



ACTUS

Financial Research Foundation

Response to the

LabCFTC Competition RFI

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A. Introduction

ACTUS is pleased to respond to the Commission's request for comments regarding the structure, management and focus of a prize contest for the development of innovative capabilities that could assist the Commission (and potentially other agencies) in the fulfillment of their regulatory duties.

ACTUS believes that one of the most fundamental challenges facing both financial regulators and the companies they regulate is developing (and refreshing) a real-time understanding of the ongoing evolution of the full balance sheet of the financial obligations and counterparties of financial institutions, and creating an effective means of managing and sharing that understanding.

Such a real-time understanding of a financial institution requires, at the outset, a detailed knowledge of the terms of the fundamental contractual data on the books of a firm. It also requires an understanding of how exogenous events, financial market data, and the behavior of counterparties under all manner of possible future scenarios could affect the subsequent states of financial health of the firm.

Financial statements (and regulatory reports based on static snapshots of highly aggregated data) can not adequately model or convey the dynamic nature of the risks inherent in the balance sheets, transactions and operational processes of individual financial institutions, much less the network of firms that comprise the entire financial system.

Although some of the aggregated data snapshots and reports may be indicative of the health or weakness of a company or the financial system, those indications are often highest at (or after) the onset of a crisis, and yet their applicability is typically lower and proves less effective for decision support in the daily management of a company or the prudential supervision of the financial system as a whole.

When using aggregated reports of static financial data, it is in fact difficult for a company to convey to a regulator both a detailed snapshot of its data as well as the functional relationships and dynamic behaviors that drive the potentially wide range of possible future states of the firm's balance sheet and economic health.

Our response will follow the order in which the Commission phrased its request.

B. Potential Prize Competition Topics

The LabCFTC intends to stage a competition to encourage and stimulate the demonstration and development of innovative solutions and improvements to the transparency, oversight and stability of financial markets.

We would like to suggest that innovation occurs in many ways and takes many forms, and is not limited to only new technologies.

Innovations and enhancements that will ultimately help the CFTC to achieve its goals can also come from applying existing technologies in new ways through structural and operational changes in the financial market ecosystem, as well as in modifications, efficiencies and enhancements to the regulatory framework.

The following are some of the topics that have been identified by LabCFTC as potential objectives that staging the competitions would address:

- Transaction, Position, and Margin Data and Analysis
- Enhancing Market Transparency and Oversight
- Systemic Risk Analysis
- Improving the Accessibility of CFTC Regulations
- Strengthening CFTC's Administrative Process

Specific Questions:

1. Are there subject matter areas or specific topics that the Commission should particularly consider or focus on for a potential prize competition?

a. 'Bottom-up' approach to best practices in financial data integration, business analytics, strategic decision support and systemic regulatory reporting.

We would like to suggest some distinct, but related and overlapping, objectives -- and phases -- that could be structured in a LabCFTC competition challenge program:

- ❖ *How to substantially and dramatically improve the accuracy and relevance of risk management and market supervision based on granular cash flow analysis and the standardization and consolidation of underlying financial information and risk data;*
- ❖ *How to greatly improve the effectiveness and reduce the burden of regulatory reporting, in particular by leveraging the benefits and results of the previous phase; and*
- ❖ *How to utilize the capabilities of existing business processes and technical infrastructure while leveraging and incorporating rapid innovation in business models and technology in order to best achieve strategic objectives.*

These objectives taken together can serve as central pillars of a competitive challenge framework that addresses and includes many of the goals that the CFTC has identified (above) as motivating the CFTC's interest in hosting a competition.

We can think about such a competition as a challenge to demonstrate the consecutive steps in a methodical regimen for financial management and risk oversight.

This regimen is based on a 'bottom up' approach to best practices in financial data integration, business analytics, strategic decision support and systemic regulatory reporting.

b. Phase 1A: Demonstrate how to dramatically improve the accuracy and benefits of the analysis and reporting of underlying financial information and risk data

The challenge of this competition begins at the foundational source (counterparty contracts), and proceeds in stages up the financial management 'food chain' along the following lines:

- Adopt open source standards for (1) the data elements and terms of financial contracts, and (2) the contract type algorithms whose rules and cash flows are driven by the defined elements in this data dictionary of contract terms¹ ;
- Map source data from contract-level datasets to the data elements of the data dictionary standard and create an equivalent dataset of standardized financial contracts. Ideally, the source datasets would cover a variety of financial products, markets and business lines -- whether from operational systems of record of an institution or from transaction repositories;
- Generate expected contractual cash flows for all the financial contracts in the mapped dataset contingent on a number of different sets of future scenarios. The scenario sets would each be designed to introduce a variety of risk factor possibilities, assumptions, stress tests, or distributions of stochastic variables that are external factors upon which the exact cash flow behavior of each contract depends.
- Analyze the contractual cash flows in all of the scenarios of the scenario sets in order to calculate the following measures for the entire dataset for each scenario: total net present value, monthly earnings, and daily liquidity. Collect all of the measures for all the scenarios and produce a histogram of the distribution of all of the measures by scenario. Identify scenarios in the distribution of measures where the measures do not meet selected criteria.

¹ The data elements included in the data dictionary standard should cover as many financial contract types as possible, and must include all contract elements and terms that are necessary and sufficient for determining (i.e., generating) the expected cash flows for each contract based on the selection of future scenarios of the external factors on which a given contract is also dependent.

c. Phase 1B: Greatly improve the effectiveness and reduce the burden of regulatory reporting, in particular by applying business rules to the extensive results dataset produced in Phase 1 (“RegTech”).

Descriptions of “RegTech” typically involve better approaches to reconcile and map compliance data from business lines into the numerous reporting formats required by financial regulators. These better approaches also usually involve rules-based approaches to codifying the myriad rules specified by different regulatory regimes.

Generating regulatory reports can be simplified by deriving them from scenario-consistent cash flows. These cash flows are collected in a comprehensive repository of scenario-based outcomes that are themselves generated by the application of algorithmic models of all financial contracts to data that has been standardized for purposes of this application. This would be our approach to RegTech in general and would, we believe, have clear benefits.

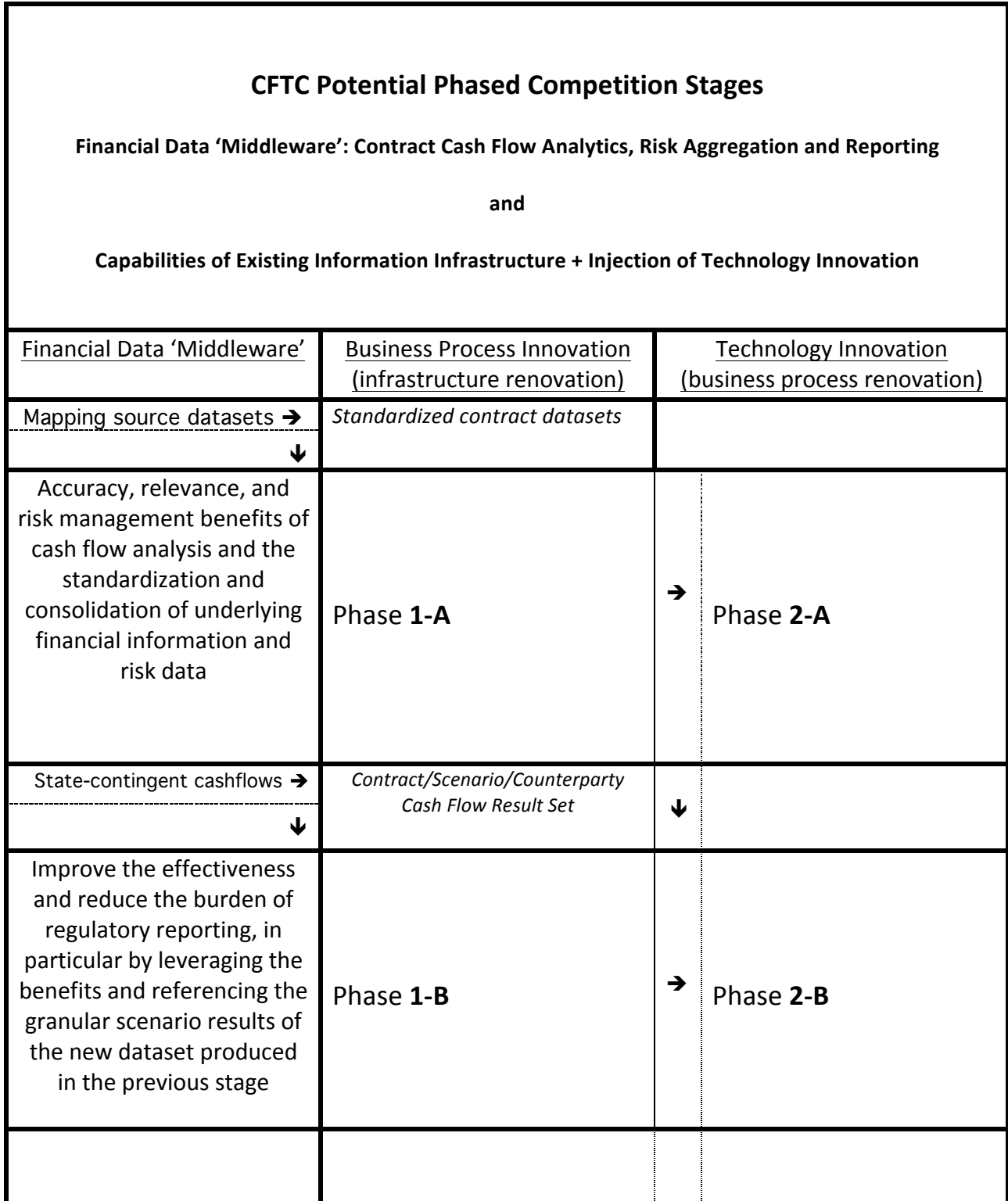
d. Phase 2A: Application of Predictive Analytics, Data Science and Deep Learning to Contract Event Type / Timestamp / Scenario / Counterparty Result Set Repository

e. Phase 2B: Automated Financial Contracts: Integration of Transaction Processing, Financial Analytics and Regulatory Reporting

We can also think of the combination of existing (“legacy”) and new (“FinTech”) technologies as two interacting and evolving facets of the ongoing application of information technology to support business innovations and enhancements in the financial system.

We can think of these 4 phases as the structured interaction of the layered, “bottom-up” financial data supply chain, on one hand, with the evolving application of information technology innovation, on the other. The following diagram illustrates how competition phases that meet the objectives of the CFTC can interact thematically:.

The thematic intersection of a potential sequence of related competition phases that meet the objectives of the CFTC can be illustrated with the following diagram:



2. What criteria should the Commission use to select prize competition topics?

Originality, usefulness and the likelihood that the submissions enable dynamic modeling and reporting.

3. Are there subject matter areas or specific topics that are not suitable for a prize competition? Please be specific as possible or provide examples where appropriate.

Topics that are not based on underlying state-contingent expected cash flows, and not likely to contribute to the command and control of a financial company or the dynamic understanding of the part of the financial system being regulated.

4. What competition topics may help illuminate areas where new technology can reduce costs or improve services for market participants and end-users who depend on these markets to manage risk?

Topics of the kind described in the answer to question 1.

5. What competition topics may highlight areas where the regulatory framework could work better or needs significant revision to accommodate market-enhancing FinTech?

Topics of the kind described in the answer to question 1. Although there are surely ways to make any regulatory framework work better, improvements in accessible and dynamic models are likely to be the most helpful.

6. Which existing regulatory compliance or regulatory reporting processes do you feel would most benefit from RegTech? Please be specific as possible or provide examples where appropriate.

Descriptions of “RegTech” typically involve attempts at more efficient approaches to reconcile and map compliance data from business lines into the numerous reporting formats required by financial regulators. Such approaches also usually involve rules-based mechanisms to codifying the myriad rules specified by different regulatory regimes.

Generating regulatory reports can be simplified by deriving them from scenario-consistent cash flows. These cash flows are collected in a comprehensive repository of scenario-based outcomes that are themselves generated by the application of algorithmic models of all financial contracts to data that has been standardized for purposes of this application. This would be our approach to RegTech in general and would, we believe, have clear benefits.

C. Administration of Prize Competitions

- Eligibility
- Format

- Conditions of Participation
- Advertising
- Evaluation Standards
- Judges
- Prize

Specific Questions:

7. What ground rules should govern participation in a CFTC-sponsored FinTech prize competition?

- For example, are there particular eligibility requirements that the agency should adopt?

ACTUS believes that the seriousness and quality of an entry should be the only eligibility requirement.

- Should competition entries be designated “open source,” or should each participant retain full control of its entry and any decision about its availability?

ACTUS understands the great importance of commercial motivation but believes that open-source entries have the most usefulness in spreading the kinds of infrastructure that are necessary for successful dynamic regulation and the kinds of data sharing that are necessary from both a commercial and regulatory perspective.

However, it is sometimes necessary to impose certain restrictions even on open source software in order to maintain the level of standardization that is sometimes necessary in a regulated industry.

- Should any different rules apply to winning entries?

ACTUS believes that only winning entries should be required to be open source and that those who have submitted unsuccessful entries should retain the right to decide whether to make their ideas and applications available through open source software or otherwise

8. How should prize competition judges be selected?

- Should the Commission select a single judge or panel to evaluate prize competition submissions?

ACTUS suggests that there should be a panel of business subject matter experts, technology experts, academic researchers, regulatory representatives, and participants in the industries regulated by the CFTC.

- If a panel, how large?

11 to 13 members should be sufficient to provide the range of knowledge and interests required.

- And what is the appropriate mix of stakeholders?

Approximately equal numbers of representatives from the groups mentioned in the first bullet point in 8 above.

- What additional requirements, if any, should apply to judges?

Fairness, professional skill and a high level of disinterestedness.

9. What general evaluation standards or criteria may be appropriate in the context of a CFTC-sponsored FinTech prize competition? Regarding the evaluation process, are there models or protocols that the Commission might adapt with regard to prize competitions it sponsors?

This is clearly one of the most important considerations. It is our view that the following scoring template would be useful for evaluating competition submissions and identifying the semi-finalists who merit further review and evaluation. By using this business case format to communicate the nature and characteristics of the innovative ideas, the submissions with the highest quantitative ratings should be identified and subsequently discussed and voted upon by the panel of judges in order to introduce qualitative factors into the final recommendation of each category/class's winners:

- a. *Definition of problem(s) being addressed*
- b. *Description of Solution*
- c. *Validation or Proof of Concept*
- d. *Analysis of competitive alternatives*
- e. *Discussion of Benefits and implications for CFTC operations/regulations*
- f. *Risk Assessment*
- g. *Technology Readiness Level*

Each of the above evaluation categories could be equally weighted and assigned a numeric value of 1 for least impressive to 10 for most impressive. In developing this template, a rating guide should be adopted for each category along the following lines:

Definition of Problem – clarity of explanation; size of market and number of markets and/or stakeholders affected; quantification of cost or time lost. Extra credit given to submissions that cover multiple markets/customers/stakeholders and/or address multiple CFTC goals.

Description of Solution – clarity of explanation; stage of development and additional development required to commercialize/adopt; level of detail; understanding of adoption process. Extra credit provided for short-term availability and ease of implementation/adoption of solutions

Validation and Proof of Concept – empirical data that demonstrate the gains that are achievable with the solution. Additional credit provided for contestants that are able to provide working models or validation trial results.

Analysis of competitive alternatives – discussion of current methods and practices. Competitive scan of other solutions.

Discussion of benefits for CFTC and the financial industry – Quantification of benefits – both tangible and intangible

Risk Assessment – Identify technical and managerial team along with their respective degrees of expertise. Review the technical milestones reached and clearly identify any hurdles.

Technology Readiness Level – Technology readiness levels (TRL) are a method of estimating technology maturity of Critical Technology Elements (CTE) of a program during the acquisition process. They are determined during a Technology Readiness Assessment (TRA) that examines program concepts, technology requirements, and demonstrated technology capabilities. TRL are based on a scale from 1 to 9 with 9 being the most mature technology. The use of TRLs enables consistent, uniform discussions of technical maturity across different types of technology.

One of the most challenging issues facing any competition of this nature is obtaining high quality judges. While the high level of awareness and respect for the CFTC will be important in attracting quality judges, it must be remembered that this will be a major commitment of time and effort for any judge to do right.

Therefore, we strongly urge that the CFTC use an on-line research tool, like survey monkey.com to facilitate the reviews of the contestants' submission of their Innovate IT business case. This would allow for an early screening of the submissions and provide the basis to extract a limited number of semi-finalists for panel review and recommendation, thereby saving time and effort.

10. What type of prize is likely to encourage the greatest participation from a broad range of innovators? What factors should the Commission consider? If the prize is other than a cash purse, what type of prize may be suitable?

A substantial monetary prize amount that would enable subsequent and further development of the winning entry and related technologies is likely to be most effective. Such a prize is of particular importance for a regtech solution that is open source and made freely available to all users. The developers of a fee-free open source solution do not stand to gain any commercial or monetary benefit from their solution because it is, at the end of the day, a public good. Therefore, a monetary prize would play an important role in providing the necessary resources to fully develop, promote, and deploy a winning entry that is a public good.

Additionally, there should be more than one recognized winner. It is likely that there will be more than a single entry whose quality merits recognition. Just as an Olympic competition recognizes the achievements of Gold, Silver, and Bronze competitors, a CFTC competition could recognize and reward 1st, 2nd and 3rd place entries..

11. Generally, are there any rules, policies, or practices that the Commission should adopt to facilitate a prize competition or encourage participation? For example, what modes of advertising and publicity may be most effective? And, likewise, are there any rules, policies, or practices that could impede participation in a prize completion?

Eliciting a robust response to the competition will require more than simply posting a notice announcing the competition in the Federal Register. Companies that have built their businesses around contracting with the Federal government pay close attention to notices in the Federal Register.

However, innovative entities that do not routinely do business with the government do not follow what is published in the Federal Register. The competition's formal announcement should be accompanied by active outreach to relevant industry media, associations and conferences, professional social media, and research and development organizations and academia.