CSM Group of Companies IT Asset and Operations Management **Core**

### Development Team

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# What is a core?

A *core*, in context to the Software System I: Development and Requirements class (CS 4900) at Western Michigan University, describes a brief overview how a software application system is being developed and what is being used. The overview includes, but is not limited to, the client name, stories and use cases for the application, a general plan for the development of the application, initial selection of programming languages and frameworks, programming standards, brief descriptions of the different systems and applications used for development, and how the systems can interact with each other.

# The core

## Client introduction

*Who is the client?*

CSM Group of Companies Information Technology (CSM IT) team.

*What does the client do?*

CSM IT provides helpdesk service and system monitoring and maintenance for the computers, software, networking equipment, and other IT equipment for all daughter companies under the CSM Group of Companies umbrella.

*What is the need for an application?*

CSM IT currently uses an open source asset manager called Spiceworks for managing equipment and some software. As the companies grow, CSM IT has out-grown Spiceworks. The Spiceworks system is slow, not mobile-friendly, can’t complete specific work flows for CSM IT, and is difficult to manage groups of assets. CSM IT wants an asset management system catered to how they operate that can run faster, more efficiently, and be hosted at a cheaper cost.

*Any additional requirements or requests for features?*

In addition to the hardware asset manager, CSM IT has requested a ticket tracking system, a way to easily import assets from the current system to the new one, “live” computer management (described later), automatic software management from Office 365, and mobile friendly access.

*Additional information*

CSM IT is all cloud based, meaning all their servers (file, web, database, etc.) are hosted using cloud systems (AWS to be specific).

## Technical details

The following lists will contain the name of the system used followed by the description of why it was chosen.

*Hosting:*

* Website:
  + Amazon AWS EC2
  + Currently supported and used cloud hosting company is Amazon AWS.
* Database:
  + Amazon AWS RDS
  + Currently supported and used cloud hosting company is Amazon AWS.

*Operating System(s):*

* Ubuntu 18.04 Server – runs the web application and communication server.
* Windows 10 – runs the communication client on client computers.
* Mac OS Mojave – runs the communication client on client computers.

*Version Control:*

* GitHub – code is currently hosted on a personal GitHub at <https://github.com/noahjahn/csmgroupit-inventory> and is available to the public. At the time of project completion, the code will be moved to a company repository.

*Programming Language(s):*

* PHP – Existing web applications developed for the company have been made using PHP. For the future maintenance of the system at the company, the project will also be written in PHP.
* PowerShell – Existing scripts for automating tasks in Office 365 and Windows are developed in PowerShell. For the future maintenance of the system at the company, the project will use PowerShell for automating software between Office 365 and the web application.
* C – Used for writing the communication client and server applications. This language was left for us as programmers to choose. Since PHP is built from C, and can share C libraries, we decided it would be the easiest for the client maintain in the future. Some employees have experience in C as well.

*Programming Standard(s):*

* PHP – CodeIgniter offers a style guide for their code that the project adheres to: <https://codeigniter.com/userguide3/general/styleguide.html>.
* PowerShell – Microsoft offers encouraged programming styles that the project adheres to: <https://docs.microsoft.com/en-us/powershell/developer/cmdlet/strongly-encouraged-development-guidelines>.
* C – GNU offers C Standards that the project adheres to: <https://www.gnu.org/prep/standards/html_node/Writing-C.html>.

*Programming Framework:*

* CodeIgniter v3 – Existing web applications developed for the company have been made using the CodeIgniter framework. For the future maintenance of the system at the company, the project will also use the CodeIgniter MVC framework. The framework version 3 was released in March 30, 2015. So, the framework has been around for a while and active security and application updates have been made to present day.

*Testing:*

* Unit testing using the CodeIgniter unit testing class will be done for PHP portion of the web application. Unit testing using CUnit will be used to test the client and server applications of the project.
* Usability Testing will be done by CSM IT as pages and overall functionality development is completed. This will be integrated throughout the project on a bi-weekly cycle. Every Wednesday a new mini-release will be given to the client thoroughly test.

*Compilation automation:*

* Make – used to automate compilation and testing of the communication client and server written in C. PowerShell and PHP are both scripting languages and do not require compilation in to an executable machine code file.

## Stories

A story in agile program development answers three basic questions:

1. Who’s going to do it?
2. What and how are they going to do?
3. What are the results?

The first question declares an actor. The actor is the person or system that completes the story. The second question declares what the actor will do to the system and how they will complete it. The third question declares what the result of the action will be based on what the actor did to the system.

CSM IT includes four employees: IT Manager System Administrator, IT Field Technician, and IT Technician. All employees have the same level of access as the other and can be referred as a single acting entity: CSM IT.

* *Story 1 (S1):*
  + Actor: CSM IT.
  + What/How: View the number of total hardware assets, software assets, number of open tickets, problem categories for tickets, number of computers that haven’t talked in over 3 months with server, and activity feed of recently added assets on one page.
  + Results: Display overview using graphs on a single page.
* *Story 2 (S2):*
  + Actor: CSM IT.
  + What/How: Securely store passwords for group accounts.
  + Results: View, search, and create passwords in one section on the website for CSM IT to access.
* *Story 3 (S3):*
  + Actor: CSM IT.
  + What/How: Store and track software keys and software user accounts.
  + Results: Properly bill-back users the software license is assigned to.
* *Story 4 (S4):*
  + Actor: CSM IT.
  + What/How: Store and track hardware assets with live crawled data.
  + Results: Logically group hardware to easily update hardware costs and types.
* *Story 5 (S5):*
  + Actor: CSM IT
  + What/How: Track user issues/requests within the organization with categories, assignees, due dates, internal and public comments, and email notifications.
  + Results: Reporting, management, and archiving of past IT issues.
* *Story 6 (S6):*
  + Actor: CSM Employees (Non-IT)
  + What/How: Create a helpdesk ticket by email or a website page.
  + Results: Enter new helpdesk ticket for CSM IT to review and update.
* *Story 7 (S7):*
  + Actor: CSM IT
  + What/How: Run reports on all asset management systems (hardware and software) with different configurable filters and options.
  + Results: Easily view and send out bill-back costs and reports to CSM Employees
* *Story 8 (S8):*
  + Actor: Office 365
  + What/How: Automate office 365 software assignments in the system.
  + Results: Automatic updating of user licenses in the software asset manager for Office 365 software.
* *Story 9 (S9):*
  + Actor: Asset Manager
  + What/How: Connect to and store information of current hardware and software associated with a computer.
  + Results: View current hardware and software associated with a computer with the communication client installed.

## Use Cases

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| https://documents.lucidchart.com/documents/398fce9a-0b6a-4cd0-a3f1-88ed524b280e/pages/0_0?a=783&x=180&y=120&w=836&h=880&store=1&accept=image%2F*&auth=LCA%203498ce0bae71c593ba17f99d0d31880cc48353db-ts%3D1555861450 | https://documents.lucidchart.com/documents/2c1bd3ca-d0a6-4597-b4ee-fb95a3703456/pages/0_0?a=829&x=192&y=99&w=553&h=902&store=1&accept=image%2F*&auth=LCA%2099e47f59c29b6e026c3a3a25708e42bbdaaca9fa-ts%3D1555862527 |
| https://documents.lucidchart.com/documents/048f9330-a7da-4f5b-b37b-96cac2b378f5/pages/0_0?a=436&x=192&y=94&w=553&h=1012&store=1&accept=image%2F*&auth=LCA%206be8cf9377dca1c4ca0d2a70086186f84e41517a-ts%3D1555863318 | https://documents.lucidchart.com/documents/2b069072-d3c6-4a97-82e3-84c12cacee3b/pages/0_0?a=582&x=163&y=85&w=755&h=1210&store=1&accept=image%2F*&auth=LCA%203d78a4b94668b6803d2092a5b66a5838e2f14754-ts%3D1555864260 |
| https://documents.lucidchart.com/documents/a60ae2fa-279b-42ac-b7da-0cc2e4cfa59d/pages/0_0?a=852&x=163&y=85&w=755&h=1210&store=1&accept=image%2F*&auth=LCA%20e709d98024d075e8afd12ddb838abe610850cc4c-ts%3D1555865301 | https://documents.lucidchart.com/documents/5c4577c5-804d-4049-a270-36ac2d11d410/pages/0_0?a=658&x=150&y=95&w=639&h=990&store=1&accept=image%2F*&auth=LCA%20f198bf0677ad4b16da5f946223d5c849d01e0b68-ts%3D1555868278 |
| https://documents.lucidchart.com/documents/f4194103-cca7-4580-be19-1a91907fcec2/pages/0_0?a=568&x=160&y=95&w=836&h=990&store=1&accept=image%2F*&auth=LCA%2089eb0f75601c32464b2d26a8831479303360e6f7-ts%3D1555868747 | https://documents.lucidchart.com/documents/fd73f50e-33a4-4eaa-b792-2d0d97f7f939/pages/0_0?a=580&x=149&y=111&w=847&h=638&store=1&accept=image%2F*&auth=LCA%20f2ea8725a7468a4d6ad05193be42526e9676f6c4-ts%3D1555869110 |
| https://documents.lucidchart.com/documents/76f632d8-6700-4d4d-8117-c35c96fb4e4d/pages/0_0?a=535&x=156&y=118&w=632&h=484&store=1&accept=image%2F*&auth=LCA%20989bf3e2706dfaa99780bbe4a10771368e78855d-ts%3D1555870064 |  |