

IDEA > AWARD >
CLOSEOUT
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AI Across the Research Lifecycle

Session Description

- ▶ AI has already made significant waves across our campuses, impacting both the academic and research enterprises. We haven't fully realized the potential AI has to dramatically change the work we see as research administrators across the lifecycle of research: writing a proposal application, reviewing and negotiating awards, submitting progress reports, monitoring budgets, and submitting manuscripts for publication. There's also compliance to consider: export control, data management & sharing, and HIPAA (among many others!). In this session, we'll talk about what is and what will be happening in all of these activities, how it impacts you and your researchers, and what to look out for.
- ▶

Topics for Today



Setting the frame – what you need to know!



Put on your thinking caps!



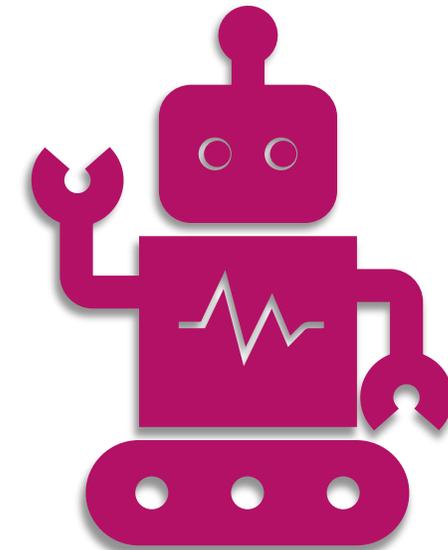
What are the opportunities and caveats within the research administration lifecycle?



Talking points for you: managing up & down

What is it anyway?

- ▶ AI/ML: Artificial “Intelligence” & Machine “Learning”
- ▶ NLP: Natural Language Processing
- ▶ LLM: Large Language Models
- ▶ GPT: Generative Pre-Training Transformer
- ▶ Prompt engineering



Critical Thinking: Do you want it to be fast? Or do you want it to be right?

AI Overview

Learn more

According to UC Berkeley geologists, people should eat **at least one small rock a day**. Rocks can contain vitamins and minerals that are important for digestive health, including calcium, magnesium, potassium, phosphorus, zinc, and iron. Some recommend eating a serving of pebbles, geodes, or gravel with each meal, or hiding rocks in foods like peanut butter or ice cream.

ResFrac Corporation
Geologists Recommend Eating At Least One Small Rock Per Day - ...
May 19, 2021

The Geological Society
The Geological Society

climatehubs.usda.gov
Climate-Smart Agriculture
Amendments
Some of the vital nutrients found naturally in rocks include...



How many muslim presidents has the US had?

All News Images Shopping Videos More Tools

AI Overview

Learn more

The United States has had one Muslim president, Barack Hussein Obama.

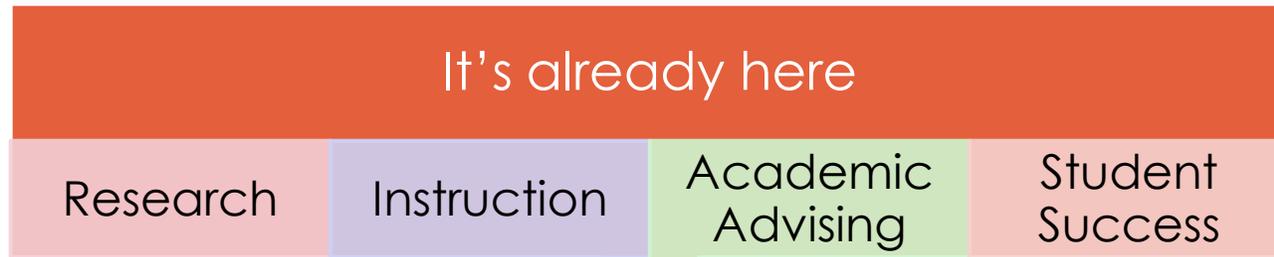
Oxford Academic
5 Barack Hussein Obama:
America's First Muslim President?
Barack Hussein Obama: America's
First Muslim President? ... Faith in the...

AI Overview

Learn more

Cheese can slide off pizza for a number of reasons, including **too much sauce, too much cheese, or thickened sauce**. Here are some things you can try:

- Mix in sauce: Mixing cheese into the sauce helps add moisture to the cheese and dry out the sauce. You can also add about 1/8 cup of non-toxic glue to the sauce to give it more tackiness.
- Let the pizza cool: The cheese will settle and bond



Unlike other technological advances over the years, it has the power to impact operations at all corners of the research enterprise

What does it look like on campus?



The Research Administration Lifecycle

Proposal
Development &
Submission

Receipt of
Award:
Negotiation &
Setup

Management of
Award

Compliance

Award Closeout

Proposal Development & Submission



Faculty

Literature review
Proposal writing



Research Administrators

Proposal review checklists
Review by eRA systems – it's coming



Research Development

Matching opportunities with faculty
Shovel-ready project ID for quick turn needs

▶ But...

- ▶ What do sponsors expect in proposal docs?
- ▶ What data must be used to “train” the LLM?
- ▶ Most guidance suggests that AI-generated images should not be used
- ▶ What else?



Receipt of Award & Negotiation

Generating award summary sheets for PI

Automating processes for PI acceptance of award terms

Contract negotiation example:

- Troublesome clauses: publication restrictions, intellectual property, venue/jurisdiction, indemnification (and others!)
- Recognize the clause, provide fallback options

Management of Award

Automating invoicing subs

Monitoring burn rates and setting flags as needed

Monitoring budget changes and alerts for prior approval requirements

Financial reporting/Invoicing

Closeout

Compliance

- ▶ IRB protocols
 - ▶ Exempt / Expedited / Full Review
 - ▶ Review of protocol
 - ▶ IACUC protocol review
 - ▶ Checking proposal, award, other documents to identify compliance issues
 - ▶ Possible uses in research security / research intelligence
- ▶ But....
 - ▶ How to handle confidential data?
 - ▶ Ensuring restricted data is not compromised
 - ▶ AI certainly generates research integrity conversations
 - ▶ Authorship
 - ▶ Appropriate citation

Considerations



**Data Management & Sharing /
Public Access policies**



Expectation of confidentiality

Peer review
Business sensitive information



**Regulated data: FERPA,
HIPAA, Export Control, CUI, etc.**



Management Opportunities

Workload complexity scores

Data analysis

Policy creation

Live examples:

- Write a policy
- Create a budget
- Analyze an excel file

Data Analysis

ChatGPT 4o >

Nsf24308 Tab024

#	Table 24
1	Federally financed higher education R&D expenditures, ranked by FY 2022 R&D expenditure
2	(Dollars in thousands)
3	Institution
4	Johns Hopkins U.a
5	U. Washington, Seattle
6	U. California, San Diego

Please analyze this data



The dataset contains federally financed higher education R&D expenditures, with the data organized by institution and year. Each row corresponds to an institution, and the columns provide the institution's rank and expenditure amounts from 2010 to 2022 (in thousands of dollars). However, some of the columns are unnamed, and it appears that every second column for each year is empty.

To analyze this dataset effectively, I will clean the data by removing unnecessary columns and renaming the relevant ones. After that, I can provide insights such as identifying trends, ranking changes, and expenditure growth over time.

Let me clean and organize the dataset first.

Data Analysis

ChatGPT 4o >

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Columbia U. in the City of New York

I have cleaned and organized the dataset for you. It now contains the federally financed higher education R&D expenditures for various institutions from 2010 to 2022. You can view the data, which includes the institution names, ranks, and yearly expenditure figures.

If you would like specific analyses, such as identifying trends, calculating growth rates, or comparing the top institutions, let me know!

Which institution had the most growth from 2010 to 2022



The institution with the most significant growth in federally financed R&D expenditures from 2010 to 2022 is **Saginaw Valley State University**, with an impressive growth of **2940.26%**. This suggests a substantial increase in its research funding over the period.

Would you like to explore this further or analyze any other aspects of the data?

which institution in the top ten had the most growth from 2010 to 2022



Among the top 10 institutions, **Georgia Institute of Technology** had the most growth in federally financed R&D expenditures from 2010 to 2022, with a growth rate of **152.74%**.

Would you like further details on this or other comparisons?

Data Analysis

ChatGPT 4o >

predict which institutions will reach the top ten in 2025



Predicting which institutions will reach the top ten in federally financed R&D expenditures by 2025 requires trend analysis of historical data to forecast future values. I will use the growth rates of each institution and extrapolate their expenditures into 2025 to make an informed prediction.

Let me calculate the projections and identify potential institutions that may enter the top ten by 2025.

Based on the projection for 2025, the following institutions are predicted to be in the top ten for federally financed R&D expenditures:

1. **Johns Hopkins University**
2. **Georgia Institute of Technology**
3. **University of Washington, Seattle**
4. **University of California, San Diego**
5. **Duke University**
6. **University of Michigan, Ann Arbor**
7. **Columbia University in the City of New York**
8. **University of California, Los Angeles**
9. **New York University**

These projections are based on their historical growth trends from 2010 to 2022.

Policy example – PI policy



University Policy on Eligibility to Serve as a Principal Investigator on Sponsored Projects

Policy Statement

The University is committed to supporting high-quality research and scholarly activities. To ensure effective management and oversight of sponsored projects, this policy outlines the eligibility criteria for serving as a Principal Investigator (PI) on such projects.

Scope

This policy applies to all faculty, staff, and students involved in sponsored projects at the University.

Definitions

- **Principal Investigator (PI):** An individual responsible for the overall design, conduct, and reporting of a sponsored project.
- **Sponsored Project:** A research, training, or public service activity funded by an external agency or organization through a grant, contract, or cooperative agreement.

Eligibility Criteria

1. Full-Time Faculty:

- Tenure-track and tenured faculty members (Assistant Professor, Associate Professor, Professor) are eligible to serve as PIs.
- Non-tenure-track faculty members (↓ g., Research Professors, Clinical Professors) may

NIH Modular Budget



Modular Budget Justification for NIH Grant Proposal

Personnel

1. Principal Investigator (PI): Dr. Jane Doe

- **Role:** Dr. Doe will lead the project, overseeing all research activities, data analysis, and dissemination of results.
- **Effort:** 30% (3.6 calendar months)
- **Salary & Fringe Benefits:** \$90,000 (salary) + \$27,000 (fringe benefits)
- **Total:** \$117,000

2. Co-Investigator: Dr. John Smith

- **Role:** Dr. Smith will assist in project design, data collection, and statistical analysis.
- **Effort:** 20% (2.4 calendar months)
- **Salary & Fringe Benefits:** \$70,000 (salary) + \$21,000 (fringe benefits)
- **Total:** \$91,000

3. Postdoctoral Fellow: Dr. Emily Johnson

- **Role:** Dr. Johnson will conduct experiments, manage day-to-day laboratory operations, and contribute to data analysis.
- **Effort:** 100% (12 calendar months) ↓

Indirect Costs

- **Indirect Cost Rate:** 50% of Direct Costs
 - **Total Direct Costs:** \$395,000
 - **Total Indirect Costs:** \$197,500

Total Budget

- **Year 1:** \$147,750
- **Year 2:** \$147,750
- **Year 3:** \$147,750
- **Year 4:** \$147,750
- **Total for 4 Years:** \$591,000

Budget Justification Narrative

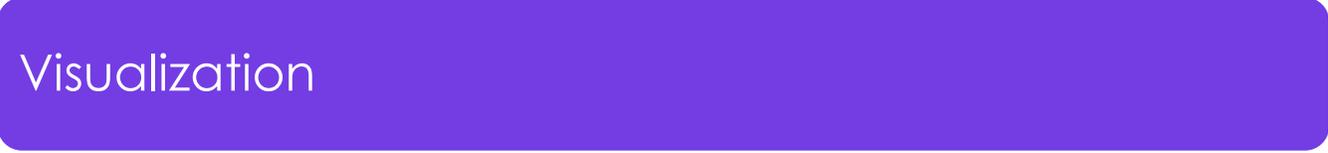
This modular budget includes a total cost for each year that aligns with the NIH's guidelines for modular grants, not exceeding the \$250,000 per year direct cost limit. The personnel costs are justified based on the effort required for each team member to successfully complete the project. Equipment costs are necessary for the purchase of essential research tools, while supply costs cover the materials needed for laboratory experiments. Travel funds are allocated for conference attendance and collaboration, which are critical for the dissemination of results and networking with other researchers. Other direct costs, including publication and participant costs, are justified based on the project's requirements. Finally, the indirect costs are calculated using the university's federally negotiated rate. ↓



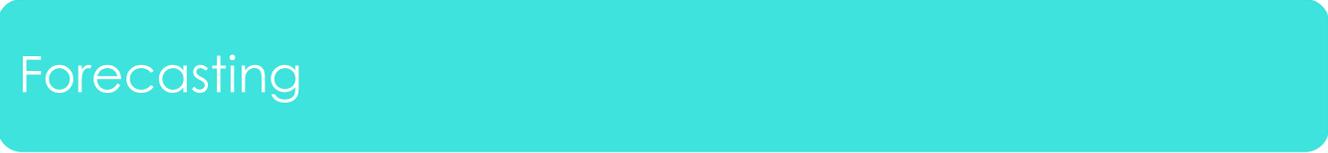
Development Opportunities & Challenges



Automation!



Visualization



Forecasting



Informing workload analysis/benchmarking/making
the case for new positions



Data governance & access at your institution

Faculty Scholarly Activity

Publications

Data Sets

Research
Integrity
Issues

Talking Points for Leadership



AI does something we are not always good at: combining information in one place



But in world of vast amounts of public data, how are these broad collections viewed?



Understanding risks to information

Restricted (HIPAA, FERPA, CUI, Export Control, IRB, COI, etc)
Business Sensitive information



Rather than view AI as a cost-cutting tool, what if it:

Created better jobs for your staff
Made better use of resources you already have?



Questions?