

# Notice of Funding Opportunity Publication for Biomedical Data Translator: Technical Feasibility Assessment of Reasoning Tool

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## Notice Number:

**NOT-IC-FY-NNN**

## Key Dates

**Release Date:**

## Related Announcements

None

## Issued by

National Center for Advancing Translational Sciences ([NCATS](#))

## Purpose

This Notice is being published to alert the community that NCATS plans to support the research, development and testing of up to 3 biomedical reasoning tool prototypes for an estimated \$1,000,000 total costs each. The duration of each award will be less than one year.

Eligibility: Team qualification process

Prospective applicants must complete a qualifying challenge to ensure that they have the requisite skills to develop a reasoning tool. The challenge exercises themselves are designed to provide important background and insight into the task of building a biomedical reasoning tool prototype for this program and thereby improve the quality of applications received.

To begin the qualifying challenge, go to <https://ncats.io/challenge/start>

The challenge is a multi-level computational exercise. The challenge may be completed as an individual, or as the team that will be part of the application provided the team is using a common log in. Upon successful completion of each level, additional sections of the funding opportunity will be revealed. Applicants must successfully pass through all levels to gain access to the complete funding opportunity announcement. These computational exercises also control access to the instructions necessary to submit a concept letter, which is a required component of the application process.

Eligibility: Skills required

This funding opportunity and the qualifying challenge require specific skills related to translational research and software development. Applicants will need to demonstrate technical skills including familiarity with web communication protocols, a variety of programming languages and software stack, and general algorithmic techniques in the areas of artificial intelligence, machine learning, and knowledge engineering as well as problem solving skills,

especially creativity and persistence. Depending on applicants' familiarity with the specific languages and packages most useful for solving different tasks, this entire qualification process may take between 2 and 8 hours to complete, though applicants without the necessary background in all of these areas may take substantially longer.

**Eligibility:** All U.S. and foreign organizations and U.S. Citizens

This Other Transaction initiative is open to U.S. and foreign organizations, academic institutions and commercial entities with an affiliated individual or team (subcontracts are allowed) able to successfully complete the qualification challenge., U.S. or foreign; and U.S. citizens applying as individuals without an organization affiliation are also eligible to apply and to be direct recipients of an award, provided they are able to successfully complete the qualification challenge. Non-citizen individuals residing in the U.S. or foreign country who are not affiliated with either a U.S. or foreign organization are not eligible to be direct recipients of an award.

**Other Transactions:**

The use of other transactions (which are not grants, contracts or cooperative agreements) enables NCATS to manage projects in which developments and integration of ideas and expertise from various disciplines are essential to achieve a programmatic goal. This means proposed projects and/or components of the projects submitted may be expanded, modified, partnered, not supported, or later discontinued based on program needs, emerging methods, technologies, or approaches, and availability of funds. All awardees will be expected to collaborate and cooperate with NCATS staff, one another and potentially other contributors to the overall program to maximize the exploration of the potential capabilities of Translator and to understand technical feasibility and challenges of having multiple groups build a single resource.

**Background**

NCATS previously issued a funding opportunity announcement for individuals and institutions to participate in the Biomedical Data Translator: Technical Feasibility Assessment and Architecture Design initiative. The focus of this initiative is to conduct data assessment and technical feasibility analyses for building a data "Translator" that integrates multiple types of data from existing data sources including drug effects and intervening types of biological data relevant to understanding pathophysiology. The purpose of the program is to accelerate biomedical translation by developing a biomedical "data translator" for the research community, thereby facilitating the generation of new hypotheses for understanding and treating disease.

Through this initiative, NCATS intends to push the limits of technical feasibility of integrating disparate data types and demonstrating the analytical potential of mining those disparate data types to answer complex questions that can only be answered when biological associations between these data are made. NCATS is currently working with a number of investigators on the assessment and technical feasibility analysis <https://ncats.nih.gov/translator/projects>. The teams participate in quarterly face-to-face events with NIH staff, focused on specific aspects of the Translator project. In January 2017, it was decided to explore the potential of using a blackboard architecture consisting of three types of components: (1) Blackboard—contains data relevant to the current state of the problem and its solutions; (2) Knowledge sources—independent agents that encode (domain) knowledge needed to solve the problem incrementally; (3) Reasoning tool—an independent module that dynamically controls knowledge source invocations at

runtime. Current awards focus on novel integrations of data that advance translational research and on making knowledge sources interoperable with the blackboard. To complement this work and complete our feasibility assessment of the proposed architecture, NCATS plans to support the research on, and the development and testing of reasoning tool prototypes.

Key events and dates are provided in the table below. Instructions for the content of the concept letter will be provided in the funding opportunity announcement upon completion of the qualifying challenge.

Key Events	Dates	Action needed by applicants
Qualification challenge opens	September 4, 2017	Solve challenge puzzle to qualify for eligibility and access FOA
Concept letters due	September 22, 2017	Concept letter submitted following instructions provided through the qualification challenge before 11PM EDT*
Objective review of concept letters completed; successful teams will receive written notification with instructions for submitting a full application and giving a virtual presentation to review panel	September 29, 2017	
Biomedical Data Translator public meeting	October 25, 2017	Attend in person (Optional) Webex will be available
Written, full application for reasoning tool development including milestones due	November 20, 2017	10-month plan and milestones emailed by AOR (for organizations) or signing representative (for individuals) by 5pm local time*
Objective review tier 2: Virtual presentations of proof-of-concept software and 10-month project plan	November 28-29, 2017	***Candidates individually participate in virtual meeting with review panel
Awards announced	January 2018	

\*Letters and applications received after these times will not be accepted.

\*\*DUNS and SAM number registration can take 6 weeks or more. Candidates should begin the registration process at least 6 weeks prior to this deadline to ensure completion in time to provide these to NCATS.

\*\*\*Applicants should save-the-date to ensure availability for the virtual interview.

## Inquiries

Please direct all inquiries to:

National Center for Advancing Translational Sciences (NCATS)

Email: [translator-questions@nih.gov](mailto:translator-questions@nih.gov)