KML Guard

GIS File Management Web Application

Requirement Specification <1.0>

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1. Executive Summary

1.1 System Context

KML Guard is a GIS file management web application that will support a cross-domain file sharing requirement.

1.2 System Motivation - Problem to Solve

G2 Software Systems contracts with numerous DoD agencies including NORAD/US Northern Command. At NORAD, G2SS supports mission partners such as the National Guard unit, FEMA, state or local governments, etc., sharing GIS files, usually as KML, which provide amplifying information for the US DoD to provide support to those civilian authorities. In order to provide that support, the US DoD needs to engage their resources at the classified level, and so data provided by a state or county, for instance showing flood plain mapping data, needs to be transferred from an unclassified network to a classified one so that the DoD can engage some of their own mission systems to provide machinery, manpower, or other resources in support of civil authority.

1.3 Solutions Provided in this Document

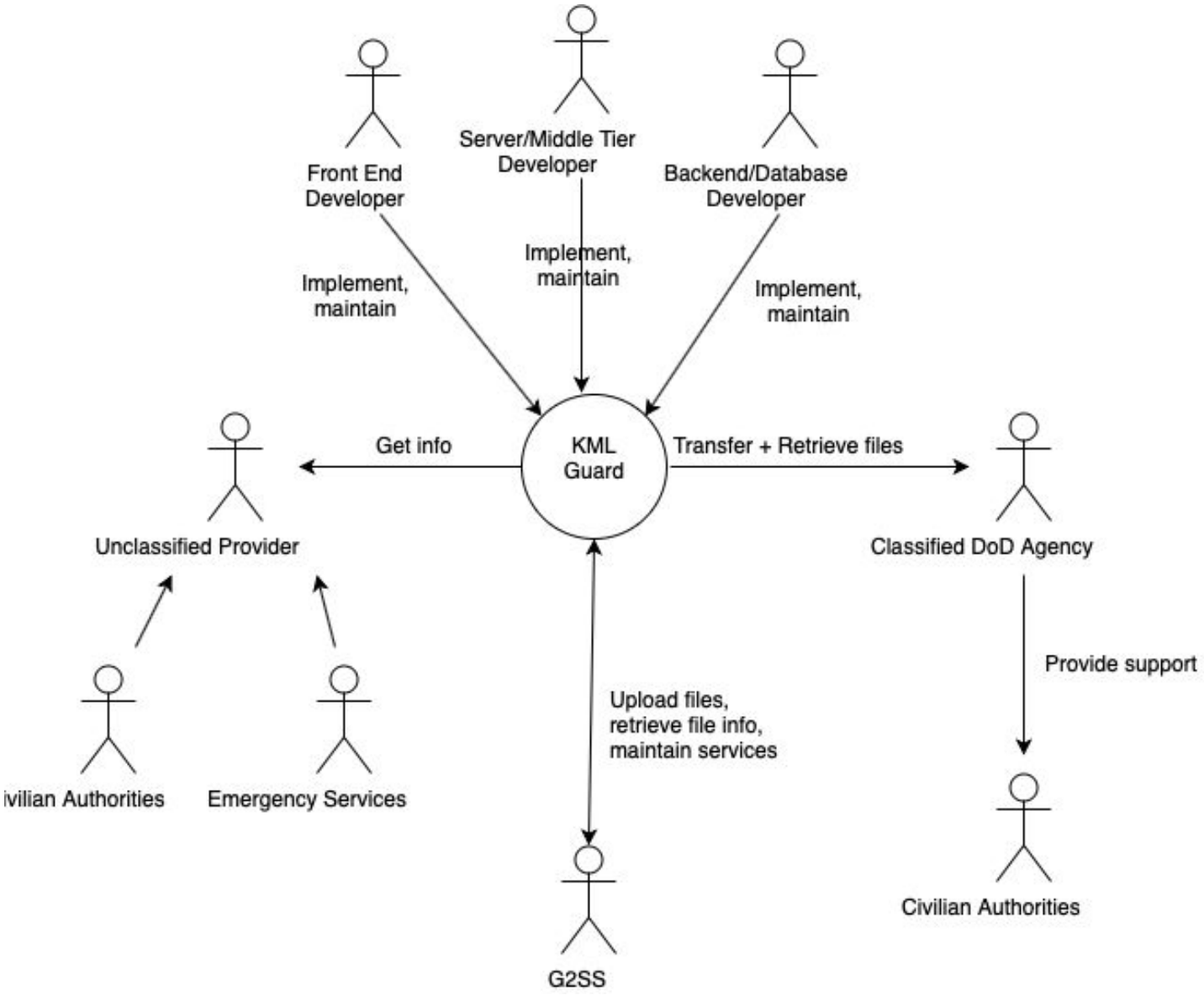
We begin with an introduction giving context and an overview of the motivation for this software and how this software will solve the problem at hand. We will then provide a stakeholder model which gives an easy overview of the stakeholders involved in the project along with additional details about them such as their roles, goals and motivations, responsibilities and functions, their skills, and their level of priority. Then we will provide a goal model which is an overarching visual representation of our stakeholders' business goals which are broken down into usage goals and system goals. Then we will provide a system vision which illustrates the vision of the system and its core purpose and context. Following that, we will include a use case diagram and use case scenarios which will provide greater detail as to how the system and users will interact.

1.4 Impact - What This Helps, Why This Matters

The ultimate goal of this system is to support the movement of a file from an unclassified network to a classified one in order to provide the US DoD with crucial information needed to provide support to civilian authorities.

2. Stakeholder Model

2.1 Stakeholder Diagram



2.2 Stakeholder Matrix

Stakeholder Name	Goals/Motivations	Responsibilities/Functions	Skills	Priority
G2SS (Client)	1. To have a file management web system implemented by the team. 2. To have this web system support a cross-domain file sharing requirement. 3. To excel at delivering superior software development solutions. 4. Ability to upload files and retrieve file information from the system.	1. Provide the team with system requirements/features and overall system vision. 2. Make decisions on feature prioritization. 3. Act as a consultant, advisor, and mentor for the team.	Provides configuration management services and production test suites for all types of commercial, DoD, and other government projects.	High
Web frontend/UX/UI developer(s)	1. Personal skill development. 2. Contribute to implementing a sophisticated system. 3. Relationships and networking.	1. Participate in team meetings. 2. Take notes and communicate information with the team. 3. Provide support. 4. Participate in documentation.	CSS, HTML5, JavaScript, JavaScript libraries, Angular, Trello, Draw.io or other diagramming tool, G (Google) Suite	High

		5. Complete assigned tasks by assigned deadlines. 5. <System Goal> [technical] Implement a simple, easy to use WebUI and WebUX while conforming to the overall vision of the system. 6. <System Goal> [technical] Provide interface to upload KML file. 7. <System Goal> [technical] Provide interface to collect and store required metadata about file (who, what/why, when, etc.). 8. <System Goal> [technical] Provide interface to allow user to see status of previously uploaded files. Interface includes table view showing files and status, with ‘Delete button’.		

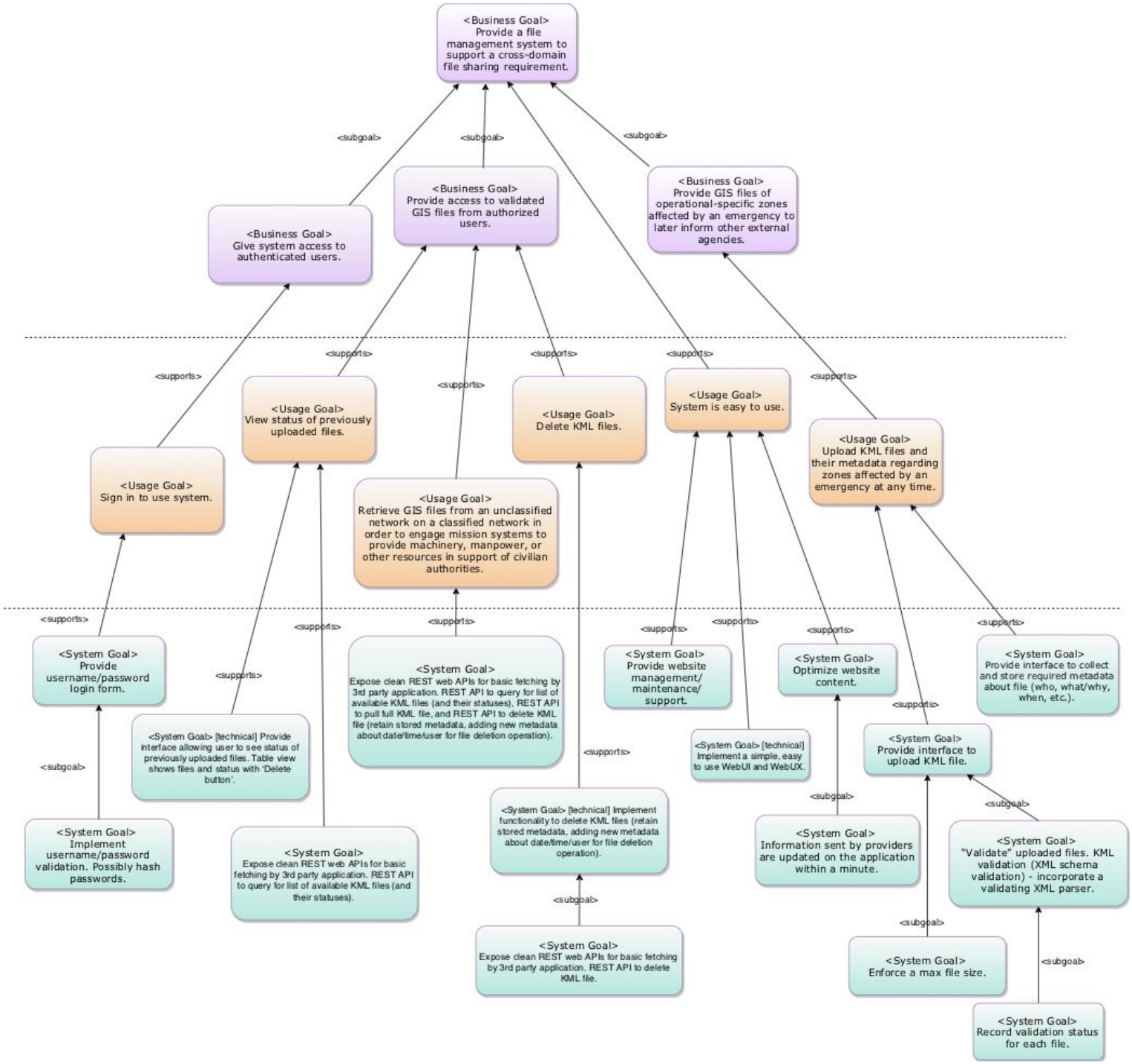
		5. <System Goal> [technical] Provide username/password login form.		
Server/Middle Tier Developer(s)	1. Personal skill development. 2. Contribute to implementing a sophisticated system. 3. Relationships and networking.	1. Participate in team meetings. 2. Take notes and communicate information with the team. 3. Provide support. 4. Participate in documentation. 5. Implement the business logic of the system. 6. <System Goal> [technical] “Validate” uploaded files, recording validation status for each one. (KML validation (XML schema validation) - incorporate a validating XML parser.) 7. <System Goal> [technical] Expose clean REST web APIs for basic fetching by 3rd	Node.JS, JavaScript, Trello, Draw.io or other diagramming tool, G (Google) Suite	High

		party application. REST API to query for list of available KML files (and their statuses), REST API to pull full KML file, and REST API to delete KML file (retain stored metadata, adding new metadata about date/time/user for file deletion operation) - same functionality as the 'Delete' button from the UI. 8. <System Goal> [technical] Implement username/password validation. Possibly hash passwords.		
Backend/DB Developer(s)	1. Personal skill development. 2. Contribute to implementing a sophisticated system. 3. Relationships and networking.	1. Participate in team meetings. 2. Take notes and communicate information with the team. 3. Provide support. 4. Participate in documentation.	MongoDB - NoSQL Database, Trello, Draw.io or other diagramming tool, G (Google) Suite	High

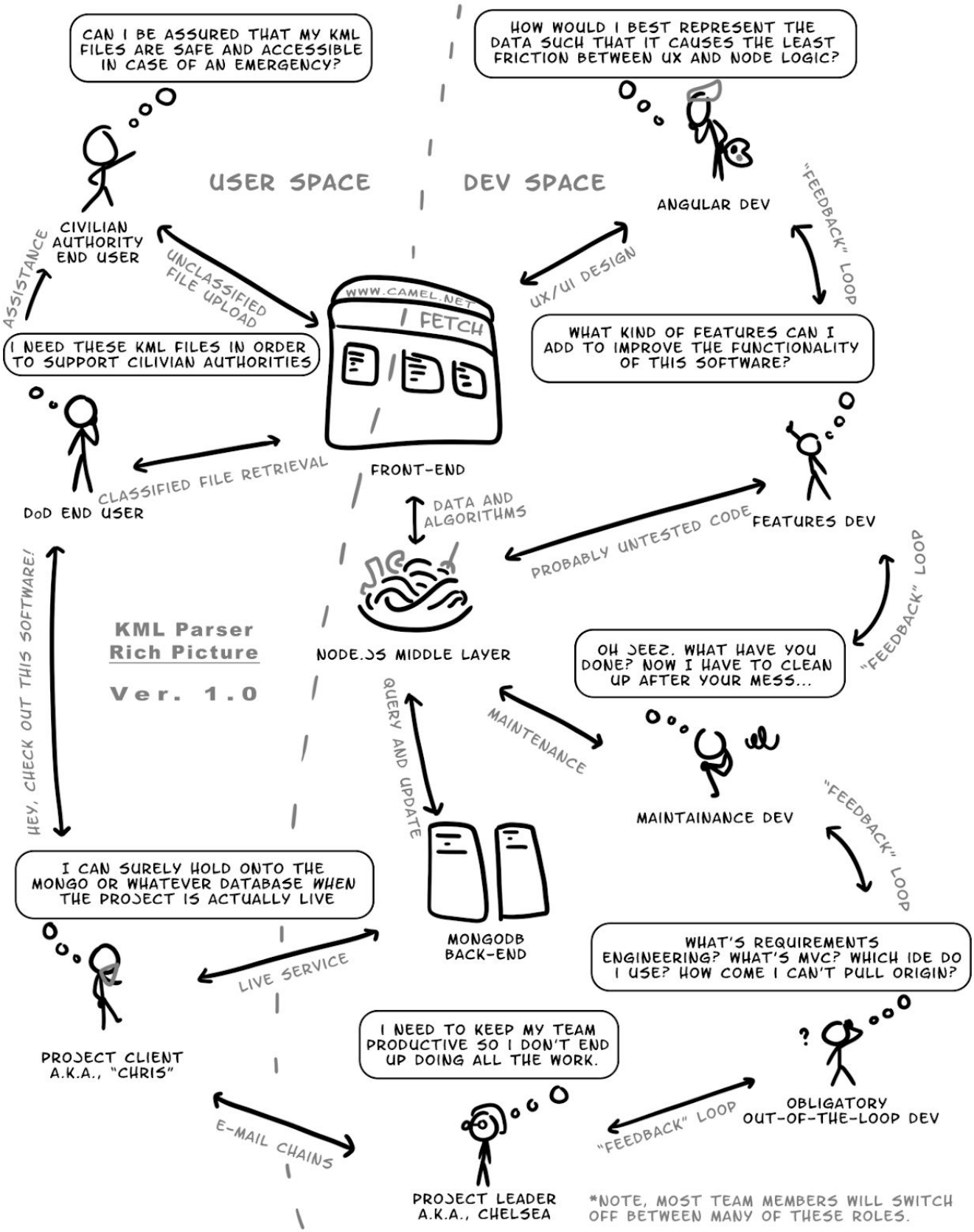
		6. <System Goal> [technical] Store KML file along with required metadata about the file (who, what/why, when, etc.). 7. <System Goal> [technical] Record validation status for each file. 8. <System Goal> Information sent by providers are updated on the application in a timely manner. 9. <System Goal> [technical] Handle file deletion which updates the stored metadata about the file.		
Consultant(s)/Advisor(s)/Mentor(s)	1. Keep the project on task. 2. Keep the system goal clear. 3. Ensure that students are learning software engineering principles and processes.	1. Empower the team to work effectively. 2. Provide guidance to the team whether that be technical or involving system goals. 3. Provide project requirements.	Knowledge of software engineering principles.	Medium

		4. Set deadlines. 5. Influence greater cooperation among team members. 6. Look over team's work and provide feedback.		
Classified File Retrievers: DoD Agency	1. Retrieve GIS files from an unclassified network on a classified one in order to engage their own mission systems to provide machinery, manpower, or other resources in support of civilian authorities.		Ability to extract files from the system.	Medium
Unclassified GIS File Provider: Civilian Authorities	1. Provide files that the DoD needs to engage their resources at the classified level.		Ability to upload files in a valid format and fill out forms.	Medium
Emergency Services	1. Contribute to the overall well-being of civilians.	1. Provide, inform, report emergency information.		Medium

3. Goal Model

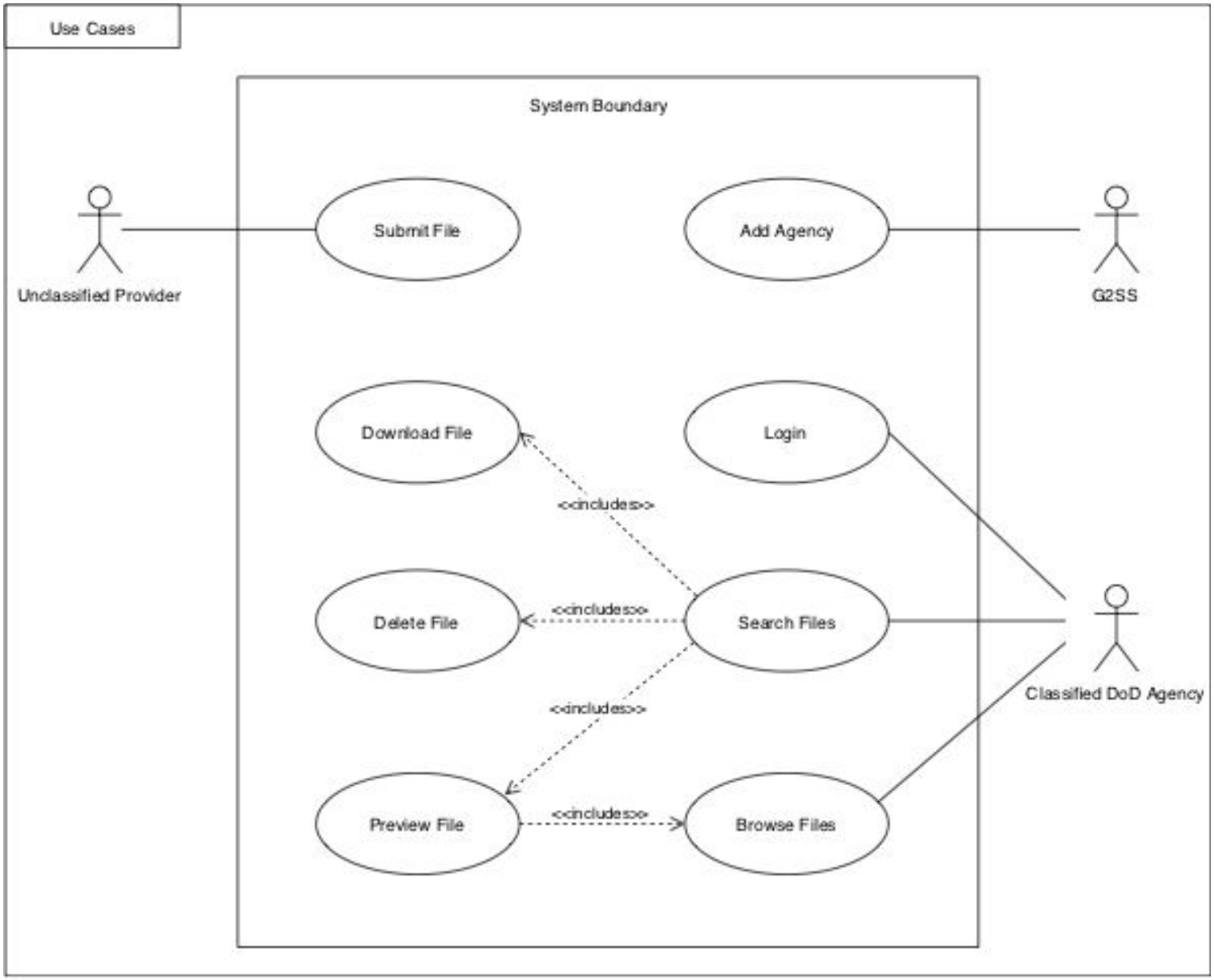

<Business Goal>
Provide a file management system to support a cross-domain file sharing requirement.
<Business Goal>
Give system access to authenticated users.
<Business Goal>
Provide access to validated GIS files from authorized users.
<Business Goal>
Provide GIS files of operational-specific zones affected by an emergency to later inform other external agencies.
<Usage Goal>
Sign in to use system.
<Usage Goal>
View status of previously uploaded files.
<Usage Goal>
Retrieve GIS files from an unclassified network on a classified network in order to engage mission systems to provide machinery, manpower, or other resources in support of civilian authorities.
<Usage Goal>
Delete KML files.
<Usage Goal>
System is easy to use.
<Usage Goal>
Upload KML files and their metadata regarding zones affected by an emergency at any time.
<System Goal>
Provide username/password login form.
<System Goal>
Implement username/password validation. Possibly hash passwords.
<System Goal> [technical] Provide interface allowing user to see status of previously uploaded files. Table view shows files and status with 'Delete button'.
<System Goal>
Expose clean REST web APIs for basic fetching by 3rd party application. REST API to query for list of available KML files (and their statuses).
<System Goal>
Expose clean REST web APIs for basic fetching by 3rd party application. REST API to query for list of available KML files (and their statuses), REST API to pull full KML file, and REST API to delete KML file (retain stored metadata, adding new metadata about date/time/user for file deletion operation).
<System Goal> [technical] Implement functionality to delete KML files (retain stored metadata, adding new metadata about date/time/user for file deletion operation).
<System Goal>
Expose clean REST web APIs for basic fetching by 3rd party application. REST API to delete KML file.
<System Goal>
Provide website management/ maintenance/ support.
<System Goal> [technical] Implement a simple, easy to use WebUI and WebUX.
<System Goal>
Optimize website content.
<System Goal>
Information sent by providers are updated on the application within a minute.
<System Goal>
Provide interface to upload KML file.
<System Goal>
Enforce a max file size.
<System Goal>
"Validate" uploaded files. KML validation (XML schema validation) - incorporate a validating XML parser.
<System Goal>
Record validation status for each file.
<System Goal>
Provide interface to collect and store required metadata about file (who, what/why, when, etc.).
<subgoal>
<supports>

4. System Vision - Rich Picture



5. Usage Model: Use Cases

5.1 Use Case Diagram



5.2 Use Case Scenarios

5.2.1 Use Case Scenario 1: Upload File

USE CASE # 1	Upload File	
Goal in Context	To inform DoD agencies of a local emergency or to provide DoD agencies with valuable information	
Scope	File Sharing System	
Level	Primary Task	
Preconditions	User has access to the web application and knows basic information about the file being uploaded.	
Success End Condition	File is uploaded to the server and can be downloaded by other users on the application	
Failed End Condition	File is not uploaded to the server	
Primary Actor	Civilian authority	
Secondary Actor	Emergency service	
Trigger	User clicks on upload link	
DESCRIPTION	Step	Action
	1	User clicks on upload link
	2	Application displays basic file upload form with simple meta-data table
	3	User fills in the upload form
	4	User clicks on upload button and select a KML file to upload
	5	User clicks on complete link
	6	System validates KML file
	7	System stores KML file and updates the application
SUB-VARIATIONS	Step	Branching Action
	5	Condition: user enters invalid information Action: application displays error message

	6	Condition: KML file fails validation Action: application notifies user
RELATED INFORMATION		
Priority		Top priority
Performance		Three minutes KML file should be available for download within a minute after it is validated.
Frequency		Often
Channels to actors		Interactive
OPEN ISSUES		How to handle files that fail validation.
Due Date		May 2019

5.2.2 Use Case Scenario 2: Download File

USE CASE # 2	Download File	
Goal in Context	To obtain valuable information in order to provide support to civilian authorities	
Scope	File Sharing System	
Level	Primary Task	
Preconditions	User is a DoD agency with valid username and password and has access to the web application.	
Success End Condition	File is downloaded	
Failed End Condition	File is not downloaded	
Primary Actor	DoD agency	
Trigger	User clicks on download button	
DESCRIPTION	Step	Action
	1	User clicks on download button
	2	System begins to transfer the file to the user's computer

	3	System updates meta-data with new download entry
	4	Application notifies user that the download is finished
RELATED INFORMATION		
Priority		Top priority
Performance		One minute (depending on the size of the file)
Frequency		Often
Channels to actors		Interactive
Due Date		May 2019
Subordinates		Search File

5.2.3 Use Case Scenario 3: Browse Files

USE CASE # 3	Browse Files	
Goal in Context	To see status of previously uploaded files	
Scope	File Sharing System	
Level	Primary Task	
Preconditions	User is a DoD agency with valid username and password and has access to the web application.	
Success End Condition	User sees table view showing files and status	
Failed End Condition	User does not see table view showing files and status	
Primary Actor	DoD agency	
Trigger	User clicks on browse file button	
DESCRIPTION	Step	Action
	1	User clicks on browse file button
	2	Application displays table view showing files and their status

	3	User scrolls through the table
	4	User clicks on preview file link
	5	Application displays meta-data of the file
RELATED INFORMATION		
Priority		Top priority
Performance		One minute (depending on the user)
Frequency		Very Often
Channels to actors		Interactive
Due Date		May 2019
Subordinates		Preview File

6. Detailed Requirements

7. Appendix - Additional Information

7.1 System Process Model