# Elements of a Competitive Research Grant Proposal

TAMIU
Laredo, TX
March 23, 2009

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# Workshop Objectives

- Increase understanding of grant proposal development and award context
- Increase understanding of grant proposal development process
- Increase understanding of elements of competitive proposals

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# Award Context: Pre-Award vs Post-Award

## Pre-Award
- Research and Sponsored Programs Administration
  - -- Values and Mission Context
- Grants Development
  - -- Project Development
  - -- Proposal Preparation

## Areas not Covered

### Post Award

- Project Administration
- Award Process
- Account Set Up
- Project Implementation
- Research Compliance
- Project Close-Out

## Values and Mission Context

### Sponsored Research and Programs

- Contributing to the Public Good

  (*Science the Endless Frontier*, 1945; disease, national security, general welfare)

- Institutional Service Mission

  -- Meeting the Mission through Sponsored Activities (Research and Programs)

## Contributing to the Public Good

- Externally supported projects benefit local, state, regional, and national communities

- Governments, philanthropic societies, and other sponsors seek to contribute to the common good through the advancement of knowledge, culture, facilities, programs and services, etc.

- Enhanced institutional and faculty capacities contribute to societal, institutional and individual development

## Two Major Types of Grant Proposals

- Programmatic—seek funds for delivery of specific services (or the development or improvement of infrastructure or facilities to do so)

- Research—seek funds to conduct research on a specific topic (our focus)

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## Research Project Funding

- Competitive (everybody is in the game)
- Meritorious (strong enough to warrant funding)
- Meet funding priorities of sponsoring agency

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## Stages in Proposal Development

- Research Question/Hypothesis
- Matching interest with potential sponsor
- Review of sponsor guidelines
- Notification of intention (Institutional and Sponsor representatives)
- Proposal preparation
- Revisions & Institutional Review
- Submission

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## Developing a Research Question

- What are the critical research questions in the body of knowledge of your specialty?
  - Where are they on the Fad Curve? Timing?
- What are the next critical research steps in the research literature?
- Which questions are those that interest you?
- What is the "angle" you bring to the body of knowledge that can contribute to the development of knowledge?

## Keeping Background and Significance in Mind

- Why is this an important project?
- What mechanisms and processes will be addressed by the data?
- Is the significance supported by a critical and current literature review?
- What will the reviewer think about this study after reading this section?

## Proposal Development

- Defining Interests and Matching them to a potential Sponsor
  - Electronic (SPIN or SPIN Plus) sources of information on RFP's (Internet Resources)
  - Development Officers at Organizations/Institutions
- Getting Institutional Okay to Proceed
- Developing the Proposal
- Processing the Proposal through Institution
- Submission

## Sponsored Research is a Matching Game: Key Questions to Ask

- Why?    Why is this project important?
- Where?  Where will it be conducted?
- Who?    Who will it involve? Who will it benefit?
- Who Cares?   Who can sponsor it?
- When?   When will it be conducted?
- How Much?   How much will it cost to implement the project?

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## The Matching Game: Key Questions to Ask

Why?

- Developing a Sound Needs Analysis
  - Why is this needed?
- Understanding the Central Point
  - Clear statement of the problem and how it is to be addressed.

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## The Matching Game: Key Questions to Ask

Where?

- Where will project activities take place?
- What resources are available?
- What are the limitations/assets offered by this location?

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## The Matching Game:
## Key Questions to Ask

Who?

- Who are the research participants?
  - Are they Special Populations?
- Who will conduct the research?
  - Level of Expertise (and experience)
  - Need for Consultants, Staff
  - Staff Support Available
  - Collaborators

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## The Matching Game:
## Key Questions to Ask

Who Cares?

- Targeting the Constituency
  - Groups that care
- Targeting the Sponsor
  - Funders that care
  - Fit with funding priorities
  - Oversight requirements

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## The Matching Game:
## Key Questions to Ask

When?

- Time Frame for the Project
  - When will this project take place?
- Time Frame for Funding Award and Completion

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## The Matching Game:
## Key Questions to Ask

How Much?

● How much will this project cost?
  – Estimate a Budget

● Matching Funding Patterns from Sponsors
  – Does your project fit within their funding priorities
  – Are there matching requirements?

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## The Matching Game:
## A Matching Matrix

The Matching Matrix

● What are the Key Items from the Project Perspective?

● What are the Key Items from the Sponsor Perspective?

● How do they line up?

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## The Matching Game:
## A Matching Matrix

Information Needed to Complete the Matrix

● Sponsor levels of funding
● Sponsor funding patterns to similar institutions
● Abstracts/Faculty previously funded
● Stated limits
● Regulatory restrictions

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## Review of the Guidelines

- Funding priorities
- Funding levels
- Award periods
- Matching (cost sharing) requirements
- Manuscript specifications
- Section requirements
- Timelines/Deadlines
- Letter of intent
- Deadlines

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## Proposal Preparation

- Getting Started at your Institution

- Proposal Preparation (Follow the sponsor's instructions; use their forms, etc., where needed)

- Budget Development (only allowable items)
  - Comply with both funder and institutional requirements

- Proposal Review and Processing

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## Proposal Preparation– Getting Started: Institutional Policies

**Key Policy Areas to Keep in Mind**

- Institutional Process Policies
- Compliance Policies
- Related Institutional Areas Required for Compliance

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## Proposal Preparation –
## Preliminary Steps:
## Internal Procedures

Pre-Project Development Approvals Models

- Department Approval to Write?
- Relationship to Departmental Mission?
- Relationship to Promotion/Tenure – How will the effort be received?

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## Proposal Preparation –
## Preliminary Steps:
## Internal Review and Processing

Signatures and Responsibilities
- Routing Processes and Forms
- Who should Sign?
  - Streamlining the Process
- Order of Review
- Who Should Process?
- How Much Time to Process

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## Proposal Preparation – Getting Started

What You Must Know About a Proposal Before it is Submitted
- Institution's Obligation
- Time Frame
- Potential Benefit
- Special Clearances Needed
- Who Must Approve
- New Programs, Initiative, etc.
- New Organizational Structures, etc.
- Equipment Issues
- Continuing Obligations

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## Proposal Preparation –
## Proposal Preparation :
## Internal Review and Processing

Basic Services of the Sponsored Programs
Office in Processing Proposals
- Preparation of Assurance Forms
- Copying (in the old days)
- Electronic Submission (or Mailing)
- Advocacy (w/administration and sponsor)
- Documentation

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## Federal Grant Proposal Guides and
## Instructions

- SF 424 Instructions (Adobe and PureEdge Instructions)
- NIH Instructions (NIH Grants Policy Statement-03)
- NSF Instructions (NSF Proposal and Award Policies Procedures Guide-09)
- Dept. of Education (Grantmaking at Ed; on-line materials)
- Health and Human Services (HHS Grant Policy Guide, 2007)
- Grants.gov User Guides (February, 2009)

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## Proposal Preparation :
## The Document

- The Function of a Proposal

- The Essential Elements of a Proposal

- The Research Administrator's Role

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## Proposal Preparation – The Document: The Function of a Proposal

- Why Write Proposals (Do you have to?)

- Traditional Functions of Proposals

- Non-Traditional Functions of a Proposal

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## Proposal Preparation – The Document: The Function of a Proposal

The Traditional Functions of a Proposal

- Presents a Compelling Argument for Funding
- Represents the Individual's and the Institution's Credibility
- Describes the Project in Persuasive Terms
- Tests the Ability of the Individual to Articulate/Conceptualize
- Provides an implementation schedule that will achieve the project's aims

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## Proposal Preparation – The Document: The Function of a Proposal

The Non-Traditional Functions of a Proposal
- Provides the Sponsor with Evidence of Public Trust Obligations
- Leverages Funding for the Sponsor
- Represents the Individual and Institution in Future Applications
- Provides a Mechanism for Project Development and further pursuit of funding
- Establishes benchmarks

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## Proposal Preparation– The Essential Components of a Proposal

- Abstract/Summary
- Introduction
- Statement of Need/Thesis/hypothesis
- Goals/Objectives/Methodology
- Research Environment and Institutional Support
- Budget and Budget Narrative
- Expected Outcomes
- Bibliographies
- CV's & Appendices (if allowed)

## The Essential Components of a Proposal: Introduction

- Preliminary Section of Proposal
  - Mini-proposal
    - ✓ Connects vision, goals, objectives, outcomes
- Orients the Reviewer to Your Institution
  - Provides (more or less):
    - ✓ History and Location
    - ✓ Major Purpose of Institution
    - ✓ Relates focus of proposed project to mission
    - ✓ Documents significance of the focus

## The Essential Components of a Proposal: Introduction

- Establishes who is applying for funds
- Describes institution's mission
- Describes your programs
- Describes your constituency
- Provides evidence of accomplishment
- Offers statistics to support credibility
- Offers statements or endorsements

## Introduction Section Continued

- Supports credibility in program area where funds are being sought
- Leads logically to the problem statement
- Is interesting
- Is free of jargon
- Is brief

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## Other Sometimes Useful Elements of an Introduction

- Significant and relevant events in your history
- Prior and current activities related to project
- Accomplishments and impacts
- Funding sources and their positive comments
- Results of positive external evaluations of your programs
- Quotes from individuals who would be known to the reviewers about your efforts
- And more that relates to the sponsor's interests

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## The Essential Components of a Proposal: Description of Research Project

- What will the research focus on?
- What are the hypotheses that will be tested?
- How will your research build on the existing stock of knowledge and how will it advance knowledge?
- What are the methods that will be used?
- How will research participants be selected?
- How will the data collection occur?
- What statistical analyses will be conducted?
- What are the thresholds for significance?

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## Research Project Continued

- Do you have pilot or preliminary data and its analysis that you can use to support your research endeavor?
- What research instruments will be used?
- Are they established in the field of study?
- Are there other instruments that might be preferred by reviewers?
- If the instrument has been modified, has it been used in a modified form?

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## Contextualizing Your Research Project

- Frame project within the agency's mission and research priorities
- Make sure the reviewers know that you understand the problem. Avoid a bibliographic lecture or describing individual studies in detail.
- Provide a theoretical and conceptual framework for your research project that is grounded in the scientific literature.
- Provide information to convince reviewers that this study is part of a larger context and that it has implications for other settings and populations.

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## Solicit Input from Colleagues

- Develop a problem statement for a proposal that you would like to write.

- Discuss this problem statement with others in your network.

- How can it be improved?

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## Functions of a Proposal Budget

- States the Project in $ (dollars)
- Promotes understanding of the project
- Allows use of the budget to refine the project

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## Budget Development

- What are the needs related to the proposed project (individuals, equipment, travel, etc.)?
- What institutional resources are needed to establish realistic cost estimates (HR, vendors, etc.)?

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## Types of Costs

- Direct Costs – allocable costs directly needed to carry out the project
- F&A Costs (indirect or overhead costs) – joint costs incurred by institution that are not precisely allocated to specific projects and are thus based on an institutional rate negotiated with the cognizant agency (usu. DHHS).

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## Components of the Budget

- Salaries and wages
- Benefits
- Consultants
- Equipment
- Supplies
- Travel
- Other direct
- Subcontracts
- F&A

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## Institutional Policies & Salaries

- Academic year salary recovery (course buyouts, etc.)
- Summer salary
- Student wage and benefit rates
- Clerical support
- Allowance for increases in the future

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## Faculty Salaries

- Can be expressed in amounts, percentages of annual salary, person months, etc.; make sure you follow the sponsor's guidelines
- NIH as a salary cap (updated every year)

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## Fringe Benefits

- Usually a percentage rate of the salary that yields and amount
- Differ by FTE percentage (what is the threshold? .5 FTE)
- Student rates may differ from others on the project

## Consultants

- Use prevailing rates in area of expertise
- Are there thresholds or institutional requirements for consultant payments that demand special procedures?

## Equipment

- Capitalization level ($5K)
- Identify in budget
- Will institutional services support the equipment?
- Software is not equipment

## Supplies

- Use supply category
- Includes special supplies needed to carry out the research project (ex. Chemicals, glassware, small electronic components, software, animals, etc.)

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## Travel

- Must be allocable to the objectives of the project
- Use appropriate rates as established by the institution
- Things to consider:
  - In-state vs out-of-state
- Out-of-State per diem rates
- On foreign travel, follow institutional policies, etc.

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## Other Direct Costs

- Participant incentives
- Equipment service contracts
- Communications, publications, postage, etc.
- Rental/lease of facilities
- Other?

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## Subcontracts

- Subawardees must submit a budget and evidence of institutional support
- Scope of work
- Usually entered as one item with the subcontract budget attached
- Subcontract amount usually includes direct & F&A costs (except NIH, which separates them to determine of a budget exceeds a direct cost limit)            55

## F&A

- Usually calculated using total direct costs less:
  - Costs of subawards greater than $25K (i.e., charge F&A on amounts up to $25K)
  - Tuition remission, fees, etc.
  - Scholarships and fellowships
  - Rental or lease of facilities
  - Equipment and capital expenditures
  - Charges for patient care          56

## Project Costs

- Includes both direct and F&A costs
- Follow sponsor's requirements (detailed first year with summaries for additional years)
- Include only allowable costs
- Specify the cost sharing
- Provide for increases over the years          57

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## Budget Narrative

- Describes key personnel and their responsibilities, including their time commitments to the project
- Provides a description of how item figures were computed
- Describes in greater detail items in specific budget categories
- Other needed information to questions that might arise

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## OMB Circulars

- OMB Circular A-21 (allowable costs)
  http://www.whitehouse.gov/omb/circulars/a021/a021.html
- OMB Circular 110 (project implementation and administration)
  http://www.whitehouse.gov/omb/circulars/a110/a110.html
- OMB Circular 133 (project auditability)
  http://www.whitehouse.gov/omb/circulars/a133/a133.html

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## The Essential Components of a Proposal: The NIH Perspective

Abstract
- Provides basis for assignment to Internal Review Group
- Describes main purpose, hypothesis, methods of data collection, analysis, significance (potential and substantive) of the study

Budget
- Itemize, justify, be realistic
- Budget description/narrative/justification
- Key personnel

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## Essential Components Continued

### Research Plan

- Aims (what the study will do and how you will go about it) describe variables, identify specific products or endpoints of the study – hypothesis clarity is essential
- Significance – how research will contribute to the understanding of the problem; stress national/global significance
- Timelines and Milestones -- What will be done by whom and by when? How will you know that it's been done?

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## The Essential Components of a Proposal: The NIH Perspective

### Preliminary Studies

- Describe previous work leading to this research point
- Design and Methods
  - "How to" section provides comprehensive plan and detailed set of procedures for conducting the study
  - Discuss measurement in detail, justify selection of instrument, describe staff ability to use this method

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## The Essential Components Continued

- Present detailed plan for analysis, show how it relates to conceptual framework, variables and hypothesis, give time table showing sequence, discuss plans for dissemination

Wrap-Up

- Reiterate significance, anticipate potential problems or limitations, check out study section after assignment to prevent possible conflicts

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## Completing the Proposal Package

- Re-Reading Instructions
- Completing Forms
- Submission
  - ✓E-Submissions?
    - -- Grants.gov, Fastlane, and other e-grant systems (e-applications; readers; payments; reports)
    - --Authorized Organizational Representative (electronic signature)

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## Completing the Proposal Package: Reading the Instructions

- Federal Instruction Format
- Foundation Instructions
- Items to Check:
  - ✓Page length, type size, font, margins
  - ✓Page limits for sections, overall length
  - ✓Appendix (are they allowed; sometimes need approval)
  - ✓Copies
  - ✓Forms

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## Completing the Proposal Package: Completing Forms

Filling out a sample form
- SF 424
- NSF (Fastlane)
- Department of Education

Practice filling some forms out—the point is to get familiar with the information they require so you can begin pulling it together

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## Institutional Assurances

- Human subjects protections, animal care, conflict of interest issues, non-discrimination, drug-free workplace, etc.
- Who will fill them out?

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## Completing the Proposal Package: Completing Forms

Certifications and Representations
- Federal Policies Required
- Institutional Policies Required
- Who signs? (What do the signatures mean?)
- Lower Tier Transactions (are not with debarred, suspended, ineligible, or voluntarily ineligible participants)

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## Things to Keep In Mind Prior to Submission

- Presentation is very important
- Follow application instructions
- Proposal applications should be easy to read and free of grammatical and spelling problems
- Do not make reviewers hunt for information
- Have someone else read the application

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## Things to Keep in Mind Continued

- Clearly mark and label figures and tables
- Use an easy to read font if the sponsor's guidelines do not specify which to use
- Provide and use headings, underlining, bold text and extra spacing to organize, emphasize and separate.
- Provide photographic quality figures when appropriate.

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## Proposal Review Activity

- Review the Guidelines
- Pay Close Attention to the Required Sections and the Points Accorded to Each
- Review Proposal
- Provide Comments as to Strengths, Weaknesses, Fundability (they also consider PI experience and institutional reputation)

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## Developing the Proposal Summary/Abstract Activity

- Using your problem statement write up a carefully worded summary for your project
- Keep in mind the following:
  - Carefully selected title
  - A statement describing the main purpose of the research
  - Hypotheses/goals
  - Methods of data collection and analysis
  - and significance

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## Federal Review and Post Award Issues

- Review process may take up to 6 months
- If proposal is rejected, you may revise and resubmit 2 times more
- Chances of getting funded increase with resubmission
- Must address reviewers' comments in resubmission
- Discuss with Program Officer

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## Award Notice

- Who has received the award
- For What
- For How Much
- Start and End Dates
- Terms and Conditions

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## Terms and Conditions

- General – cites the Sponsor's Policy Statement
- Informational – e.g. Close Out Terms
- Grant Specific
  - What is restricted
  - What must be done to lift the restriction
  - Due date for required documents

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## Common Post Award Issues

- Transfers between grantee organizations
- Change in scope
- Prior approvals
- Over or under expenditure of funds
- Extensions with or without funds
- Supplements (when over expended or for minority researcher)

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## Items Usually Requiring Prior Approval

- Change in scope
- Change in status of key personnel or PI Effort
- Change of grantee organization
- Pre-award costs >90 days
- Transferring amounts from trainee costs

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## Concluding Remarks: Post Award Compliance Issues to Keep in Mind

- Matching Commitments
- Allowable Expenditures
- Reporting Requirements
- Time and Effort Reports (where required)
- Institutional Review Boards

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## Remember: Policy Contexts are Constantly Changing

- The sponsored research environment is constantly changing. Be sure to keep up with:
  - Changing institutional policies
  - Sponsors' requirements
  - Federal Government's circulars and agency policies and requirements.

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## Elements of a Competitive Proposal

- Addresses important problem
- Well written (grammar, etc.)
- Well organized
- Meets the sponsor's guidelines
- Logically integrated
- Advances scientific knowledge
- Do-able
- Cost-effective
- Good timing
- Good grantsmanship

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