

SOEN 6311 Winter 2020 Project Description

V1.0: Release of the Description on Week 2

V1.1: Release the requirements of D1 on Week 3.

V1.2: Release the requirements of D2 on Week 7.

V1.3: Release the requirements of D3 on Week 10.

This course project follows the main aspect of a software process, namely 1) software specification, 2) software development, 3) software validation and 4) software evolution. The 4 deliverables are structured according to these four aspects.

1. Problem Definition

The main *problem* for this project to solve is to build a multiuser software system to share information between users and intelligent tools that aim to help user complete their work tasks more efficiently. Such a system is called Information Capture and Dissemination Environment (ICDE) shown in Figure 1.

2. The ICDE System

This ICDE case, associated context description and the figures are from Book Essential Software Architecture, 2nd Edition by Ian Gorton. ICDE is part of a suite of software systems for providing intelligent assistance to professionals such as financial analysts, scientific researchers, intelligence analysts etc. To this end, ICDE automatically captures and stores data that records a range of actions performed by a user when operating a workstation. For example, when a user performs a Google search, the ICDE system will transparently store in a database:

- The search query string
- Copies of the web pages returned by Google that the user displays in their browser

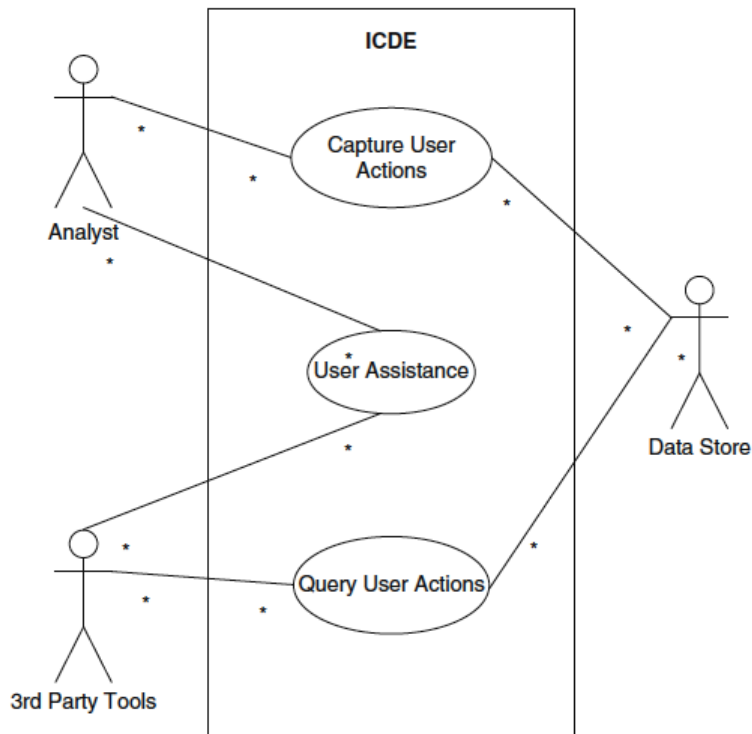


Figure 2 Use Cases of ICDE

The initial product of ICDE v1.0 targets a small user trial involving a few users, aiming for successful function development and deployment with the core features of the data collection, data storage and data query. The ICDE v2.0 further provides support for third party tools to leverage ICDE to build applications.

3. Project Demand

The project is to follow the software process to engineer the ICDE system for a specific domain application. Each team should build the core ICDE and define an application for ICDE to solve. Each application should leverage the ICDE's core function of data collection, data storage and data query.

3. Deliverables and Schedule.

The report or written documents required for deliverables should follow the template from <https://www.ieee.org/conferences/publishing/templates.html>. Mis-formatted documents will result in not being marked.

Deliverable 0 : Team Registration and Engineering Setup

Due Date: Week 2 Friday 23:55pm Moodle Site

Deliverable Format: Registration and Engineering Setup Report

Content: 1) Team member's details (name, sid, program and email, SE background). 2) Tools decided on team development including public / private code repository for version control (for code, data and design document), IDE, programming language, group

Figure 3 Scrum sprint cycle (picture from the textbook)

Deliverable 2: System Model and Design – 7 Marks

Due Date: Week 7 Friday 23:55pm Moodle Site

Part 1:

Follow up your Deliverable 1's task that has already gone through a full scrum cycle. Now review your task by further completing its modeling and design.

1. Revise the context/external description of your application – with use case diagrams and architecture diagrams. The use case diagrams should follow two levels – the overall level and the level of user requirements/system requirements. The architecture diagram is differentiated into high level architectures and system level architectures.
2. Revise the documentation of the task already implemented with modeling and design.
 - Present and document the context of the task using *class diagram*
 - Present and document the structural context and data flow of this task using *activity diagram*
 - Present and document the interaction context of this task with other components and systems using *sequence diagram*
 - Present and document the behavior context of this task with response to events using *statement diagram*

Part 2

3. Select a new task that has not been started or completed, repeat requirement 2.
4. Further evaluate your progress and milestones to adjust your project plan, schedule or even budget (including HR hours).

Deliverable 3: Implementation, Deployment – 10 Marks

Due Date: **Week 12** Monday 23:55pm Moodle Site

Part 1: Reflection on the architectural designs that you have on Deliverable 1 and 2.

Please A) Identify and articulate what are your architectural designs and the associated software engineering process. B) Indicate if any revision to your architectural design is necessary. If the answer is Yes, please explain what revision, and the reason. C) Further adopt MVC and Layered Architecture Pattern to your ICDE-App. Describe your design decisions, and discuss the pros and cons of the design.

Part 2: Software metrics and granularity of components. The components' granularity is at the level of classes/objects, packages, libraries, frameworks and platforms. Please make a statistical count of software metrics from all your tasks implemented so far and form a table given the template below. An example is given below.

Task Name	LOC	Component Granularity Level	Numbers of Unit
Save an user activity record	102	Java Class	4
	NA	Framework (MySQL)	1

Deliverable 4: Final Class Time Demo/ Report – 5/5 Marks

Due Date: 1. Week 13 Lecture Time Group Presentation and Demo

2. Final Project Report, Week 14 Monday 23:55pm.

Detailed requirement will be posted later.