

# LionShare: SFU Surrey Software Development Plan

## Version 1

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## Project strategy

The SFU Surrey team will pay a special attention for developing solutions in close collaboration with the PennState team and other partners. The development at SFU Surrey will be driven by use cases identified for the whole project. The design will be intertwined with development and early deployment to test the feasibility of the solutions and provide an early feedback.

To meet our technical and methodological objectives, we will engage in the following activities:

**Work Package 1: Management.** The main goal of the management of the SFU part of the LionShare project is to ensure a close coordination of the work with the project director and PennState team. As a part of this package we will produce two documents: white paper and software development plan (this document). We will participate in bi-weekly phone conferences to coordinate work done by SFU as related to the main development efforts at PennState. To resolve the emergent issues an adhoc working groups will be created and communicate on as needed basis.

**Work Package 2: ECL Security.** We will design a security layer into the ECL protocol. The design will be based on current security standardization efforts in the web services and will consider the Shibboleth approach to distributed trust. The design will be implemented into the ECL connector to support easy adoption of Secure ECL in existing repositories. The possibilities of implementing security into a cross-protocol middleware (the gateway) will be investigated. The prototype of the secure ECL gateway will be implemented.

**Work Package 3: Enabling LionShare with secure ECL.** This package will investigate the architectural possibilities of connecting LionShare with other repositories and networks. We will integrate ECL with the OKI OSID interfaces. Based on the outcomes of the WP2 we will implement the secure gateways between LionShare network and other networks, and between LionShare network and other P2P network (such as SPLASH).

**Work Package 4: Design and Implementation Guidelines.** We will write guidelines for securely connecting repositories for operation in a distributed environment.

We will now describe each work package in terms of tasks, deliverables and milestones.

## Project Workpackages and Tasks

The SFU Surrey work program includes two milestones: Milestone-1 at the end of the 9th month, and Milestone-2 at the end of the 15th month. At the end of the 9th month the design of the security into ECL will be completed, at the end of the 15th month the design of the secure eduSource gateway will be finished.

### Workpackage 1: Management

This workpackage is responsible for managing the SFU part of the project.

#### *Task 1.1 Project Management*

**Partners involved:** SFU, PennState  
**Duration:** M1 ... M24  
**Objective:** Manage the project

**Inputs:** Information from the project partners and the project director.  
**Expected results:** Coordinating work towards achieving the project objectives. Communication to the project director.

### *Task 1.2 White Paper*

**Partners involved:** SFU  
**Duration:** M1 ... M7  
**Objective:** Outline the objectives of the project in relation to the broader project context.  
**Inputs:** Previous work, project proposal.  
**Expected results:** Positioning of the work with respect to the overall project objectives and need in the wider community. Providing outlook for the technical solution to meet the objectives.  
**Deliverables:** The white paper document.

### *Task 1.3 SW Development Plan*

**Partners involved:** SFU  
**Duration:** M1 ... M7  
**Objective:** Plan stages of the development and their interrelations to meet project objectives..  
**Inputs:** Project proposal, white paper, early prototyping and consultations..  
**Expected results:** Detail tasks with specific timeline and assigned resources..  
**Deliverables:** This document.

## **Workpackage 2: ECL Security**

This workpackage designs and implements a security layer into ECL protocol and connecting middleware

### *Task 2.1 Review of security mechanisms*

**Partners involved:** SFU  
**Duration:** M6 ... M7  
**Objective:** Map the area of security standards and approaches.  
**Inputs:** Various, Shibboleth development group.  
**Expected results:** Understanding of the options for design of the ECL security layer.  
**Deliverables:** Internal report.

### *Task 2.2 ECL security design*

**Partners involved:** SFU, PennState  
**Duration:** M8 ... M9  
**Objective:** Design the security layer in ECL.  
**Inputs:** Task 2.1, LionShare use cases.  
**Expected results:** Detail design of the ECL protocol with security features, including details about binding security with SOAP protocol and mechanism for obtaining certificates, and checking their validity using Shibboleth like mechanism. The design will be compatible with the security solution for the Gnutella protocol.  
**Deliverables:** Design document.

### *Task 2.3 Secure ECL connector*

**Partners involved:** SFU  
**Duration:** M10 ... M12  
**Objective:** Extend implementation of the ECL connector to support security.  
**Inputs:** Task 2.2, existing ECL connector.  
**Expected results:** The security mechanism designed in Task 2.2 will be implemented into the Java ECL connector. The implementation will hide the details of the security and its binding to the protocol. The security mechanism will be available via API.  
**Deliverables:** Secure ECL Connector (code).

**Task 2.4 Gateway security design**

**Partners involved:** SFU, PennState  
**Duration:** M13 ... M15  
**Objective:** Investigate and design mechanism for crosswalks between secure protocols.  
**Inputs:** Task 2.1, Task 2.2  
**Expected results:** Investigate the possibilities for mapping between security mechanisms. Design mechanism for secure ECL gateway.  
**Deliverables:** Design document.

**Task 2.5 Secure ECL Gateway**

**Partners involved:** SFU  
**Duration:** M16 ... M23  
**Objective:** Extend implementation of the ECL gateway to support security.  
**Inputs:** Task 2.4, existing ECL gateway  
**Expected results:** The security mechanism designed in Task 2.4 will be implemented into the ECL gateway framework. The implementation will provide gateway developers with the utilities to develop crosswalks between security mechanism used in mapped protocols.  
**Deliverables:** Secure ECL gateway (code).

**Workpackage 3: Enabling LionShare with Secure ECL**

This workpackage designs and implements secure connectivity between LionShare network and other repositories and networks.

**Task 3.1 Architectural cases**

**Partners involved:** SFU  
**Duration:** M4 ... M6  
**Objective:** To investigate and recommend possible connectivity between LionShare and other repositories and entities.  
**Inputs:** Various  
**Expected results:** The output of this task will clearly indicate advantages and disadvantages of several option of connection between LionShare network, OKI enables repositories and tools and ECL network. The final connecting architecture will be recommended.  
**Deliverables:** Report.

**Task 3.2 OKI/ECL plugin**

**Partners involved:** SFU  
**Duration:** M2 ... M5  
**Objective:** Investigate the feasibility of merging two approaches.  
**Inputs:** ECL Connector, DR Search (OKI DR OSID application)  
**Expected results:** Early prototype merging search functionality of ECL and DR OSID.  
**Deliverables:** Prototype application (code).

**Task 3.3 Secure OKI/ECL plugin**

**Partners involved:** SFU  
**Duration:** M13 ... M15  
**Objective:** Develop and OKI/ECL plugin that provides a secure access to ECL network from OKI OSID enabled applications..  
**Inputs:** Secure ECL Connector (Task 2.3), OKI/ECL Plugin (Task 3.2)  
**Expected results:** Middleware component providing OKI OSID enabled applications with secure access to the ECL network. The plugin will make use of DR, AuthN and AuthZ OSIDs.  
**Deliverables:** Secure OKI/ECL plugin - middleware component (code).

**Task 3.4 Secure gateway between LionShare and other P2P network**

**Partners involved:** SFU  
**Duration:** M20 ... M23  
**Objective:** Test and provide feedback on the design of the secure gateway. Enable LionShare clients with secure access to other P2P network.  
**Inputs:** Secure ECL gateway (Task 2.5), Secure OKI/ECL plugin (Task 3.3)  
**Expected results:** Gateway between LionShare and SPLASH network. LionShare client with Secure OKI/ECL plugin.  
**Deliverables:** Instance of secure gateway (code)

**Workpackage 4: Design and Implementation Guidelines**

The guidelines for technology adopters will highlight the important implementation decisions for connecting repositories and other networks to the secure ECL network.

**Task 4.1 Guidelines v.1**

**Partners involved:** SFU  
**Duration:** M13  
**Objective:** Provide guidelines fro implementing secure ECL connector.  
**Inputs:** Secure ECL Connector design and implementation (Tasks 3.2 and 3.3)  
**Expected results:** First version of the guidelines document.  
**Deliverables:** The guidelines document.

**Task 4.2 Guidelines v2**

**Partners involved:** SFU  
**Duration:** M24  
**Objective:** Provide guidelines fro implementing secure ECL gateway.  
**Inputs:** Secure ECL gateway design and implementation (Tasks 3.4 and 3.5)  
**Expected results:** Final version of the guidelines document.  
**Deliverables:** The guidelines document.

**Charts and diagrams**

Gantt chart:

