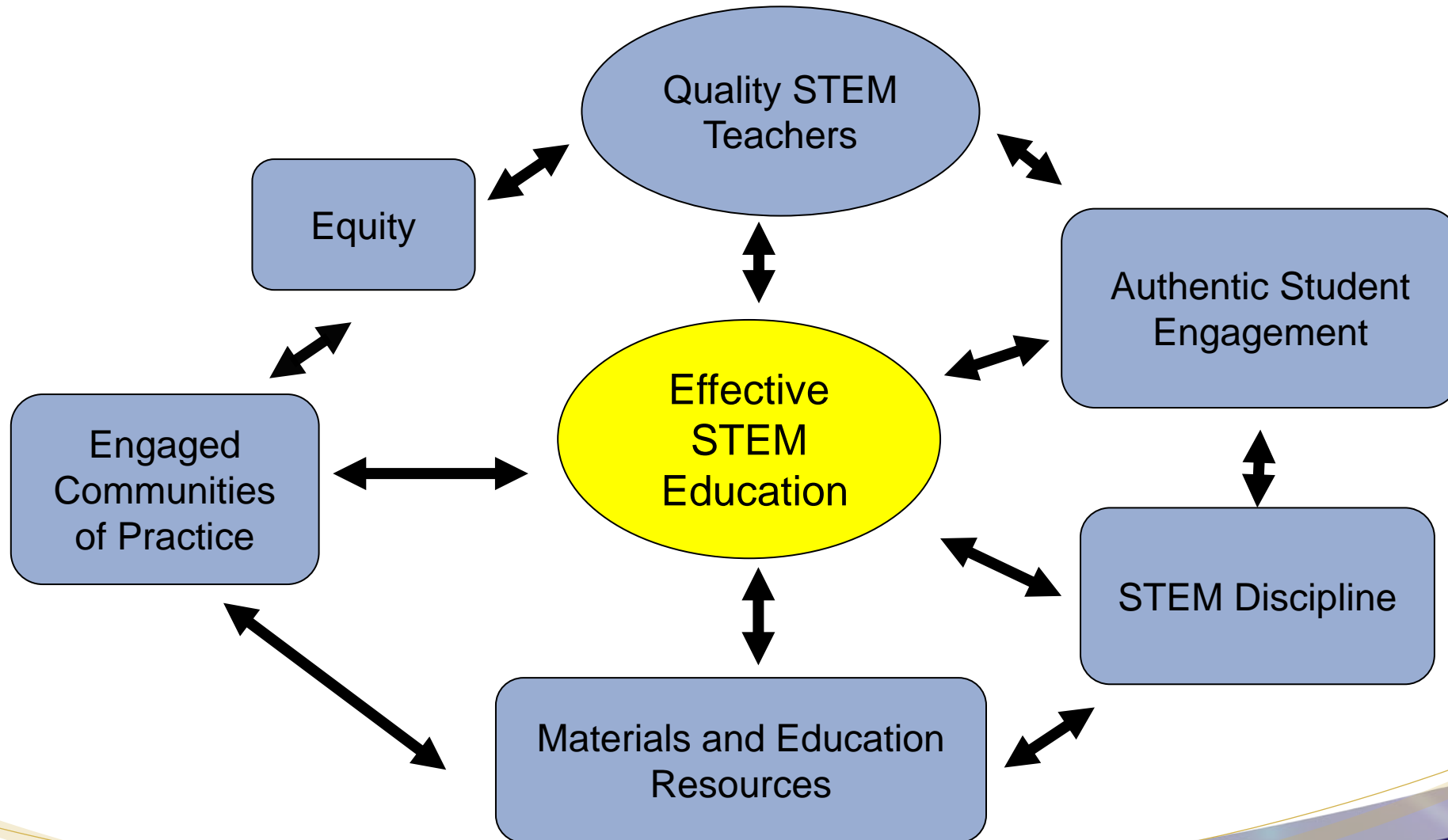
- Synthesis project include literature reviews, synthesis,, qualitative metasynthesis, and meta-analyses
- Contemporary research designs are a must

## **Conference**

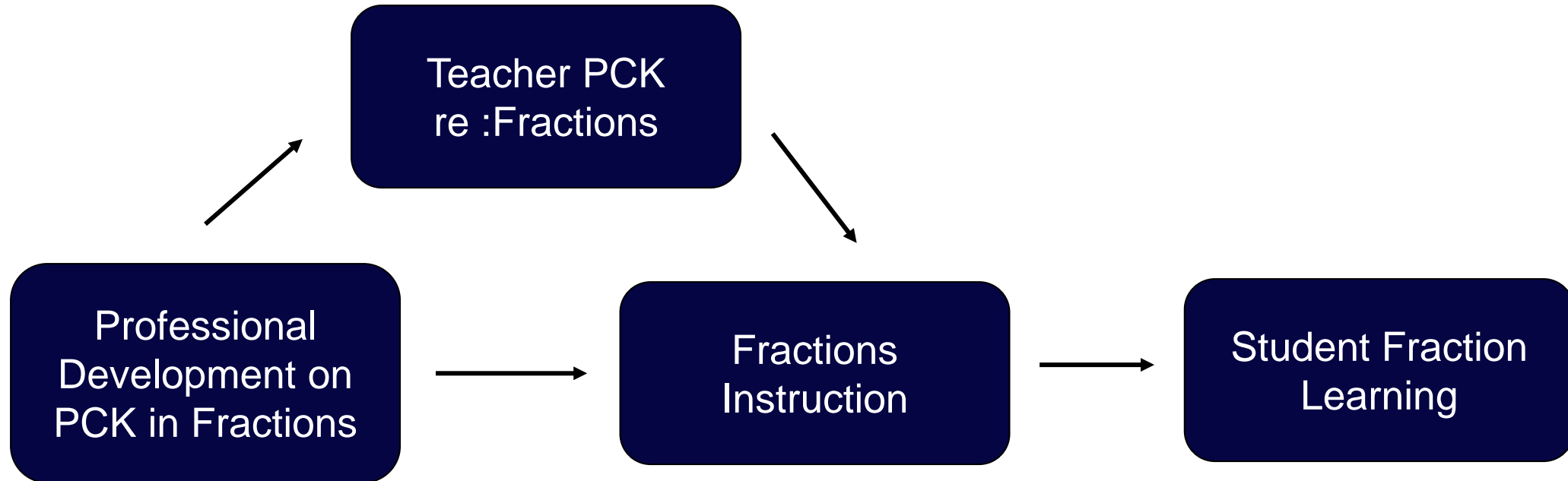
- Contact a program officer prior to submitting
- Must advance research or the research agenda for the field in some context



# Change model: wrong grain size



# Change model: overly simplistic



# Commitment, interest, and focal areas

- Areas of particular interest for funding
  - *Not limiting – projects across STEM will be considered*
- Projects involving these areas should still hew to the core DRK-12 mission
- Wondering about fit? Chat with a program officer.



Questions?

# Proposal Preparation

- DRK-12 Solicitation: NSF 20-572  
(Section V. Proposal Preparation and Submission Instructions)
- Proposals must be prepared in accordance with the PAPPG NSF 22-1





# Project Summary

- First Sentence
  - Type of Study: Exploratory, Design and Development (early/late), Impact, Implementation and Improvement, Conferences & Syntheses, Resource Network
  - Main strand addressed – Assessment, Learning, Teaching
- Second Sentence
  - STEM Discipline(s)
  - Grade or Age level(s) addressed
- Intellectual Merit and Broader Impacts
  - Must include separate statements on each of these two NSB criteria



# Mechanisms to Assess Success

- A proposal must describe appropriate project-specific external review and feedback processes.
- The review might include an external review panel and/or advisory board or a third-party evaluator.
- The external critical review should be sufficiently independent and rigorous to influence the project's activities and improve the quality of its findings.
- Successful proposals will:
  - describe the expertise of the external reviewer(s);
  - explain how that expertise relates to the goals and objectives of the proposal; and,
  - specify how the PI will report and use results of the project's external, critical review process.



# Supplementary Documents

- Brief letters of collaboration\*
- List of personnel on the proposal
- Data Management Plan
- Post Doc Mentoring Plan

**NO OTHER DOCUMENTS**

*\*be careful not to include attachments to the letters*



# Budget

- Should be consistent with level of work – you do not have to request the maximum!
- Two months salary: No more than two months of salary for senior personnel on all NSF grants unless justified



# Biosketch and Current and Pending Support

PAPPG 22-1\* includes new guidance on the format for these items and provides new templates to use.

Submissions that do not use the templates may be returned without review.

*\*biosketches can now be 3 pages under 22-1*



# Reasons for Return Without Review

- Violation of formatting rules of the PAPPG (e.g., font, page length)
- Too similar to a previously submitted proposal
- Failure to address specifically intellectual merit and broader impact in the Project Summary
- Unauthorized documents/data in the appendix or supplementary document section
- No post doc plan if post docs are included in budget
- No data management plan



# Proposal Review Process

Proposals are reviewed in panels composed of a range of external experts (e.g., educational researchers, content experts, teachers, developers)



# Merit Review Elements

Intellectual  
Merit

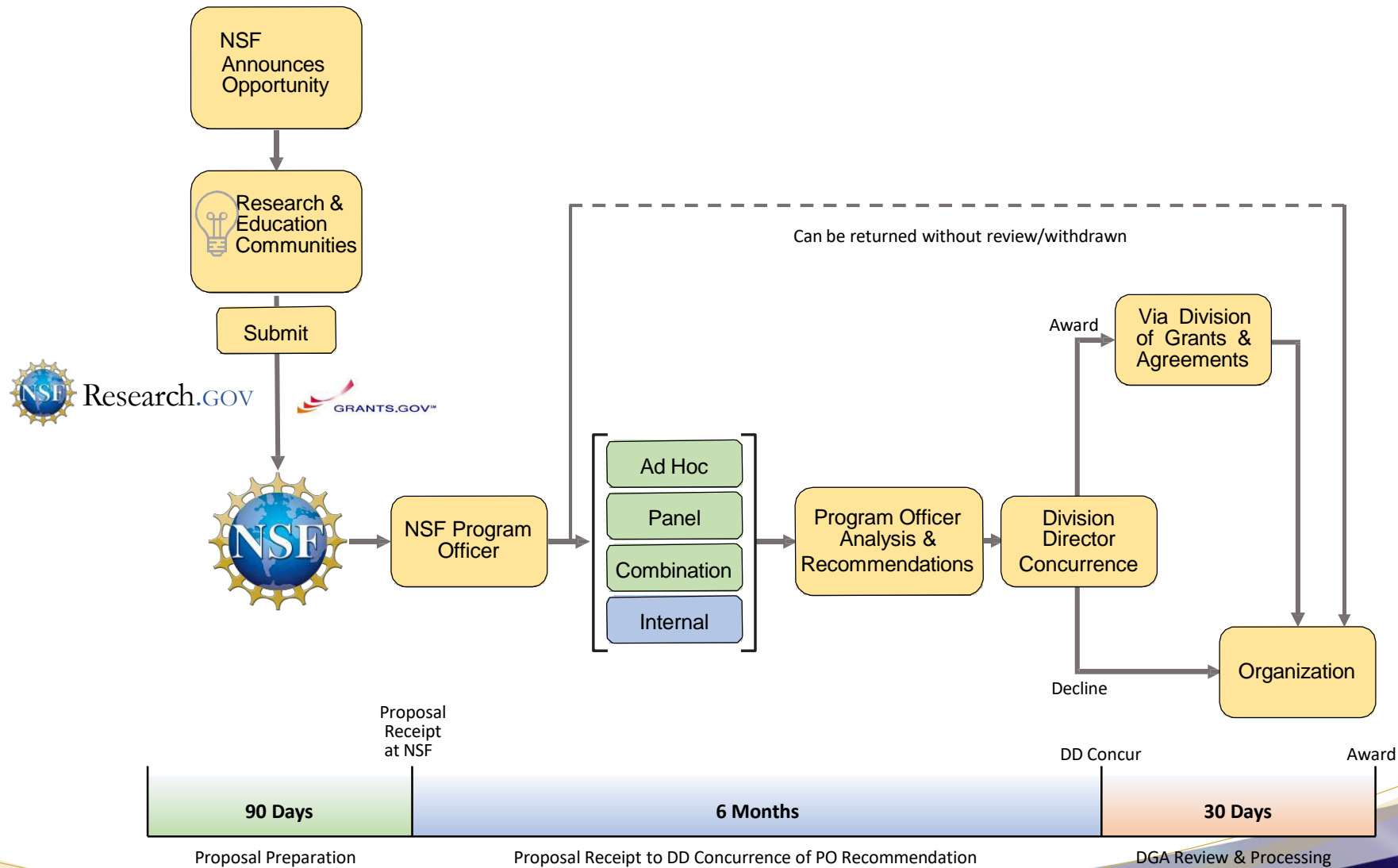
Broader  
Impacts

The following elements should be considered in the review for both criteria:

1. What is the potential for the proposed activity to:
  - Advance knowledge and understanding within its own field or across different fields (Intellectual Merit); and
  - Benefit society or advance desired societal outcomes (Broader Impacts)?
2. To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?
3. Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?
4. How well qualified is the individual, team, or organization to conduct the proposed activities?
5. Are there adequate resources available to the PI (either at the home organization or through collaborations) to carry out the proposed activities?



# Proposal Review Process and Timeline



# For Further Information

- Email: [DRLDRK12@nsf.gov](mailto:DRLDRK12@nsf.gov)
- Call 703-292-8620
- Contact a DRK-12 Program Director



Questions?



**Community for Advancing  
Discovery Research in Education**

This webinar was hosted by CADRE, the resource network for the DRK-12 Program.

**Webinar slides and recording will be posted to [cadrek12.org](http://cadrek12.org) and emailed to registered participants.**

**Resources of Interest:**

- NSF Proposal Toolkit: <http://cadrek12.org/resources/nsf-proposal-writing-resources>
- Prior DRK-12 funded work: <http://cadrek12.org/projects>
- Recent DRK-12 publications: <http://cadrek12.org/reading-list>
- Spotlights on STEM topics: <http://cadrek12.org/spotlights-stem-topics>

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**Good Luck!**