

## Redis Streams as Message Bus Discovery SOW #1

This SOW #1 (“SOW”) between The Center for Reimagining Learning, Inc., a Massachusetts nonprofit corporation whose address is One Broadway, 14th floor, Cambridge, MA 02142 (“NP”), and the undersigned service provider (“Provider”) is made effective as of the date signed by NP (“SOW Effective Date”) and is being entered into in accordance with and under that certain Services Agreement between NP and Provider that is dated **XXX 2023**. All capitalized terms not defined in this SOW shall have the meanings given to them in the Agreement. In the event of any conflict between the Agreement and this SOW, the Agreement shall prevail, unless this SOW explicitly states otherwise.

1. **Services.** Provider shall provide the following Services to NP:

The undertaking of a process of technical discovery to support the delivery of technical specifications for the Redis Streams as Message Bus initiative. In general, the resulting deliverable, a discovery document, should contain:

- Clear and unambiguous technical recommendations;
- Rationale used to reach conclusions in clear and concise language, including code samples and other visual aids where appropriate; and
- Explicit references, including but not limited to citations from other sources or results from experimental findings, to support said recommendations.

In particular, given the event bus initiative as outlined in the current draft of the corresponding Open edX Enhancement Proposal ("OEP") located at <https://docs.openedx.org/projects/openedx-proposals/en/latest/architectural-decisions/oep-0052-arch-event-bus-architecture.html>, the technical discovery should endeavor to document the updates necessary to that OEP as well as other related OEPs (such as OEP-41: Asynchronous Server Event Message Format located at <https://docs.openedx.org/projects/openedx-proposals/en/latest/architectural-decisions/oep-0041-arch-async-server-event-messaging.html>) to include redis Streams an additionally supported message bus.

In addition, Provider will develop a working reference implementation as an artifact of the technical recommendations made during technical discovery. It should implement:

- Completion of the message bus abstraction layer which was started here: <https://github.com/openedx/openedx-events/pull/85>
- A new “event-bus-redis” GitHub repository that is functionally comparable to the <https://github.com/openedx/event-bus-kafka> repository, allowing event production and consumption
- A functional version of the currently working event bus use case (propagating course run creation from the Discovery service to CMS). It must be possible to switch from a Kafka event bus to a Redis Streams event bus using only configuration
  - If any functionality is lost switching between the two event buses, it should be clearly documented as to why and whether future work might bridge that gap

The reference implementation does NOT need to fully implement all disaster recovery and error handling scenarios currently available in the Kafka bus, however any functionality that is not at parity with the Kafka implementation should be noted and suggestions made as to what would be needed to reach parity.

At Provider’s request, NP will explore providing and maintaining a development instance of the Open edX platform, to be used by Provider both as reference and as live backend for the APIs the ported reference implementation will connect to.

An architect at NP will make themselves available to answer questions and collaborate with Provider as deemed necessary by both parties during the execution of Services.

In connection with the Services, Provider shall provide NP with up to **XXX** capacity hours, between and including **XXX 2023** and **XXX 2023**. Additional hours can be added for the defined scope at the sole discretion of the NP. The total project hours are not guaranteed. The project will be considered complete when the defined scope has been completed. Adjustments to the project's scope can be made at the sole discretion of the NP.

The project will be oriented around the following Milestones and Deliverables:

Milestone 1: Technical Discovery

Deliverables:

- A detailed document containing the findings of the technical discovery as specified above;
- A live or recorded presentation of the discovery's findings.

Milestone 2: Reference Implementation

Deliverables:

- Access to the Github repositories containing the codebases, forked or otherwise, corresponding to the following:
  - The new “event-bus-redis” repository holding the code that enables the course-discovery service and edx-platform service to communicate over the Redis event bus
  - An updated course-discovery repository that can send events over Redis Streams by implementing the “event-bus-redis” code
  - An updated edx-platform repository that can consume events from Redis Streams by implementing the “event-bus-redis” code
  - Any additional repositories that require updates to support the reference implementation
- Technical documentation pertaining to the specifics of the Reference Implementation. It should include at least:
  - README files describing architectural decisions
  - In-code comments explaining implementation details
  - Meaningful commits with messages that explain the essence of each change-set
  - Suggested updates to existing architectural decisions and OEPs
  - Suggested future work to support any error handling or disaster recovery scenarios not included in the Reference Implementation
- A live or recorded demonstration of a running instance of the complete Reference Implementation.

2. **Timeline.** All Services will be provided to NP on the following timeline including without limitation any deadlines as noted:

- a. Milestone 1: delivery in **XXX** to **XXX** weeks after project start, no later than mid **XXX 2023**;
- b. Milestone 2: **XXX** to **XXX** weeks after delivery of Milestone 1, no later than mid June **XXX 2023**.

3. **Term.** This SOW shall terminate upon the earlier of NP's acceptance of all Services or upon termination in accordance with the Agreement.

4. **Fees.** Invoices shall be issued, and payment shall be made as set forth in the Agreement. Provider's fees for Services performed under this SOW are as follows:

Services will be billed at a flat rate of US\$ **XXX.00** per hour of work, or a total project cost not to exceed US\$ **XXX.00**.

NP shall have no obligation to compensate Provider more than the foregoing amount unless NP otherwise agrees in writing. NP shall not reimburse Provider for any expenses.

5. **Key Personnel.** Provider shall not change the staffing of key personnel listed below without NP's prior written consent:

Provider Key Personnel:

- **XXX**

NP Key Personnel:

- **XXX**

NP representative name: **XXX**

NP representative email: **XXX**

Provider representative name: **XXX**

Provider representative email: **XXX**

IN WITNESS WHEREOF, Provider and NP have executed this SOW as of the SOW Effective Date.

**The Center for Reimagining Learning, Inc.**

**Provider Name: XXX**

By: \_\_\_\_\_  
Name:  
Title:  
Date:

By: \_\_\_\_\_  
Name:  
Title:  
Date: