BLUE HEDGEHOG GROUP
B PLAN

Jake Whamond, John Deniel Perez, Kaleb Jones, Zane Baker and Ethan Makepeace

Table of Contents

Cover Sheet

GROUP ASSESSMENT ITEM COVER SHEET

Student Numbers:	Emails:	FIRST NAMES	FAMILY / LAST NAMES
3327794	c3327794@uon.edu.au	Jake	Whamond
3390606	c3390606@uon.edu.au	John Deniel	Perez
3405634	c3405634@uon.edu.au	Kaleb	Jones
3404983	c3404983@uon.edu.au	Zane	Baker
3375421	c3375421@uon.edu.au	Ethan	Makepeace

Course Code	Course Title
SENG2130	System Analysis and Design
(Example) ABCD1234	*(Example)* Intro to University

Campus of Study: Callaghan (eg Callaghan, Ourimbah, Port Macquarie)

Assessment Item Title: Assignment 1 Part B: System Design Due Date/Time: 01/06/23 23:59

Tutorial Group (If applicable): Word Count (If applicable):

Lecturer/Tutor Name: Kieran Molnar

Extension Granted: [X] Yes [ ] No Granted Until: 04/06/23 23:59

Please attach a copy of your extension approval

NB: STUDENTS MAY EXPECT THAT THIS ASSIGNMENT WILL BE RETURNED WITHIN 3 WEEKS OF THE DUE DATE OF SUBMISSION

Please tick box if applicable

[ ] *Students within the Faculty of Business and Law, Faculty of Science, Faculty of Engineering and Built Environment and the School of Nursing and Midwifery:* We verify that we have completed the online Academic Integrity Module and adhered to its principles.

[ ] *Students within the School of Education:* We understand that a minimum standard of correct referencing and academic literacy is required to pass all written assignments in the School of Education; and we have read and understood the School of Education *Course Outline Policy Supplement*, which includes important information related to assessment policies and procedures.

We declare that this assessment item is our own work unless otherwise acknowledged and is in accordance with the University's Student Academic Integrity Policy

We certify that this assessment item has not been submitted previously for academic credit in this or any other course. We certify that we have not given a copy or have shown a copy of this assessment item to another student enrolled in the course, other than members of this group.

We acknowledge that the assessor of this assignment may, for the purpose of assessing this assignment:

- Reproduce this assessment item and provide a copy to another member of the Faculty; and/or
- Communicate a copy of this assessment item to a plagiarism checking service (which may then retain a copy of the item on its database for the purpose of future plagiarism checking).
- Submit the assessment item to other forms of plagiarism checking.

We certify that any electronic version of this assessment item that we have submitted or will submit is identical to this paper version.

Turnitin ID: (if applicable)

DATE STAMP HERE

Insert this

Signature:	Jake Whamond	Date:	04/06/03
Signature:	John Deniel Perez	Date:	04/06/03
Signature:	Kaleb Jones	Date:	04/06/03
Signature:	Zane Baker	Date:	04/06/03
Signature:	Ethan Makepeace	Date:	04/06/03

Introduction

In order to combat long standing issues with slow response and communication, the city of Nuvalis has decided to combine all emergency stations into a single, emergency control center called ‘SSS’. In order to achieve this, careful consideration needs to be placed into the design of a whole new system designed to run every aspect of such a facility. The objective of this report is to design and provide an overall view of what this system could look like and ultimately propose its implementation. In order to account for the many different and frequently changing fragments of such a facility, the system would need to be extensive with a heavy focus on precision and attention to detail while simultaneously avoiding any obscurity.

The proposed system will run majority of SSS’s functions such as the rostering of staff, the handling of emergency reports, and the dispatching of appropriate emergency workers. As much of the work done by SSS would involve the saving of lives, it is vital that there is no room for error with the system designed to account for and remain functional during any and all potential abnormities as the failure of any part of the system could result in serious consequences.

In order to effectively convey the proposed system, this report will utilize a number of different lists and diagrams. Business rules covering work health and safety, legislation and standards, ethics, security, and privacy have been clearly established at the beginning of the report in order to provide users of the system with clear instructions on how to operate smoothly and without issue. Use cases also play a major role in the new system so use cases have been established with explanations and descriptions with each one being mapped to a sequence diagram. The use cases that will be analyzed are the creation of a weekly roster, report alerts, the creation of a report and the dispatching of appropriate emergency workers. Additionally, each use case will also have a model of the intended user interface provided along with the description and diagram in order to effectively convey how each system will be operated. As the deployment of the system is a vital aspect worth careful consideration, a class diagram and Java files for the implementation domain will also be included as well as a detailed proposal for the deployment strategy.

By detailing all these features, the report aims to provide SSS with a clear blueprint on what should be put in place in order to create an effective emergency response system while also offering tools to be able maintain it in a way that ensures constant effectiveness and efficiency with low risk of failure.

In order to reach this goal, a number of objectives need to be achieved in a way that is extensive, detailed and clear. It is vital that the report is extensive as in order to run a clear and effective emergency response system, all possible outcomes and aspects must be considered so all staff are able to work with efficiency and their roles and responsibilities clearly established. By focusing on detail and working to achieve as much clarity as possible, there will be less room for assumption allowing for consistency and accuracy for all who use the system. Business rules assist in this as through those each member of the staff know clearly how they are expected to operate. Use case descriptions as well as sequence diagrams also are beneficial in providing extensive detail as they allow users to understand in detail how each step works and any potential alternative actions. Lastly, the implementation strategy will play an important role in the report as if done correctly and with focus on detail, it will work to provide great clarity on how the system will be introduced and maintained. If all of these objectives are met, the report should provide a strong blueprint of how the SSS system should be designed with each member of staff clearly knowing their place and how to interact within it.

Business Rules

Business Rule	System Mapping	Organizational Mapping
First-come first-serve basis for emergency alerts from communication median.	System control class will be designed to create a top to bottom hierarchical regarding the alerts coming in	An Operator user Manuel will be created, and Training will be provided to the Operator explaining to the Operator will only end contact once an alert is resolved
Operators will not put communication median on hold.	System will not have a hold function	An Operator user Manuel will be created, and Training will be provided to the Operator explaining they can only focus on one alert at a time
GPS locating by mobile phone, looking up the registered address of a landline phone or sensor, or by radio triangulation will begin immediately as a communication median contact the Triple S operator.	Auto Location methods will run after system detects contact from Communication median	An Operator user Manuel will be created, and Training will be provided to the Operator explaining Operator will check location after contact
The details of each emergency report will be recorded in one log if the same incident.	Log will be updating viva the System control class	An Operator user Manuel will be created, and Training will be provided on how to modify logs and reports

The information of an active emergency that Triple S has already got more than one report for will be merged for ease of information.	Merging will be done by control class	An Operator user Manuel will be created, and Training will be provided on how to read logs and reports
Conflicting report information of same incident in a log will not be deleted.	Delete function in System	An Operator user Manuel will be created, and Training will be provided on how to read logs and reports
A separate log of operators' information and each emergency alert action they took since employment will be maintained.	System will have a key logging and be able to make an auto operator log based off information provided by key logger	An Operator log user Manuel will be created, and training provided to managers on how to read Operator logs
Operators' logs will only have access permissions granted to managers. Overwrite and modify permissions will be denied.	Permissions will be auto granted to manager user group	An Operator log user Manuel will be created, and training provided to managers on how to read Operator logs
All voice communication between an operator and reporter will be recorded from initial contact to end.	Record method in control class	Operators will be told of their voice being recorded while in contact with communication median in Operator user Manuel
Recordings will be attached to the relevant emergency log.	Control class will put unique identifier of Recordings in relevant log	An Operator user Manuel will be created, and training

		provided on recordings
An operator will send written notices to radio frequencies and local television stations as required.	UI will allow for inputs of operator needs	Written notice user Manuel will be created, and training provided on creating written notices
All operators' notices written to radio frequencies and local television stations will be recorded in a separate log each day.	System will have a top to bottom hierarchical on most recent created dates to oldest created dates in regard written notice logs	Written notice user Manuel will be created, and training provided explaining hierarchical structure of written notice logs
The Local Emergency Operations Controller will routinely check and have access permissions to daily logs of the operator's written notices.	Local emergency Operation controller will have a separate purpose-built UI	Local Emergency Operations Controller Triple S user Manuel will be created, and training provide on navigating the system
Emergency alert logs and the attached recordings will not be deleted until 7 seven years have passed.	Delete Logs use case will automatically delete logs unless otherwise specified after 7 years.	Any Manager at Triple S can oversee this deletion and prevent it if necessary.
Live resources will be constantly modified by the appropriate administrator.	ResourceController is accessed through the OperatorUI, which observes the live resources.	Either a trained Operator or Manager will overlook the live resources, periodically checking on it as scheduled.
Business supplies Address/Location which is automatically	Sensor communicates its address on an automatic report to the Alert class.	An operator must oversee the setup of automatic

transmitted/retrieved on an alarm from its sensor(s).		reporting to ensure an address is listed.
Business supplies condition(s) that the system will automatically enact if fulfilled (e.g Alarm active for 5+ minutes, send police).	Within the Sensor class the sensor rule is stored.	Operator must oversee the setup of automatic reporting to ensure the rule is valid.
Operator must remain in contact with the reporter until emergency services have arrived at the location.	Incident, through IncidentStatus displays when the incident is resolved or a service has arrived.	Operators must be trained to stay on call until the situation is properly responded to.
Operator must attempt to obtain the location of the emergency through technological means or asking the reporter.	Location is to be obtained through tracing a call, tracking gps and the like in EmergencyPhoneLine.	Operator can access the system options for tracking location, as well should be trained to ask the reporter.
Operator must decide which services are necessary to be dispatched for the emergency.	Available in the system within DispatchManager as chooseDispatch() and searchDispatch()	Operator must be trained enough to adequately decide which services to dispatch.
Operator must contact all other involved emergency control centers to share information and coordinate a response.	IncidentManager using updateIncident() allows a communication through system.	An Operator must know how to contact the required dispatch services if necessary.
Operator should pass the alert onto the Air Traffic Control center responsible for the area the aircraft is in.	OutsideScopeReport, IntercityControlCentre and AlternativeService all help with out of scope reports.	An Operator must be trained to know which reports are within the scope of Triple S, and which need to be reallocated.

Operators must be member of the NSW Police Force.	The qualification variable in Operator displays whether they are apart of the NSW Police.	A manager must ensure that any new operators are current members of the NSW Police Force.
Roster for operators according to anticipated demand must be made using the availability of each operator to staff the center 24/7.	The Roster, Shift, UnavailabilityRecord, Manager and RosterManager classes all are used to create the roster.	A manager must ensure that an operator is only scheduled for when they are available, and that all time slots are filled.
Roster for operators must take into account the conditions on a daily basis.	N/A	A Manager must take into account expected conditions to adjust the roster accordingly.
Each operator must have securely stored records Basic personal information, Qualifications, Experience, Availability, Medical information and Mental health records.	Records stored within the Operator class.	Operators must ensure their information is accurately portrayed in the database, and is updated when necessary.
Roster only accessible to a manager.	Operator has no connection to the Roster class, while Manager does.	Managers must ensure that operators can’t access the roster.
Manager reports at the end of each month the manager requires reports of the system for that month.	The Manager class interacts with the Log class and LogManager to create a report.	Managers must be trained to create reports and to complete them when scheduled.

Operator must coordinate the required services and keep them all up to date with information on the response.	IncidentManager using updateIncident() allows a communication through system.	An Operator must know how to contact the required dispatch services if necessary.
Business Rule	System Mapping	Organisational Mapping
The data provided will be analyzed to implement the most safe and effective measures for controlling the given situation.	Data analytics tools such as machine learning will be implemented to enable more advanced analysis and decision-making processes.	
Storage of equipment used for emergency scenarios will be managed to be safe and appropriate for the given equipment.	The system will be designed to manage inventory, track usage and maintenance, and ensure compliance with relevant safety standards and regulations.	Staff are to be trained to use the system to maintain regular records of equipment use.
Vehicles and machinery will be maintained, organized and conducted in safe and appropriate ways by software.	The system will be designed to manage inventory, track vehicle usage, schedule maintenance and ensure compliance with relevant safety standards and regulations.	Staff are to be trained to use the system to maintain regular records of vehicle use.
Workers' qualifications will be recorded to ensure the right employee carries out the right task they are qualified for.	Operators' qualifications will be managed and stored by managers in operator class.	Operators will be restricted from conducting certain operations until qualifications are validated.
Necessary information, instructions, or supervision will be remotely provided to protect persons	Operators can create requests to broadcast television, radio and phone warnings, instructions and other information.	Instructions and information provided by operators will be recorded for

from risks to health and safety.		auditing purposes.
Workers' compensation insurance policies will be stored in the event of work-related injury or illness.	Operators' compensation/insurance policies will be managed and stored by managers in operator class.	Policies may be updated when necessary by management.
Directions given by emergency services workers will be audited to ensure the directions are not with intent to coerce or induce a person.	Calls made to operators will be recorded and stored.	Auditors can investigate recordings and determine if the operator is providing appropriate directions.
When a situation develops beyond what is manageable by Triple S, instructions to evacuate will be issued to avoid unnecessary harm to personnel.	OutsideScopeReport class will be created using the most up-to-date and relevant emergency data and forwarded to the appropriate authorities.	Present dispatches will be instructed to evacuate the situation.
The emergency evacuation plan for Triple S administration offices will be managed to ensure the most up-to-date evacuation routes are used in an emergency.	Emergency evacuation plan will be stored and updated by the manager and will be available for all employees to access and review.	Employees will be instructed how to access the emergency evacuation plan and are required to be familiar with the plan. Employees will be informed if any changes are made to the plan.
Employees will be encouraged to maintain their health through regular reminders to stay hydrated, eat properly and take	Interface will display an unintrusive message reminding employees to maintain their health each hour.	Employees will be encouraged to take breaks when required.

breaks when necessary.		
Business Rule	System Mapping	Organisational Mapping
All collected user information such as phone numbers or addresses will be restricted and only accessible by workers who require such information with two factor authentication.	In order to access such information, an authorized employee must provide a password and a code sent to them via text.	Staff are trained not to disclose sensitive information to anyone who foes not have the appropriate clearance.
All calls made to SSS are subject to Privacy Policies and Terms and Conditions which are to be easily accessible on the SSS website.	The terms and conditions will be available and updated when necessary on the SSS website.	Staff will be made aware of these policies in order to ensure they act in accordance with them.
All employees are to complete cybersecurity training every 6 months to ensure competency in protecting data.	There will be a digital database designed to check off whether employees complete their training.	Employees will receive instruction on safe digital practices.
Daily Backups will be made to avoid data loss.	Each day a backup of all information will be created and stored on office servers.	Each day staff will be reminded to back up their data.
All employees must not take any electronic equipment or files from the workplace unless given permission by an appropriate staff member.	There will be a database keeping track of all equipment and who is responsible for it.	Staff will be warned of the consequences of taking anything without permission.
In the event of a data breach, all who are affected will be contacted and told what data has been exposed.	There will be a system in place to send a mass text informing users in the event of a breach.	All appropriate staff will receive training on what protocols must be followed in the

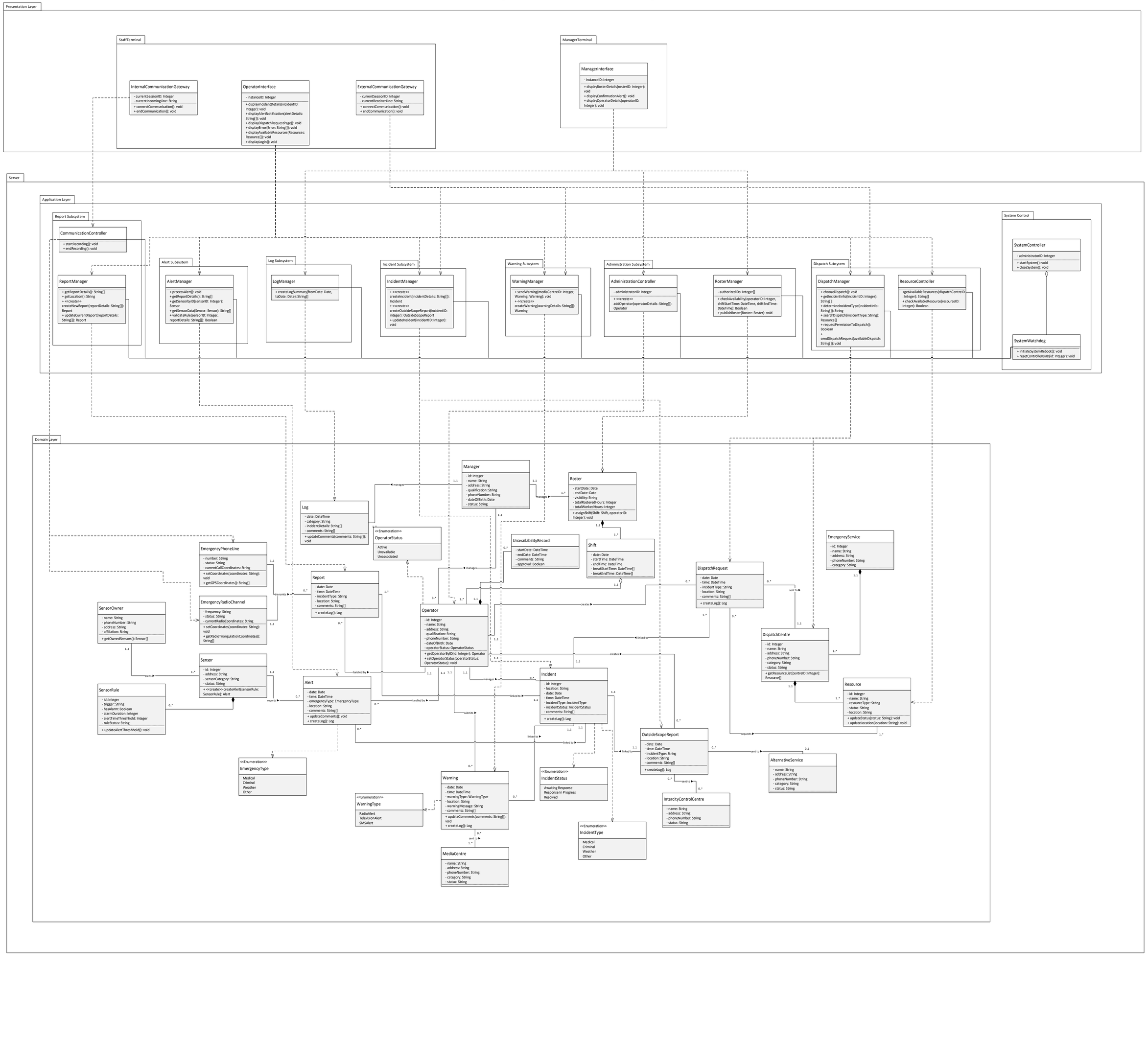
		distribution of these texts.
All new employees will be required to sign a confidentiality agreement to ensure that they do not expose sensitive information.	The signing of the agreement will be checked off on their work account when done.	The agreement will be provided to each employee during orientation.
All areas of the office containing sensitive information must remain locked and only accessible by appropriate staff.	There will be a digital lock system with keycards.	There will be signs reminding staff to close doors behind them.
All employees must change their passwords every 3 months.	Every 3 months the system will require staff to change their password before logging in.	IT support staff will check if everyone has changed their password.
In the event of an employee attempting to access sensitive information, reasoning must be provided and permission must be granted beforehand.	This reasoning and the approval will be logged on the employee's digital file.	There will be a number of staff members responsible for the guarding of sensitive information who will be trained on protocols involving distribution.
Business Rule	System Mapping	Organisational Mapping
Emergency service organisations will not be charged for services provided by the operators of emergency call services, such as the receiving and handling of calls to an emergency service number and the transfer of such calls to emergency	N/A	Operational costs incurred by the emergency call service centre are laid out in the yearly financial budget.

service organisations.		
Emergency call service operators cannot, without written notice, change the physical location in which they operate their emergency call services.	Information about flexible working arrangements are noted in the Operator class.	The manager receives requests for flexible working arrangements and manages the approval of these requests.
When emergency call service operators transfer an emergency call to the relevant emergency service organisation, they must provide the following information: The most precise location information regarding the emergency available at the time when the call is transferred; name of the caller requesting emergency services; and public number from which the emergency call was made.	Information about the report is contained in the DispatchRequest and Report classes.	Operators are given a standard operating protocol for the relaying of report information to emergency service dispatch centres. This protocol covers both the telephone information procedure and the system procedure for transferring report data.
Emergency call service operators must give the ACMA (Australian Communications and Media Authority) a copy of the records of the number and kinds of calls received by the emergency call service on a quarterly basis – within 1 (one) month after the quarter ends.	Information about reports is contained in the Report class.	The emergency call service manager has access to the report records and the quarterly summary of reports to be submitted to the ACMA.

For each day that the emergency call service receives emergency calls, emergency call service operators must answer 95% of all calls made to the emergency service numbers each day within 10 (ten) seconds of the call reaching the service.	Data about response time to calls is contained in the Report class. This response time is measured from the time a call notification appears on the interface until the time the notification is answered.	The manager of the emergency call service has access to the daily summary of emergency calls, including any calls flagged for delayed response times.
If an individual makes an unsuccessful emergency call, meaning that the call did not reach the relevant termination or answering point for the situation, emergency call service operators must conduct a welfare check on the caller through contacting them by phone or SMS. If attempts to contact the caller are unsuccessful, the matter should be referred to the police force in the location where the caller is located.	Interface displays a notification about any failed calls, including relevant contact and location details about the call.	N/A
The emergency call operator must keep a record of all calls answered 5 seconds after a call reaches the relevant answering point for the call, 10 seconds after a call reaches the relevant answering point for	Data about response time to calls is contained in the Report class. This response time is measured from the time a call notification appears on the interface until the time the notification is answered.	N/A

the call, and more than 10 seconds after a call reaches the relevant answering point for the call.		
Any false alarms that are intentionally or recklessly given by individuals will be recorded, flagged, and reported as a criminal offence.	False alarms are flagged in the notes of any reports made to Triple S.	Operators are to report any false alarms to the emergency contact centre manager.
All emergency call service operators will undergo a training program during the first two months of employment which will lead to the qualification of a PUA30822 - Certificate III in Public Safety (Emergency Communications Centre Operations).	The qualifications of the emergency call service operators are noted in the Operator class, including if they have any valid qualifications for PUA30822 - Certificate III in Public Safety (Emergency Communications Centre Operations).	All newly hired emergency call service operators are enrolled in the training program if they do not possess the qualification already.
All emergency call service operators are required to attend 3 units of work training courses throughout a calendar year.	The number of training courses completed by an operator for the calendar year is captured in the Operator class.	Managers disseminate information about training courses throughout the calendar year to the operators, including reminders about the required 3 units.

Design Class Diagram



Class Diagram Description

The design class diagram for the Triple S system is represented in a layered architectural style. The classes in the system are split into three primary layers: the presentation layer, the application layer and the domain layer. The domain layer consists of the domain entities that operate within the system, including the relationships between the entities and any enumeration classes used by these entities. These classes represent the entities in the system for the storage of data, containing classes such as operator, manager, incident, report, dispatch centre, resource, alert, sensor, dispatch request, and warning. Business rules that are mapped in the system are also present within the entities in this layer.

The application layer, contained in the same system package as the domain layer, consists of all the control classes of the system. These classes handle the logic processes of the system, and they're the ones responsible for ensuring the functional requirements of the system are met. In this diagram, the application layer is divided into subsystems representing the main use case subsystems of the system: the reporting subsystem, the alert subsystem, the log subsystem, the incident subsystem, the warning subsystem, the rostering and administration subsystem, and the dispatching subsystem. There is also a system control subsystem containing the system controller and system watchdog that manages the operations of the system as a whole.

Finally, the presentation layer consists of the boundary classes of the system. These are the classes that system actors can interact with and allow for the transfer of data between actors and the control classes. This layer is separated into two packages, the staff terminal and the manager terminal. The staff terminal consists of the OperatorInterface class, which is the user interface used by the operators of the system, as well as communication gateways for receiving and sending communication to entities outside of Triple S. The manager terminal is primarily the ManagerInterface class which represents the user interface used by the Triple S manag

Use Cases

Use Case Descriptions

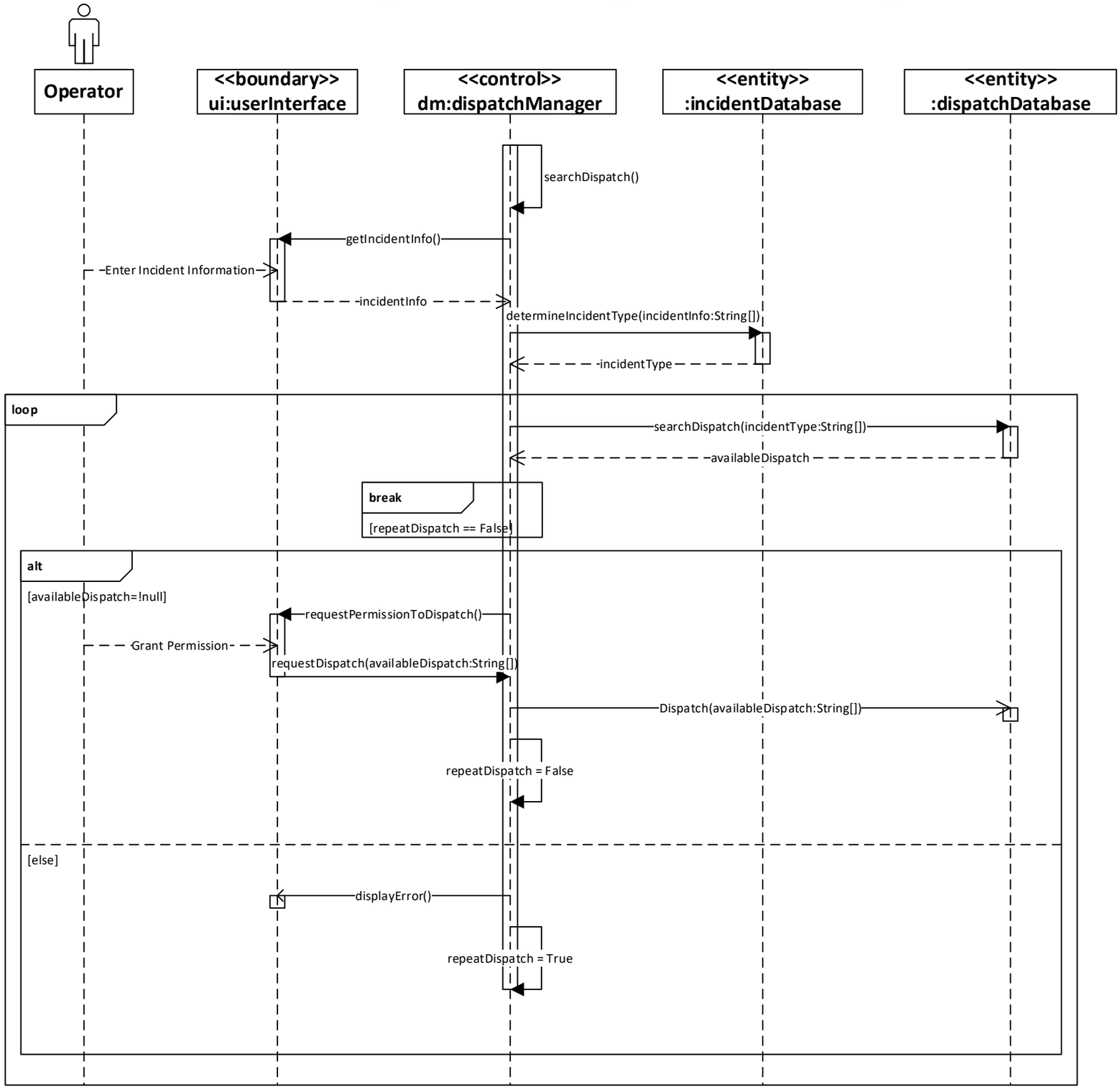
Sequence Diagrams

Class Diagram Subsets

Search Dispatch

Use Case Name:	Search Dispatch	
Scenario:	Operator searching for an available dispatch	
Triggering Event:	Operator commences an automatic search for a dispatch	
Brief Description:	The operator inputs the incident details into the system. The system uses the information to automatically select the best dispatch resources to request.	
Actors:	Operator, Dispatch Centre	
Related Use Cases	Choose Dispatch, Request Dispatch	
Stakeholders:	City Council, Civilians, Emergency Service Personnel	
Preconditions:	A report of an emergency was received Location and type of emergency have been identified Operator available to take the report and make the dispatch request	
Postconditions:	System must have sent a dispatch request to the relevant dispatch centre	
Flow of Activities:	Operator	System
	1. Operator enters location and type of emergency 2. Operator provides permission to the system to request dispatch	1. System identifies information 2. System searches for closest dispatch centres to location with available resources of emergency type 3. System displays best dispatch resources for the identified incident 2.1 System sends a dispatch request to the selected dispatch centre
Alternative Flow:	1.3. No suitable dispatch resources could be found for the incident a.) The system notifies the operator that there are no suitable dispatches to request at the moment, and continues searching for an available dispatch	
Exception Conditions:	1. Operator inputs incorrect or invalid input a.) System asks for proper input, and restarts the use case 2. Operator rejects the prompt asking for permission to request the dispatch a.) System resets to resting state	

Search Dispatch Sequence Diagram



Search Dispatch Subset Class Diagram

Search Dispatch

Sequence Diagram

This diagram demonstrates the flow of data between an operator and four objects: the user interface (UI), the dispatch manager (DM), the incident database (ID) and the dispatch database (DD). To begin with, the DM will be prompted to begin the process of searching for a dispatch, and sends a request to the UI to obtain the incident information, of which the operator inputs into the UI and returns to the DM. The DM will then send this information to the ID to determine the nature of the incident and returns this information to the DM. This point is where the diagram begins a loop, which will be broken when the variable repeatDispatch is false. The DM will then send this data to the DD, which will return an available dispatch which is appropriate to deal with the given incident. If there is no dispatch available to send to the incident, an error message will be displayed by the UI, and the variable repeatDispatch is set to true, triggering the loop to continue until an appropriate dispatch is available, or is otherwise aborted by the operator. In the case where a dispatch is available, the DM will send a message to the UI requesting the operator's permission to request the given dispatch be sent to the incident. When the operator provides permission, the UI will return this to the DM, which will then instruct the DD to dispatch the selected response. Following this, the repeatDispatch variable is set to false, the loop is broken, and the system will return to a neutral state.

Class Diagram Subset

The class diagram subset for the Search Dispatch use case consists of the following subsystems: report, log, incident, and dispatch. The control classes for these subsystems are present in the application layer of the diagram subset, and they ensure that the functional requirements of the use case are met. The system controller and system watchdog are also a part of the class diagram subset, as they manage all the other subsystem control classes. The classes present in the domain layer are the Operator, who handles the creation of a DispatchRequest, the Incident being handled, as well as the DispatchCentre and the Resource requested in the dispatch requests. Logs are also created when a dispatch request is made, so the Log class and subsystem are present in this diagram. For the presentation layer, the OperatorInterface is present since it is the main user interface that operators use in the creation of dispatch requests for incidents. The communication gateways allow for the transmission of these dispatch requests from the Triple S system to the receiving system of the dispatch centres.

Report Sensor Alert

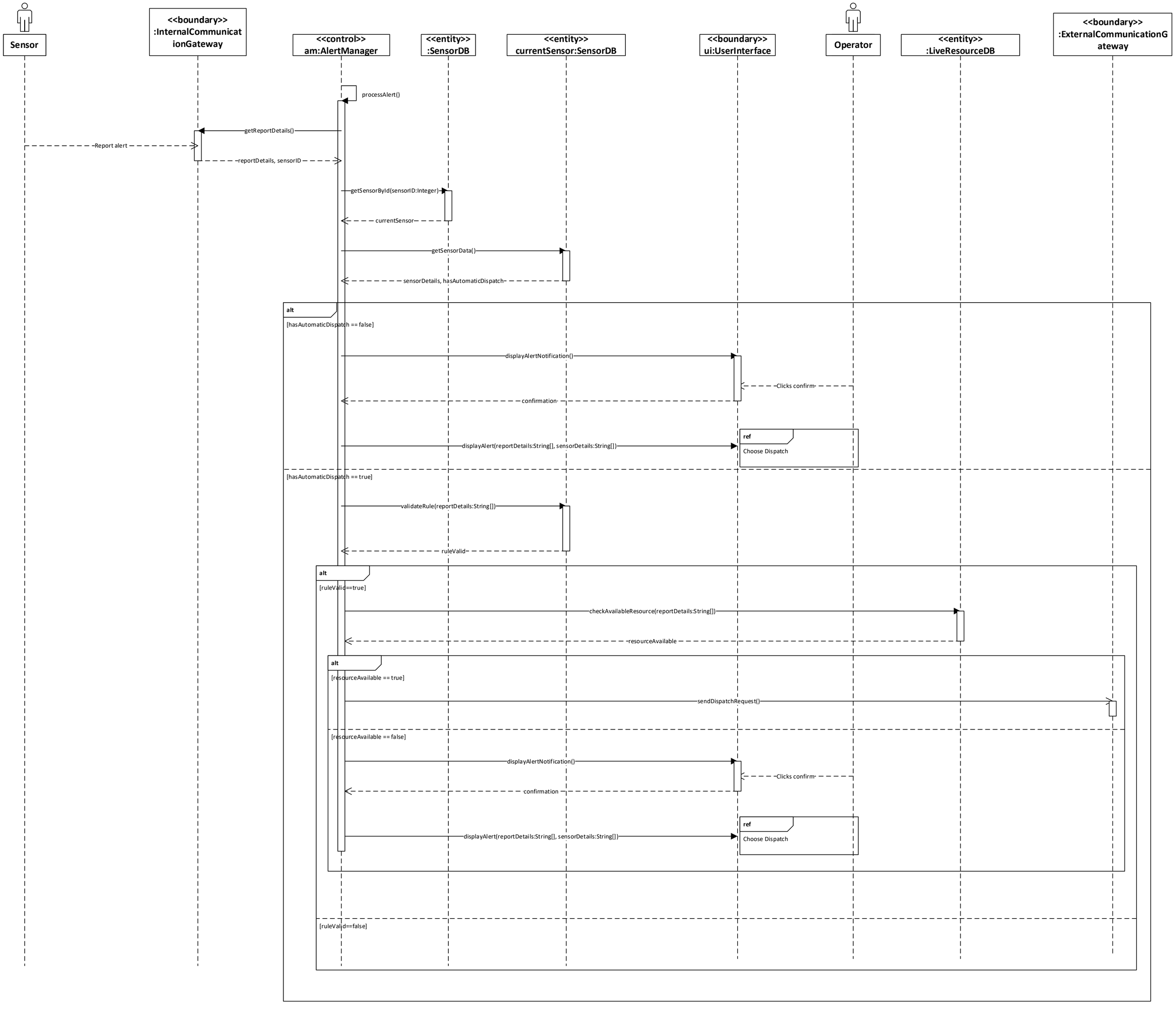
<table>
<tr><td>Use Case Name:</td><td colspan="2">Report Sensor Alert</td></tr>
<tr><td>Scenario:</td><td colspan="2">An alert from a registered sensor is reported.</td></tr>
<tr><td>Triggering Event:</td><td colspan="2">A registered sensor detects an incident that requires reporting an alert/emergency.</td></tr>
<tr><td>Brief Description:</td><td colspan="2">A registered sensor reports an incident alert to a human operator who uses the alert and the registered to determine the location and type of incident.</td></tr>
<tr><td>Actors:</td><td colspan="2">Sensor, Operator</td></tr>
<tr><td>Stakeholders:</td><td colspan="2">Emergency Services, Private Individuals</td></tr>
<tr><td>Preconditions:</td><td colspan="2">The sensor is registered to the Triple S system.
The sensor is operational and is capable of sending reports to the Triple S system.
There is a human operator available to process the report.</td></tr>
<tr><td>Postconditions:</td><td colspan="2">The sensor that reported the alert must be identified.
The type of the incident reported must be identified.
The location of the incident reported must be identified.</td></tr>
<tr><td rowspan="2">Flow of Activities:</td><td>Actor</td><td>System</td></tr>
<tr><td>1. Registered sensor reports an incident alert to the system.

2. Operator looks up the registered information of the sensor on the system.

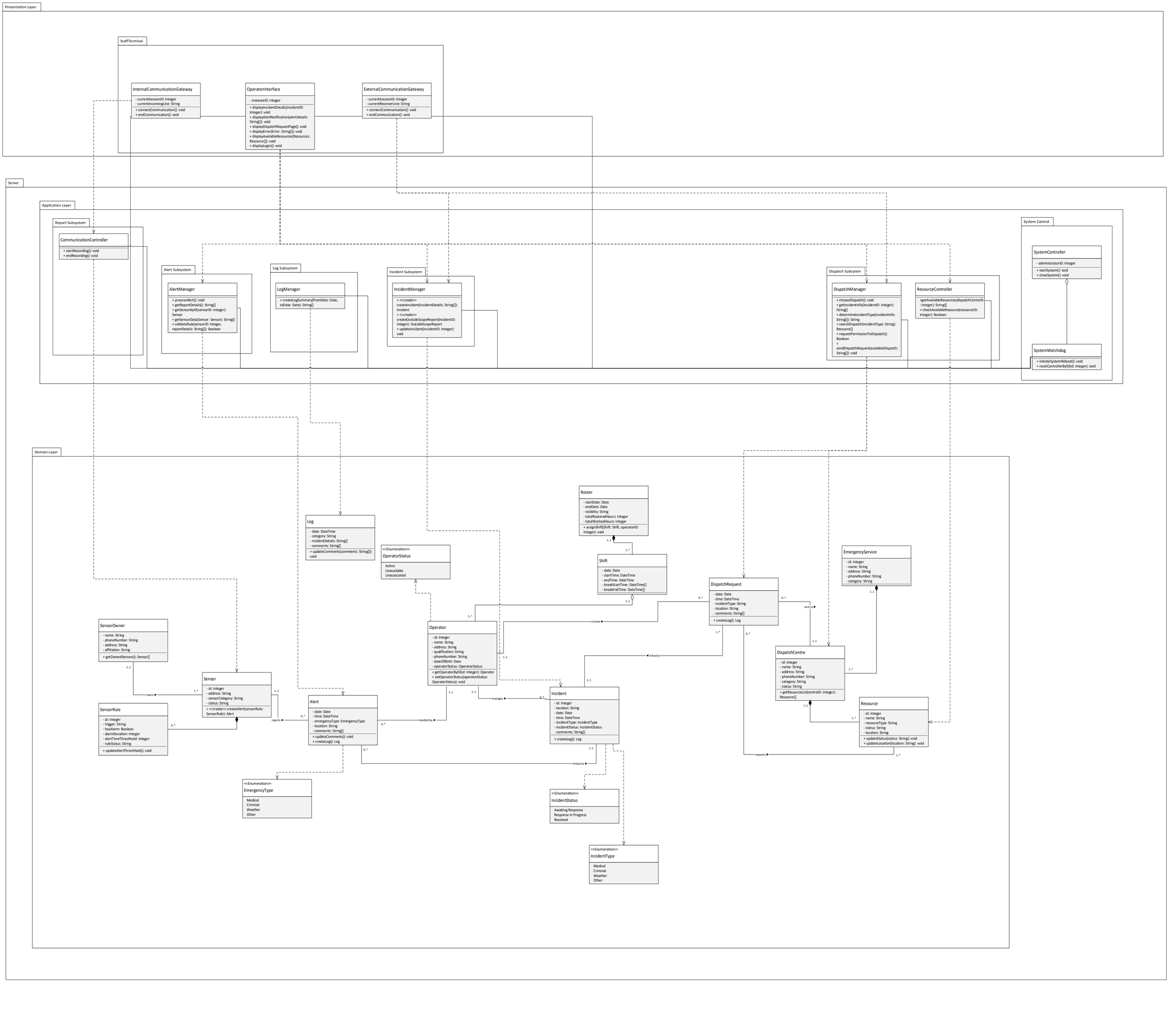
3. Operator identifies the location and type of the reported incident.</td><td>1.1 System receives the report from the sensor.
1.2 System sends a notification to a human operator about the report.

2.1. System shows the registration information of the sensor including type of sensor and its registered address.</td></tr>
<tr><td>Alternative Flow:</td><td colspan="2">1.2. If the sensor has a registered rule to automatically dispatch emergency services is an alert is reported,
a. System confirms whether the registered rule for automatic dispatch has been met.
b. If the rule is met, system sends a report to emergency dispatch services to request dispatch to the registered sensor’s location.
c. If the rule is not met, system treats the alert as a false alarm and ignores the report.</td></tr>
<tr><td>Exception Conditions:</td><td colspan="2">• If the sensor has an automatic dispatch rule and the rule is met, but no resources are available:
○ Return to normal flow at 1.2, with system sending a notification to a human operator about the report</td></tr>
</table>

Report Sensor Alert Sequence Diagram



Report Sensor Alert Subset Class Diagram



Report Sensor Alert

Sequence Diagram

This sequence diagram represents the action flow, including the methods, returned variables, and objects, for the use case of Report Sensor Alert. First, the control object AlertManager sends a self-message to start processing any incoming alerts. It calls a method to the boundary ReportGateway to get any incoming alerts and details about the alert. Registered sensors can send alerts to the ReportGateway, which relays the details about the report and the ID of sensor to the AlertManager. The AlertManager uses the sensor ID to grab the details of the reporting sensor, including any automatic dispatch rules the sensor might have. If the sensor has no automatic dispatch rules, the AlertManager displays an alert notification to an available operator's UserInterface. The notification will ask for a confirmation from the operator, after which the AlertManager will display the alert and sensor details to the UserInterface of the operator. If the sensor has an automatic dispatch rule, the AlertManager will validate if the rule was met in the alert. If the dispatch rule is not met, the alert is dismissed. If the dispatch rule is met, AlertManager will check the available resources if any that match the alert can be deployed to the incident location. If any resources are available, it will send a dispatch request to the relevant dispatch centre through the dispatch request gateway. If no resources are available, AlManager will treat the alert as if there are no automatic dispatch rules and send the alert notification to an available operator.

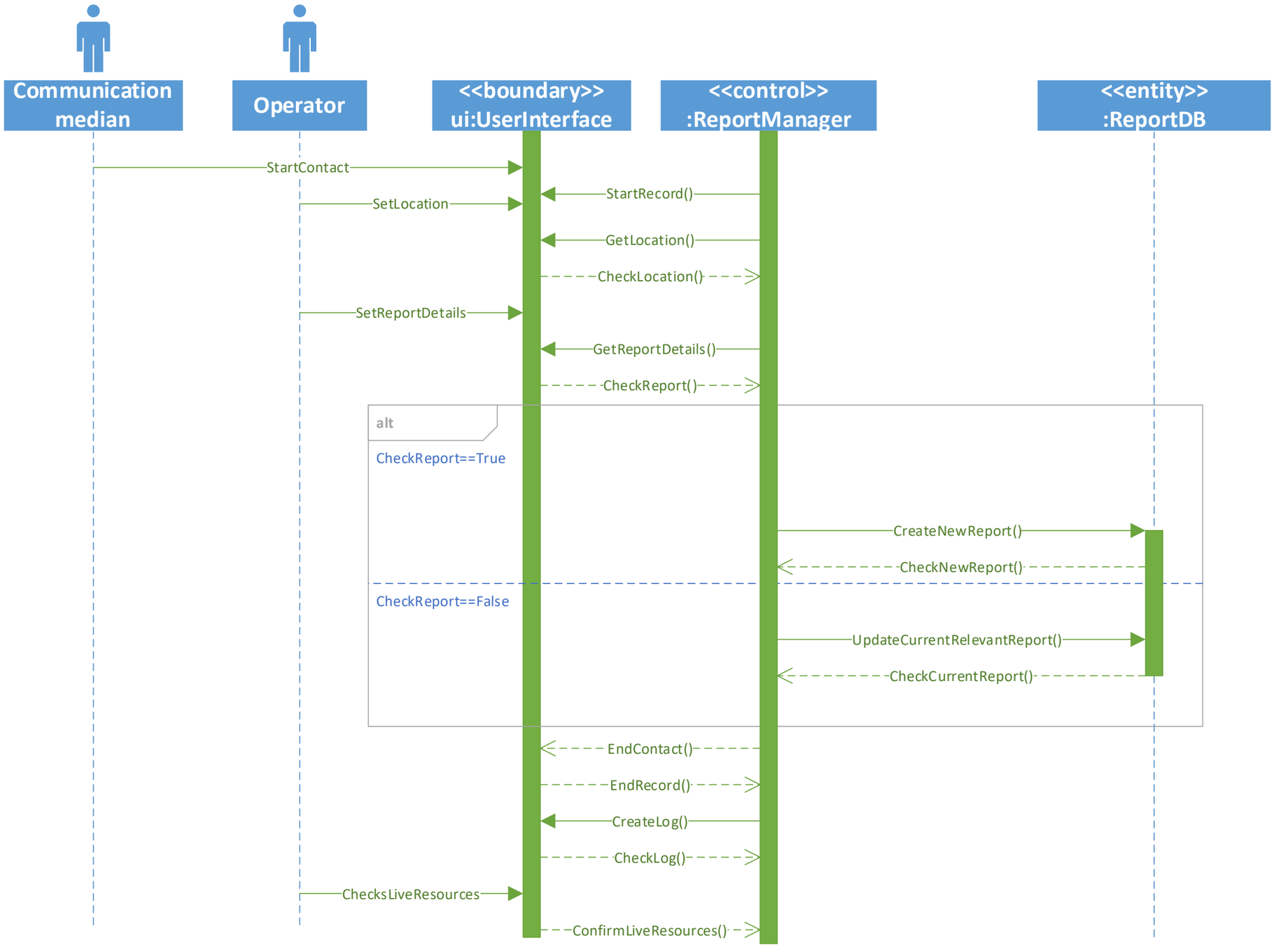
Class Diagram Subset

The Report Alert class diagram consists of the class entities related to the report, dispatch, alert, log, and incident subsystems. The application layer classes present in the system are those related to these subsystems, as well as the system control. The domain layer consists of the primary actors in the use case, which are Sensor, Operator, and DispatchCentre. Resource is also part of the domain layer as the live resource data is called upon when the use case attempts to make a dispatch request for an automatic sensor rule. The domain layer also contains classes for the data containing objects of the system. These classes in particular are Alert, which is the data transferred from the Sensor to the Operator, as well as Incident, which is the primary data containing object for all the incidents in the system, and DispatchRequest, which is transmitted when an automatic dispatch rule is met for the sensor. Log is also present in the domain layer as logs are created when the Report Sensor Alert use case is called. Classes that are essential to these classes, such as enumeration classes or data containing classes (i.e. SensorRule), are also present in the domain layer. The classes present in the presentation layer are the OperatorInterface (for notifications of alerts), and the communication gateways for the transmission of alerts to the operator and to the dispatch centres.

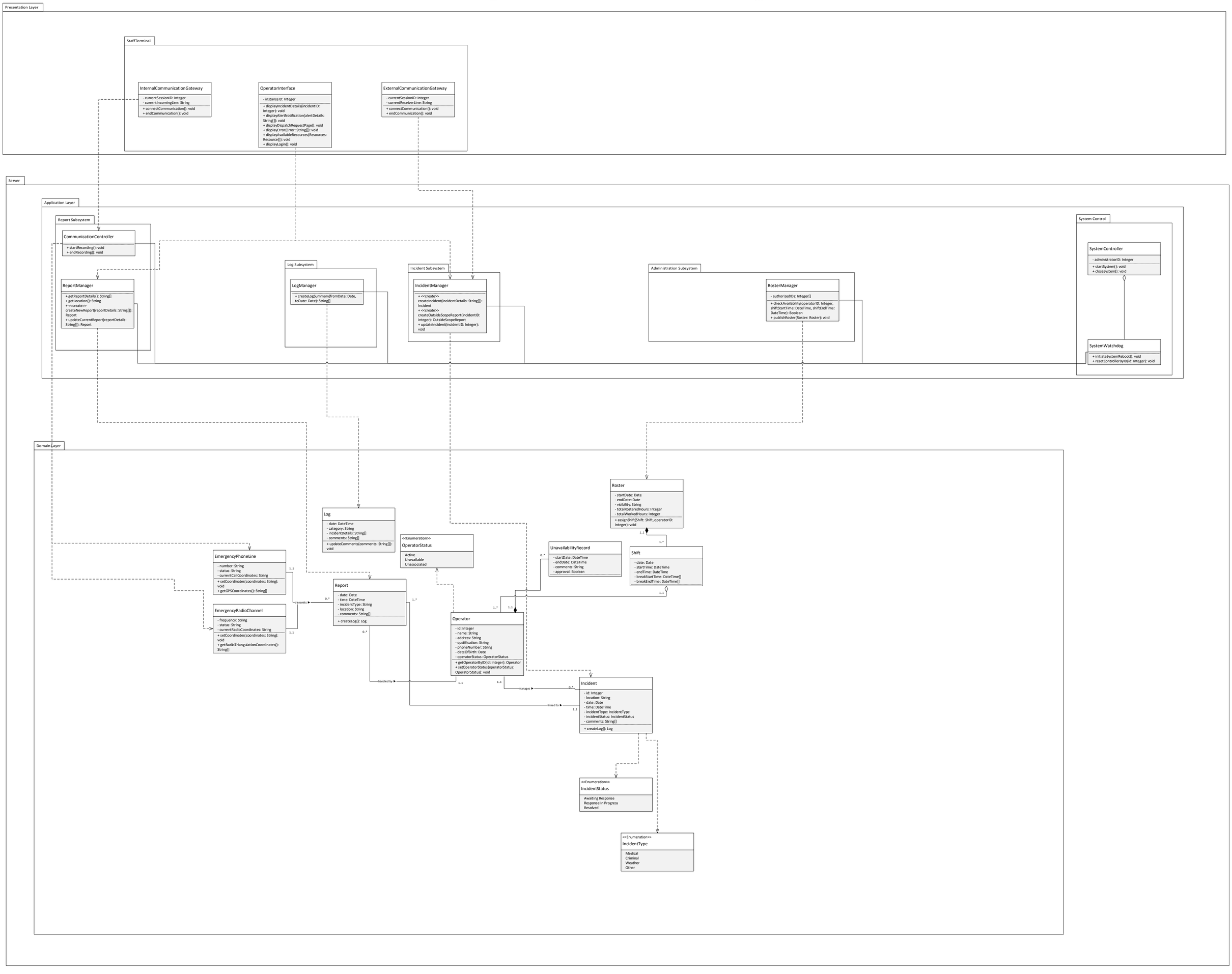
Make Report

Use case name	Make report	
Scenario	Contact made to report an emergency	
Triggering event	Human reporter contacts Triple S operator	
Brief description	Human reporters contact Triple S to make a report about an emergency. The human operator makes contact and identifies the incident type and incident location. The operator then creates a report of these incident details, and the system saves the report and creates a relevant log.	
Actor	Human reporter, Operator	
Related use case	Obtain Location, Create Log	
Stakeholders	Government organizations, Triple S, General Public	
Preconditions	There is an operator available to take the call.	
Postconditions	Relevant report containing incident details must be created. Report must be saved in a log. Location and type of incident must be identified.	
Exception conditions	- If the reporter ends the call at any point during contact: 1.) The operator will attempt to contact the reporter using the same contact details. 2.) If the operator is unable to contact the reporter, creates an incident report using the known details and requests dispatch of local emergency services to the last known location of the reporter.	
Alternative flow	8.1 If a report has already been made about the same incident: a.) The system updates the existing report with the details of the current report.	
Flow of activities	Actor	System
	1. Communication median calls the Triple S centre via Radio/Phone. 2. Operator accepts the call. 3. Operator requests location. 4. Communication median report's location. 5. Operator requests incident details. 6. Communication median's reports incident details. 7. Operator inputs incident details into a report in the system. 8. Operator ends contact with reporter. 9. Operator checks live resources.	1.System receives contact. 1.1 System begins recording communication. 1.2 System obtains reporter location automatically. 1.3 System notifies operator. 8.1 System saves the new report. 8.2 System ends the recording. 8.3 System creates a log from the report.

Make Report Sequence Diagram



Make Report Subset Class Diagram



Make Report

Sequence Diagram

This diagram demonstrates the relationship between two actors, the communication median and operator, along with three objects: the user interface (UI), ReportManager and the ReportDB entity. The median will start contact with the control class, which then begins StartRecord(), the operator, user interface, and the Report manager starts to get, set and check the location. Then the Report details two possible interactions with the ReportDB entity. Afterwards, depending on the value of checkReport(), either a new report is created or a report is updated ReportManger will then end contact via the user interface, and the User interface tells the control to end the recording an interaction creating a Log or checking it between the User-interface and control afterwards then occurs the operator by the Userface checks the live resources, which the user interface then confirms with Report Manager.

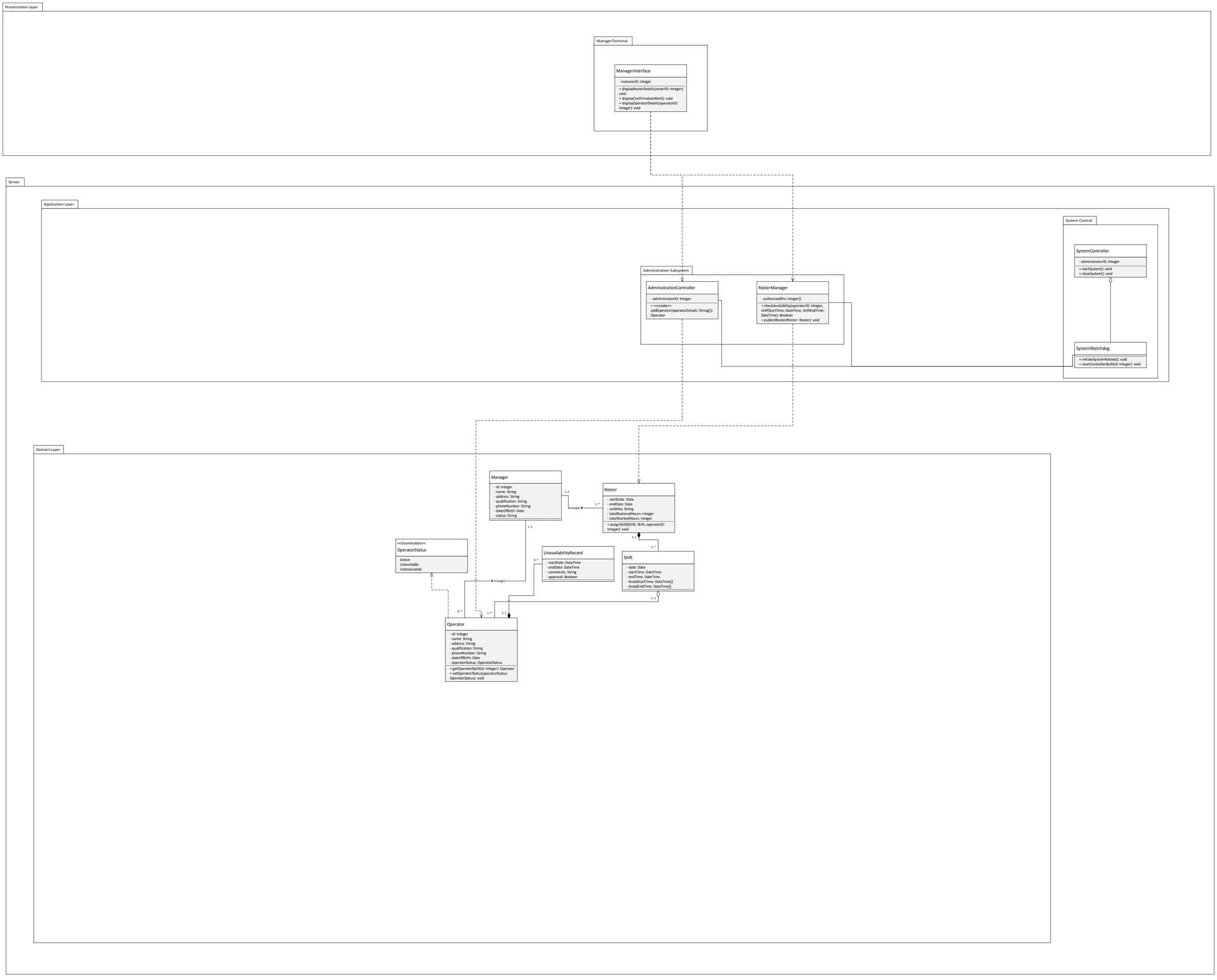
Class Diagram Subset

For the Make Report class subset diagram, the classes present are the ones that handle data of the operator, the reports, the incidents, the logs, and the communications. In the application layer, the subsystem classes present are those for the entities mentioned, and the system controller and watchdog. The domain layer then consists of the classes that contain the data for these subsystems. The operator class, including their availability and shifts, are present to determine which operators are available to handle the creation of any incoming reports. The EmergencyPhoneLine and EmergencyRadioChannel classes represent the actors, which are the phone line and radio channel, that are the medium of communication used by human reporters to make a report. These are connected to the creation of the Report entity class, which is linked to one instance of an Incident entity. There is also a Log class because the creation of a report is linked to the creation of a related Log. In the presentation layer, there is the OperatorInterface which is used by the operators to input the report into the system, as well as the communication gateways which allow for the incoming calls and radio signals to reach the operator.

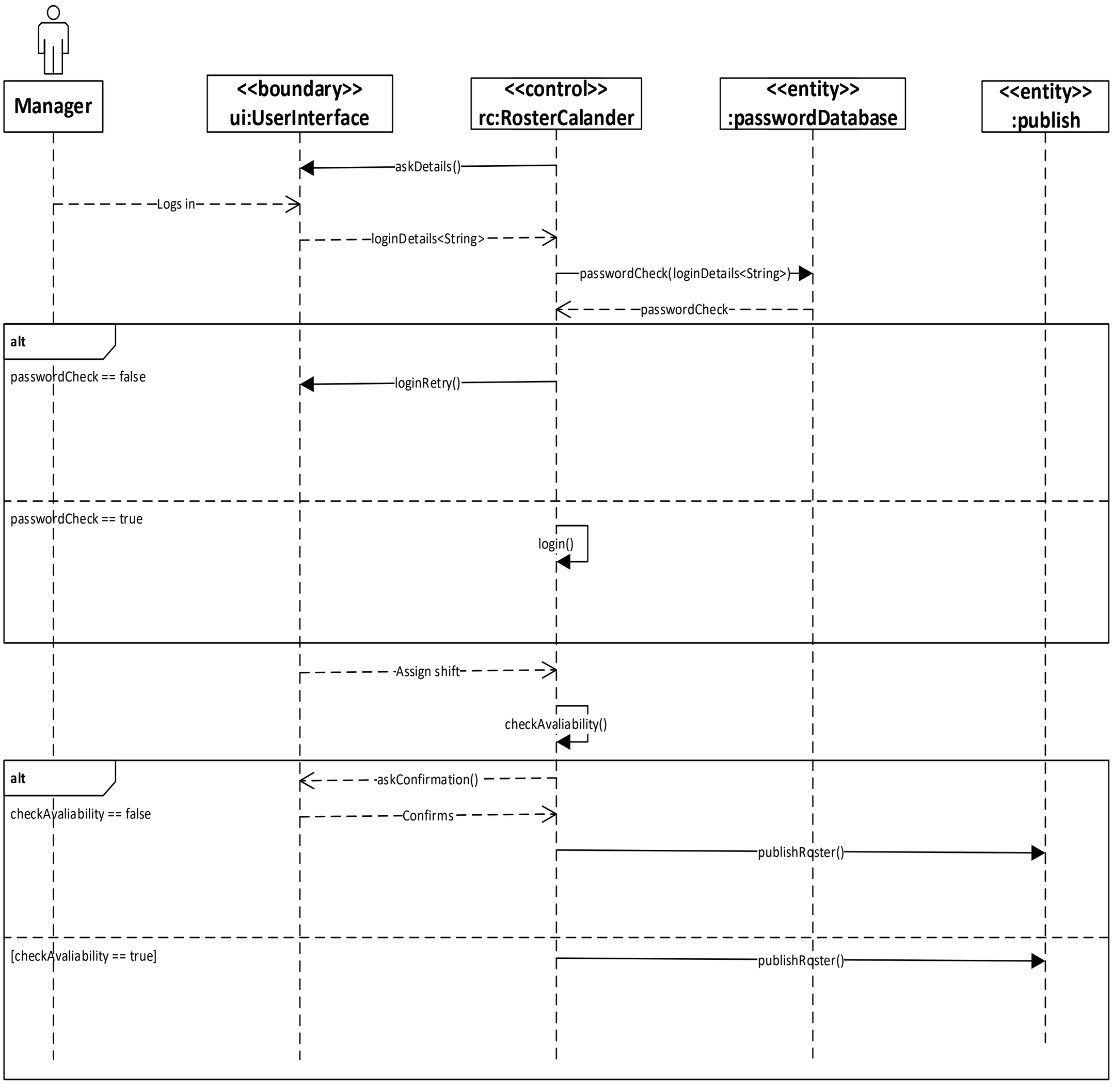
Create Roster

Use Case Name:	Create Roster	
Scenario:	Create and edit roster.	
Triggering Event:	The user attempts to log in to the roster system	
Brief Description:	A manager logs on to the roster system in order to create and edit shifts. The system presents the manager with the number of shifts needed to be filled and the manager assigns operators to these shifts.	
Actors:	Manager	
Stakeholders:	Emergency Services, Staff	
Preconditions:	• Number of rostered hours needed is available. • Operator availability is known to the manager for the relevant period.	
Postconditions:	• Roster is updated and uploaded to system. • Relevant users must be notified of changes made.	
Exception Conditions:		
Alternative Flow:	3.1. The operator being assigned the shift is listed as unavailable for the shift. a.) The system notifies the manager that the operator is unavailable to work that shift and revokes the assignment. b.) The system returns to the state allowing the manager to assign staff to shifts. 3.1. The operator has been rostered for over 38 hours in the current roster. a.) The system notifies the manager and requests confirmation to assign the shift. b.) If the manager approves the overtime shift, the shift assignment is saved and returns to normal flow. c.) If the manager rejects the overtime shift, the shift is revoked, and the system returns to the state allowing the manager to assign staff to shifts. 4. The manager selects to assign another shift. a.) The system returns to the state allowing the manager to assign staff to shifts.	
Flow of Activities:	Actor	System
	1. Manager accesses the rosters login portal. 2. Manager inputs login credentials. 3. Manager allocates staff members to specific shifts. 4. Manager selects to save and upload roster.	1.1. System asks for appropriate login credentials. 2.1. System verifies the login information. 2.2. System presents user with a table representing the work calendar. 3.1. System saves the shift assignment. 3.2. System presents manager with current roster and asks for confirmation to save/upload roster. 4.1. System uploads the roster.

Create Roster Subset Class Diagram



Create Roster Sequence Diagram



Create Roster

Sequence Diagram

This diagram demonstrates the flow of data between a manager and four objects: the user interface (UI), the roster calendar, the password database and publish entity. First, the roster calendar will request for login information to be entered, after this, the user interface sends the log in details to the roster calendar which performs a password check with the password database. If the password doesn't match the password database, the roster calendar prompts the user interface to ask the manager to retry. If the login information is correct the roster calendar logs in and the manager may use the user interface to assign shifts. Once a shift is assigned the roster calendar checks for availability, if the staff member is available the roster will publish. If not however, the roster calendar will ask the user interface for confirmation. If confirmation is made the roster will publish.

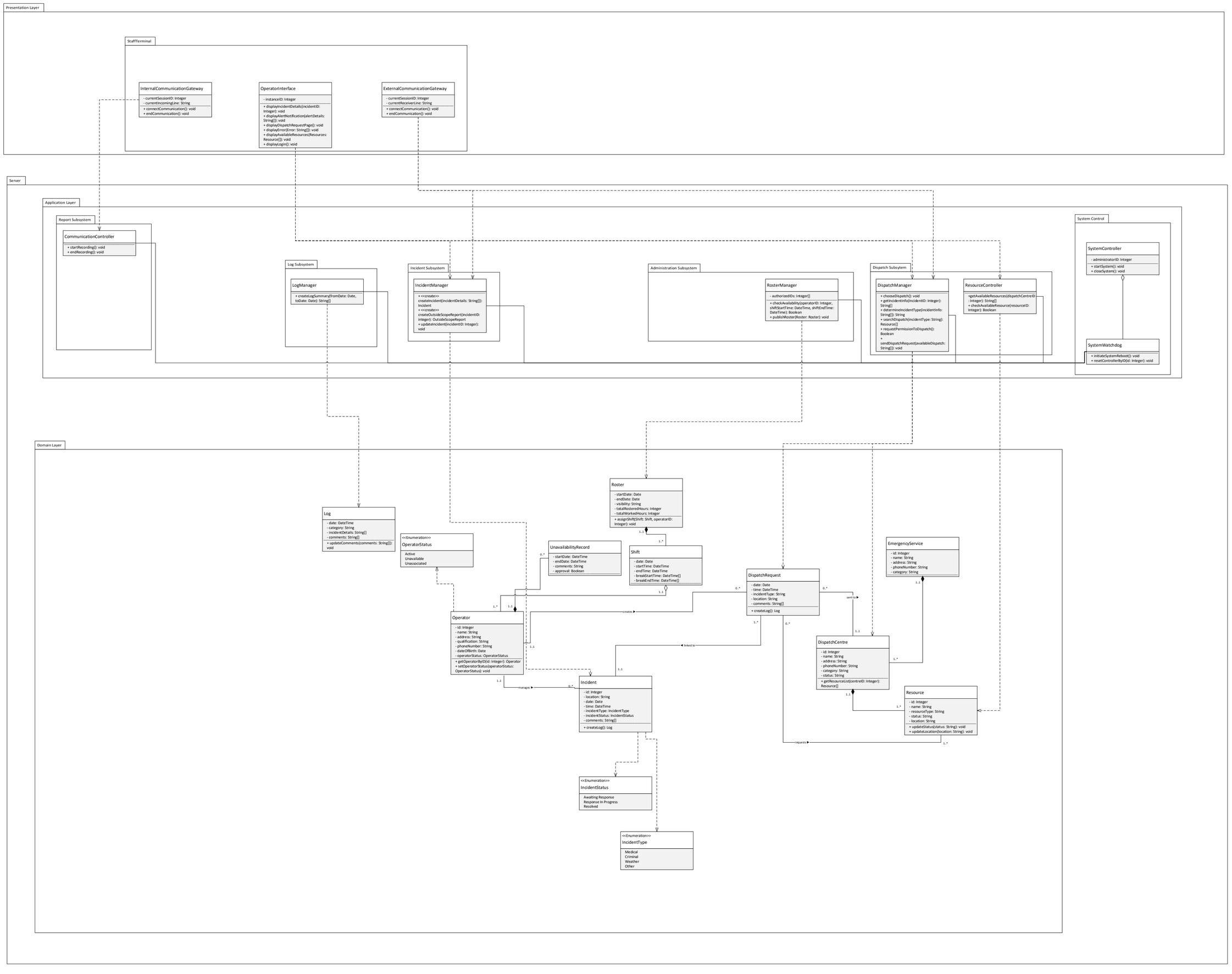
Class Diagram Subset

The subset diagram for Create Roster is only focused on one subsystem use case: the administration and rostering subsystem. In the application layer, the only classes present are the control classes for the administration and rostering use cases, and the system control classes. The primary data being handled in this use case is operator data, so the domain layer consists of the Operator class and the Manager class, as well as any data related to these classes, plus the classes for Shift and Roster. The entity containing the unavailability of the operator, UnavailabilityRecord, is also important in the functionality of this use case. The presentation layer consists only of the ManagerInterface, which is the user interface the manager uses to assign shifts to operators.

Choose Dispatch

Use Case Name	Choose Dispatch	
Scenario	Select the appropriate emergency services to dispatch	
Triggering Event	Operator enters the dispatch request system after having identified the incident details	
Brief Description	Operator manually inputs incident details into the system, and the system presents them with a list of all available dispatch resources sorted by distance to incident location. The operator then selects the desired dispatches and prompts the system to send a dispatch request to the relevant emergency dispatch centres. If no dispatch resources are available, the system will continue to search for an available resource unless aborted by the operator.	
Actors	Operator, Dispatch Centre	
Related Use Case	Search for Dispatch Request Dispatch – parent use case	
Stakeholders	Emergency Services, Triple S Operator, Emergency Reporter(s) ~~Triple S~~	
Preconditions	Live Resources must be available Dispatch Services must be available	
Postconditions	Dispatch request successfully delivered to the dispatch centre	
Flow of Activities	Actor	System
	1. Operator enters the location and type of emergency into the system 2. Operator selects from available dispatches and prompts system to request dispatch	1.1. System identifies the input 1.2. System sorts and filters all available dispatches according to the input 1.3. System displays all available dispatches post-filtering 2.1. System requests dispatch from appropriate services
Exception Conditions	1.3. Operator may abort the search for dispatches; doing so will end the flow and return to an idle state.	
Alternative Flow	1.3.1. If no dispatches available, retry the search for available dispatches until appropriate dispatch is found, then continue normal flow.	

Choose Dispatch Subset Class Diagram



Choose Dispatch

Sequence Diagram

The Choose Dispatch sequence diagram starts with DispatchManager calling to self the chooseDispatch method, which initiates the use case. From here, DispatchManager display the request page to the Operator through the OperatorInterface class, where the Operator should enter a valid report Id. With this information, Dispatch Manager connects to the Incident class to retrieve the necessary information on the specified incident.
With this information, DispatchManager contacts ResourceController to get check if there are any available resources for dispatch. If there aren't any available resources, the sequence diagram continues within the loop bracket, whilst if there are available resources, it breaks the loop and skips a few lines.

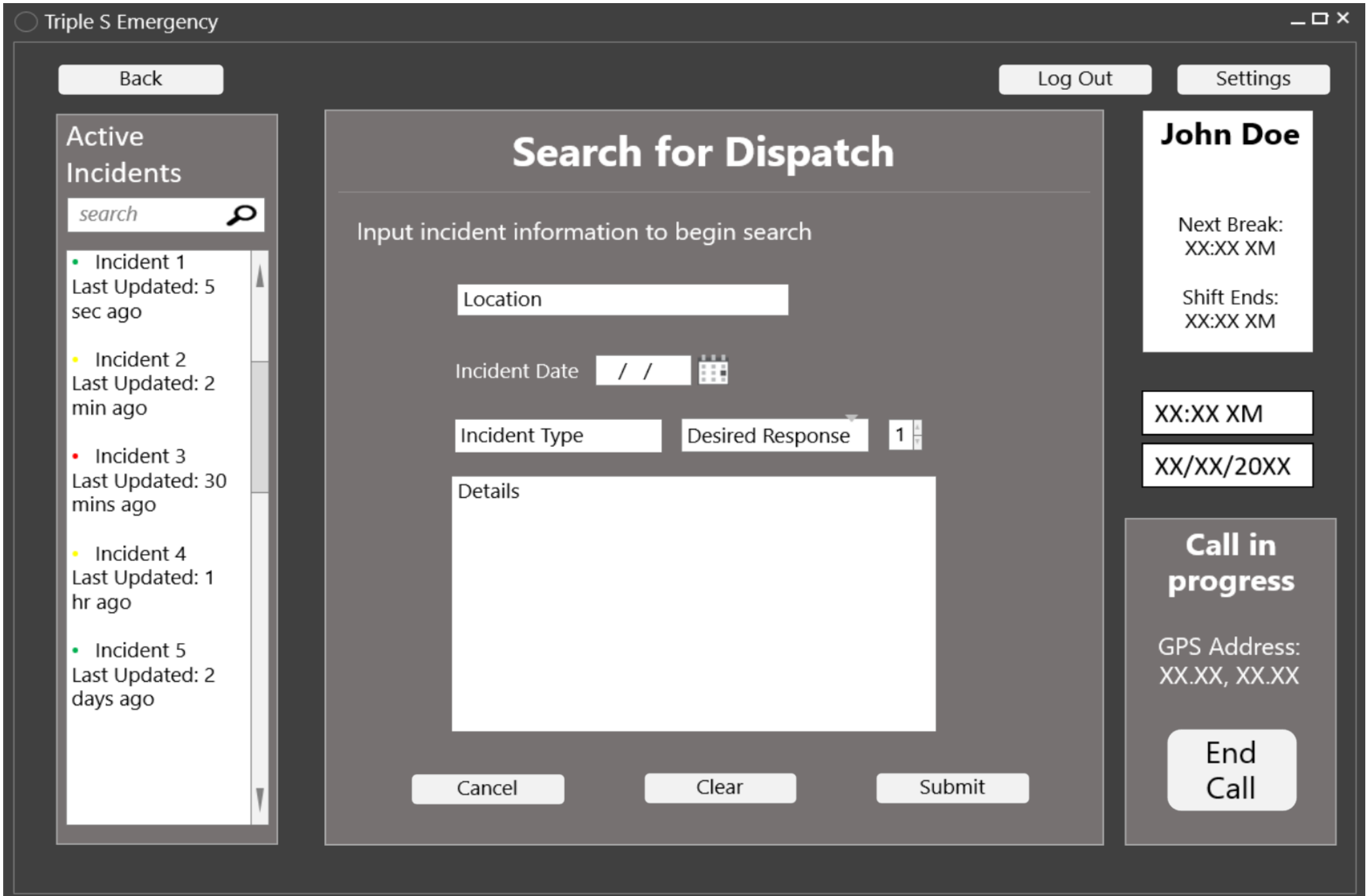
Within the loop fragment, first an error is displayed to the operator detailing there being no dispatches. Then the Operator is asked if they wish to retry the search for dispatches. Selecting no brings them to the alt (Cancellation) fragment, whilst answering yes loops. After the loop fragment, DispatchManager displays all available rsources to the Operator, who the picks which dispatch they desire. Once they confirm their selection, the sequence leads to DispatchManager sending a message to DispatchCentre, thus ending the use case. In the Cancellation fragment the Operator is asked whether they wish to cancel the Choose Dispatch query, which if they select yes the use case immediately ends. If No is selected, the Operator is displayed their previous screen they came from.

Class Diagram Subset

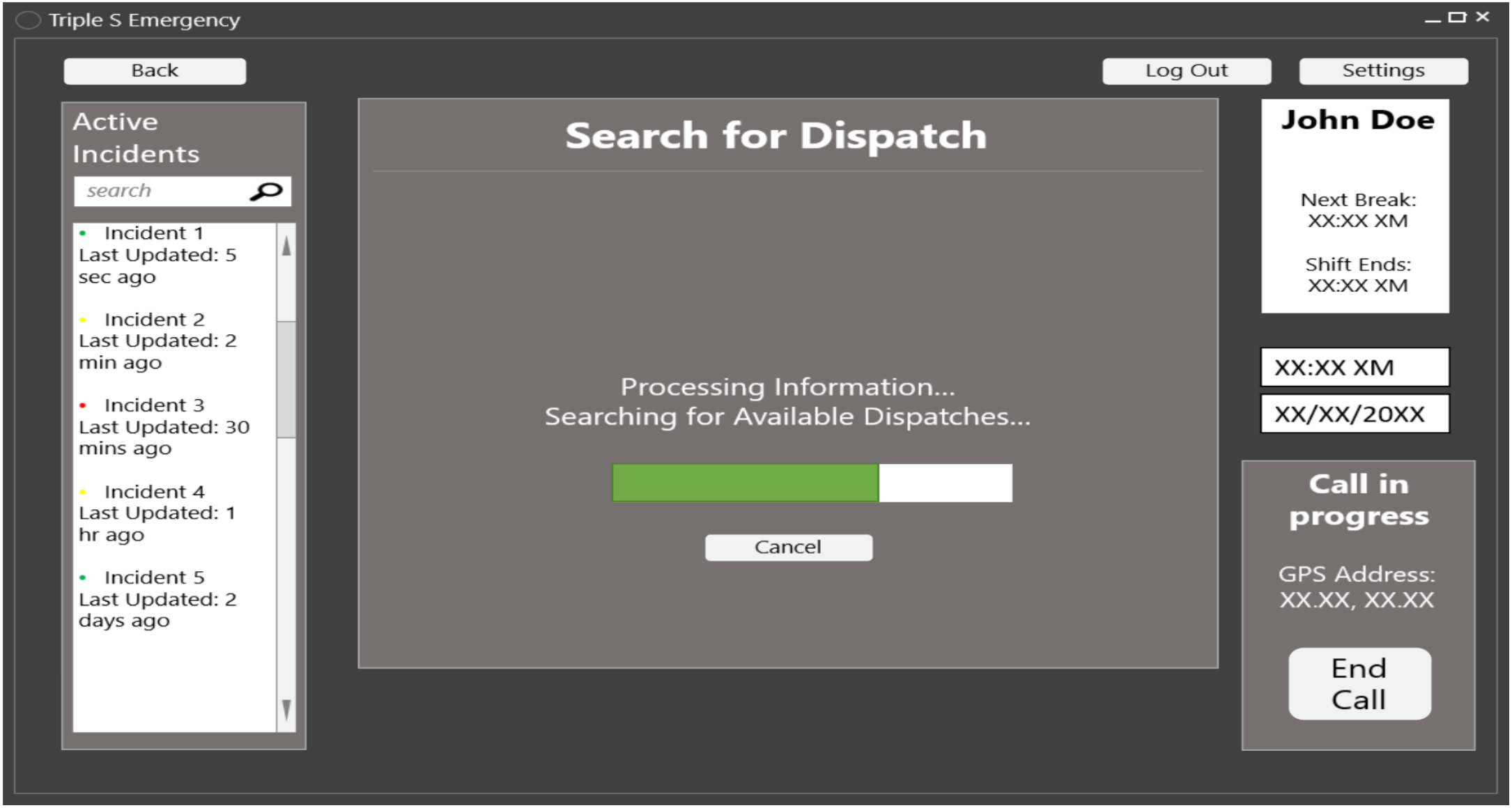
In the Choose Dispatch class diagram, the subsystems that handle the functional requirements of the use case are those in the report subsystem, the incident subsystem, the dispatch subsystem, and additionally, the log subsystem. The control classes of these subsystems comprise the classes that are present in the application layer of the diagram. Beyond these, the system controller subsystem is also in the class diagram since the system watchdog and controller handle all the other control classes of the system. In terms of the domain entities present in the diagram, there is the main data containing entities of Operator, Incident, DispatchRequest, and DispatchCentre. These classes contain the data that fulfil the data requirements of the use case. Related classes, like enumerations and the Resource class, are also part of the diagram since they are needed to fulfil the functional requirements of the use case. Logs are also created when sending a dispatch request, so a Log class and the Log subsystem are included in the class diagram. Finally, for the presentation layer, there is the OperatorInterface which is used to display the available resources to be dispatched, as well as used by the operator to create and send a dispatch request to a dispatch centres The communication gateways in the presentation layer allow for the transmission of these dispatch requests to the relevant dispatch centres.

User Interfaces

Interface: Search Dispatch

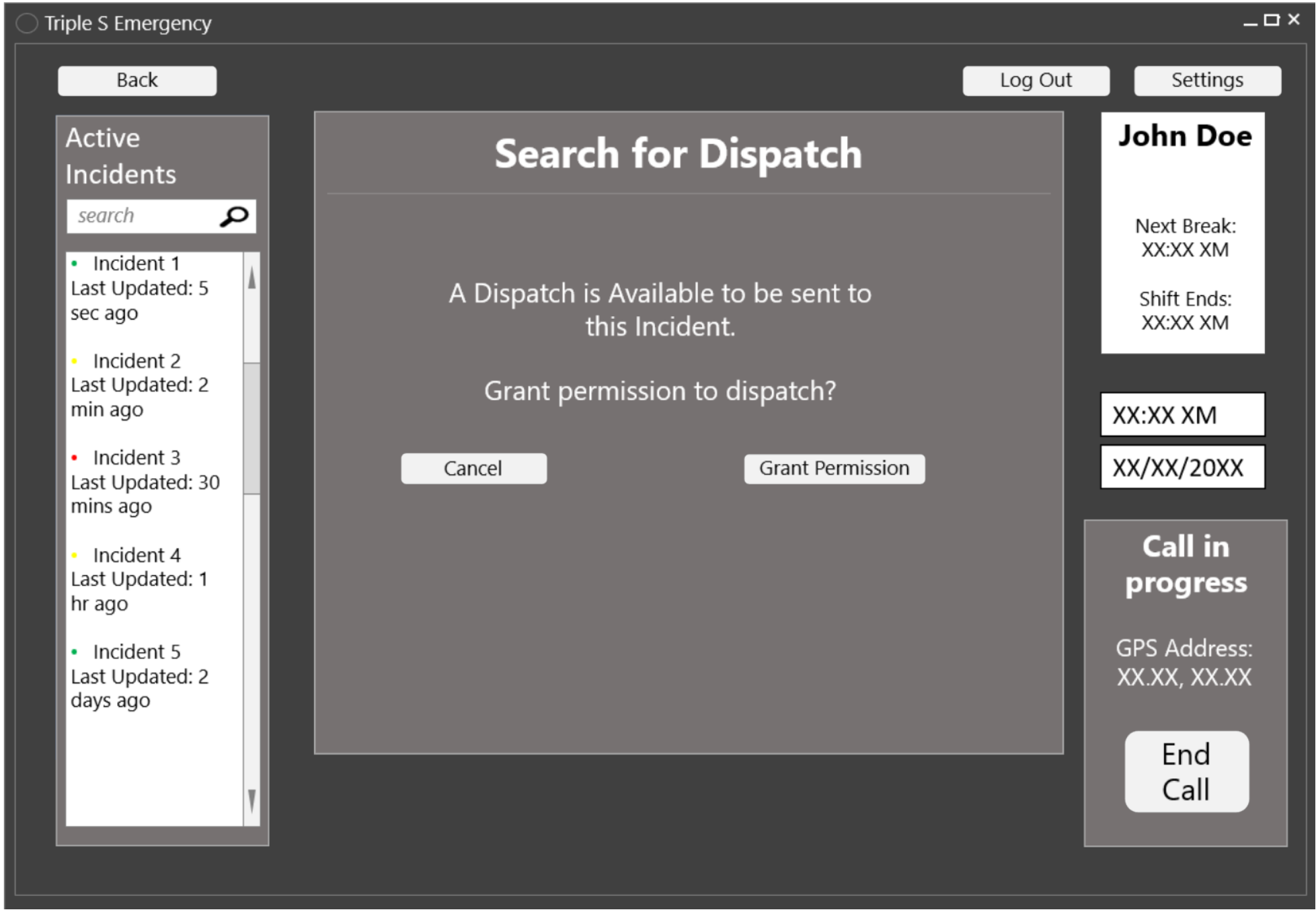


Interface: Search Dispatch



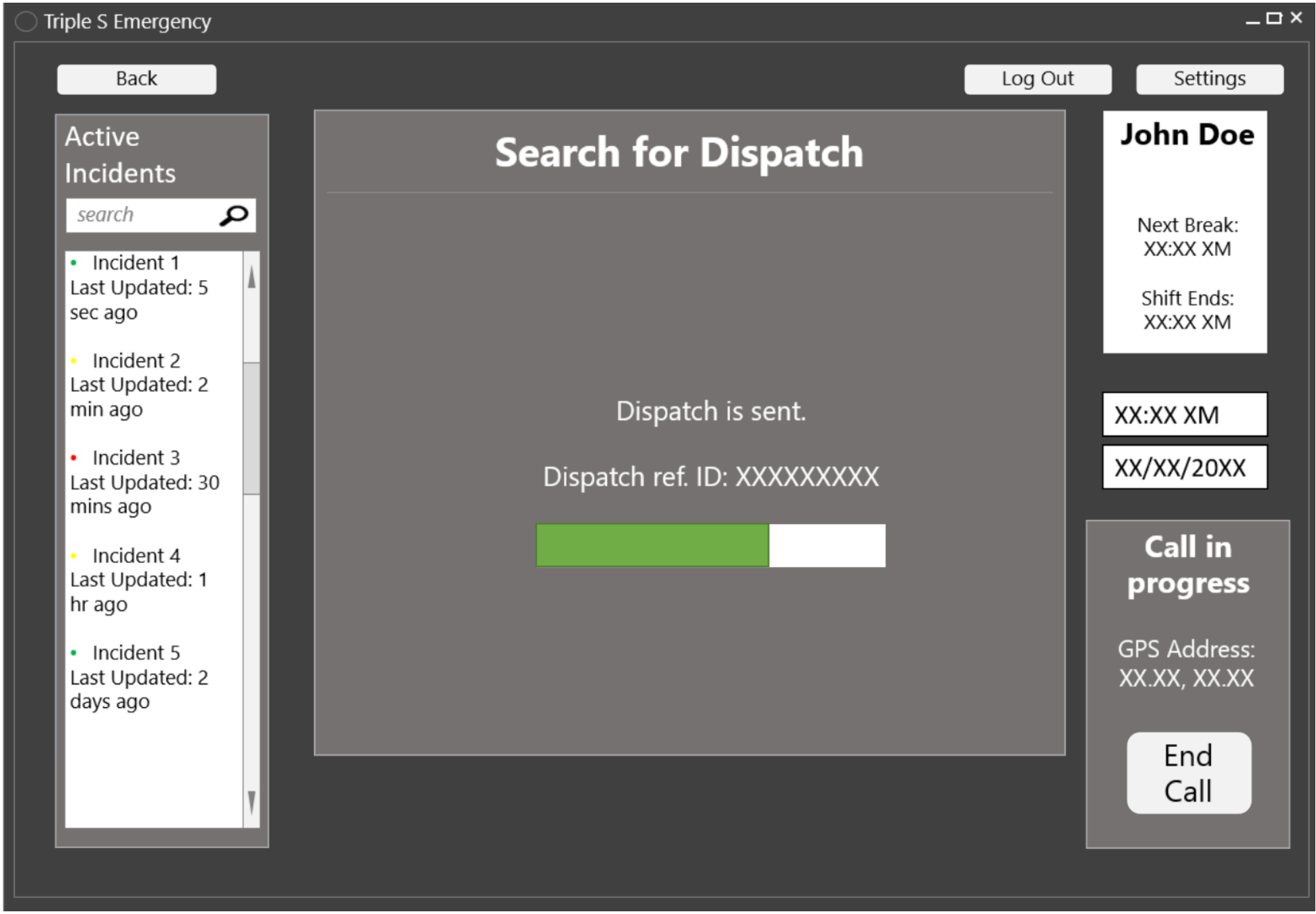
Interface: Search Dispatch

If search is successful:



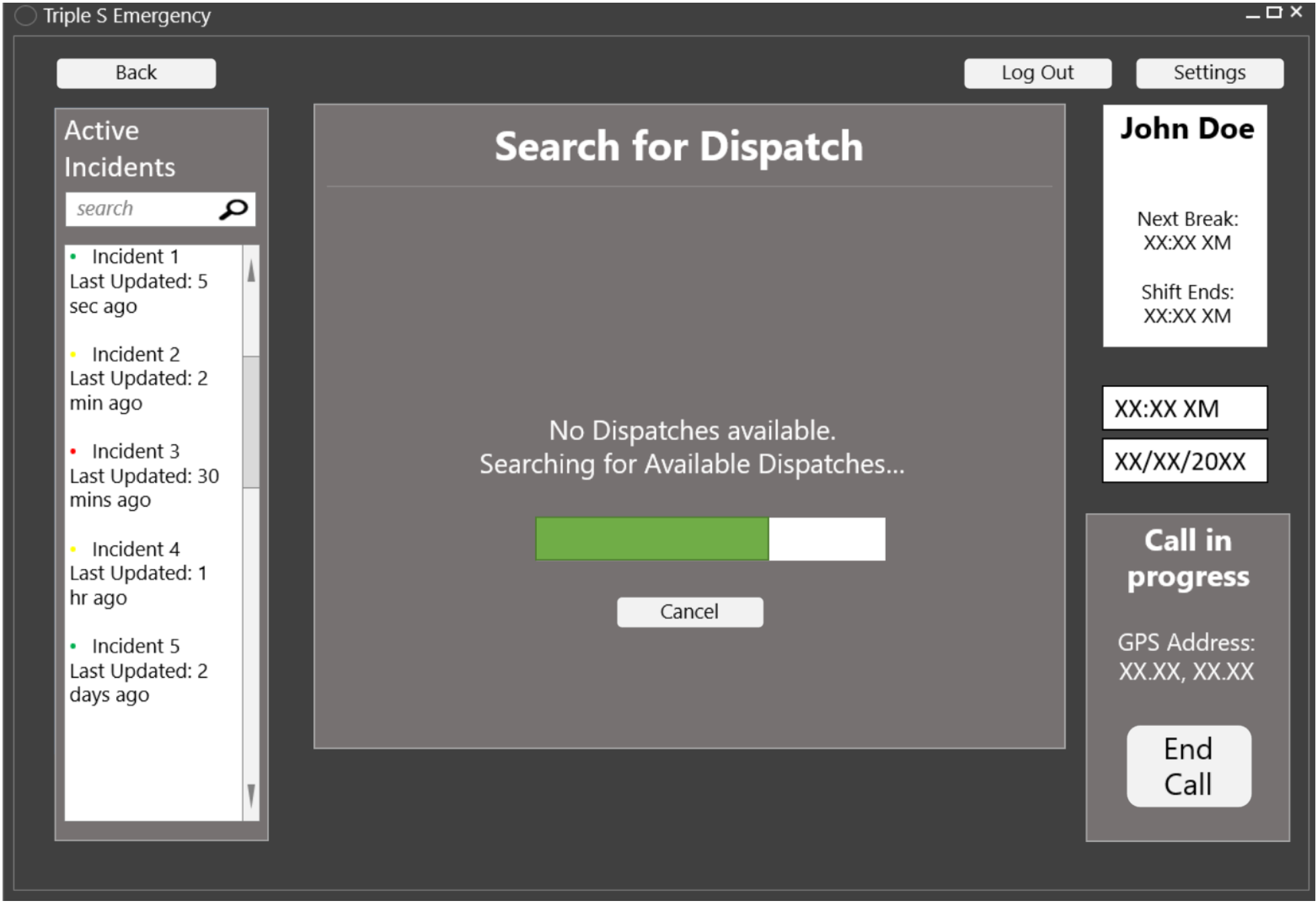
Interface: Search Dispatch

If search is successful:

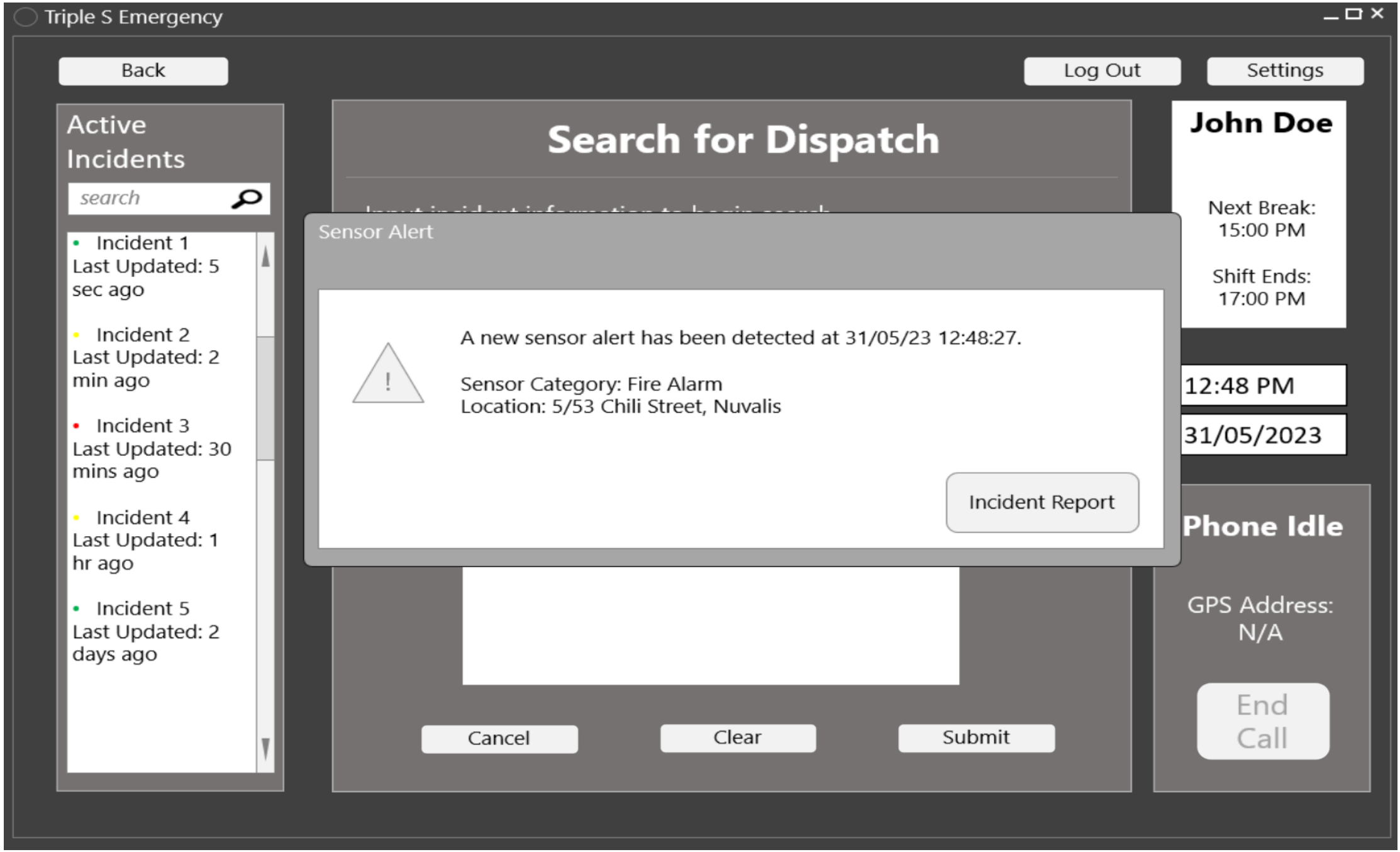


Interface: Search Dispatch

If search is unsuccessful:

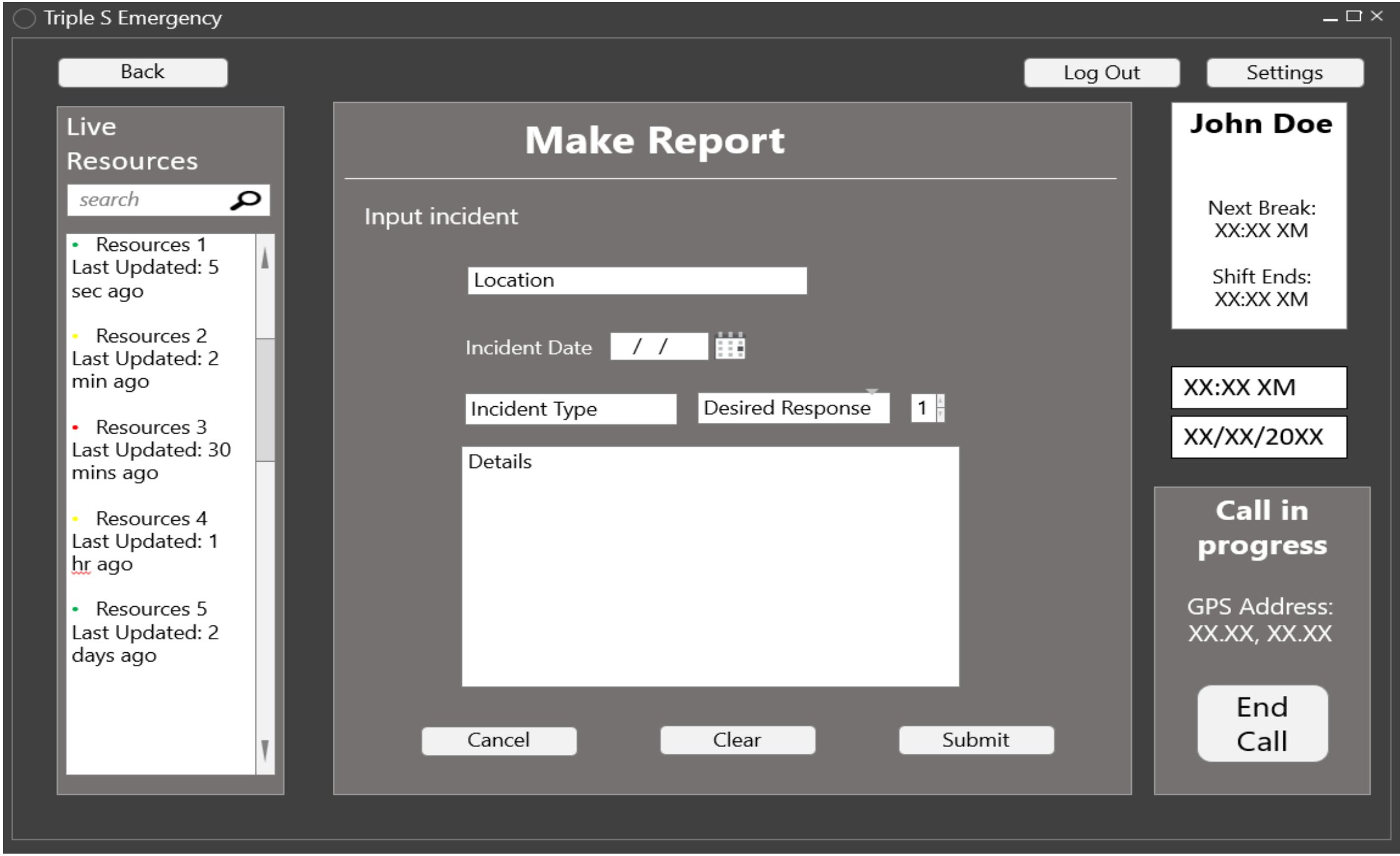


Interface: Report Alert

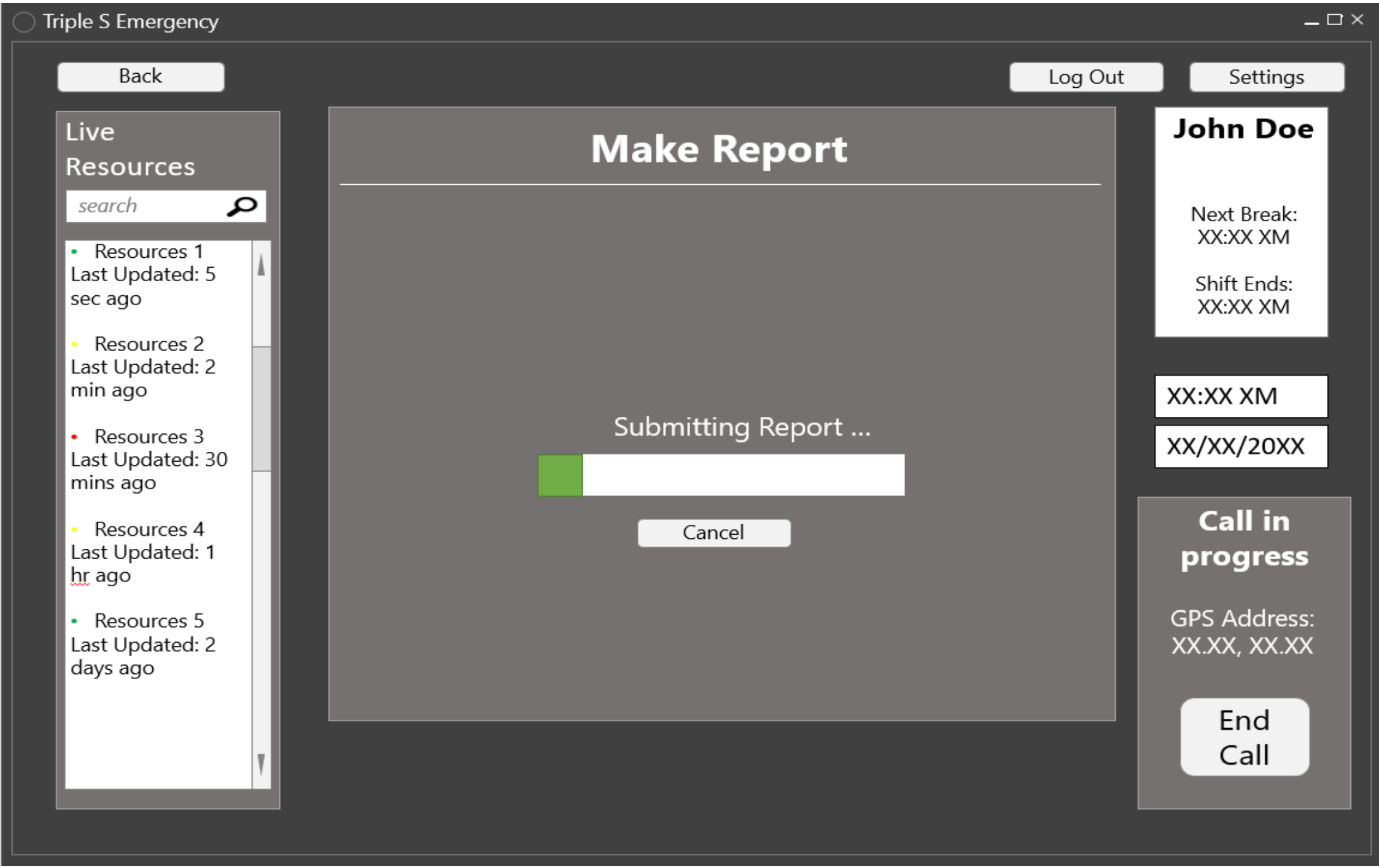


Interface: Report Alert

Interface: Make Report

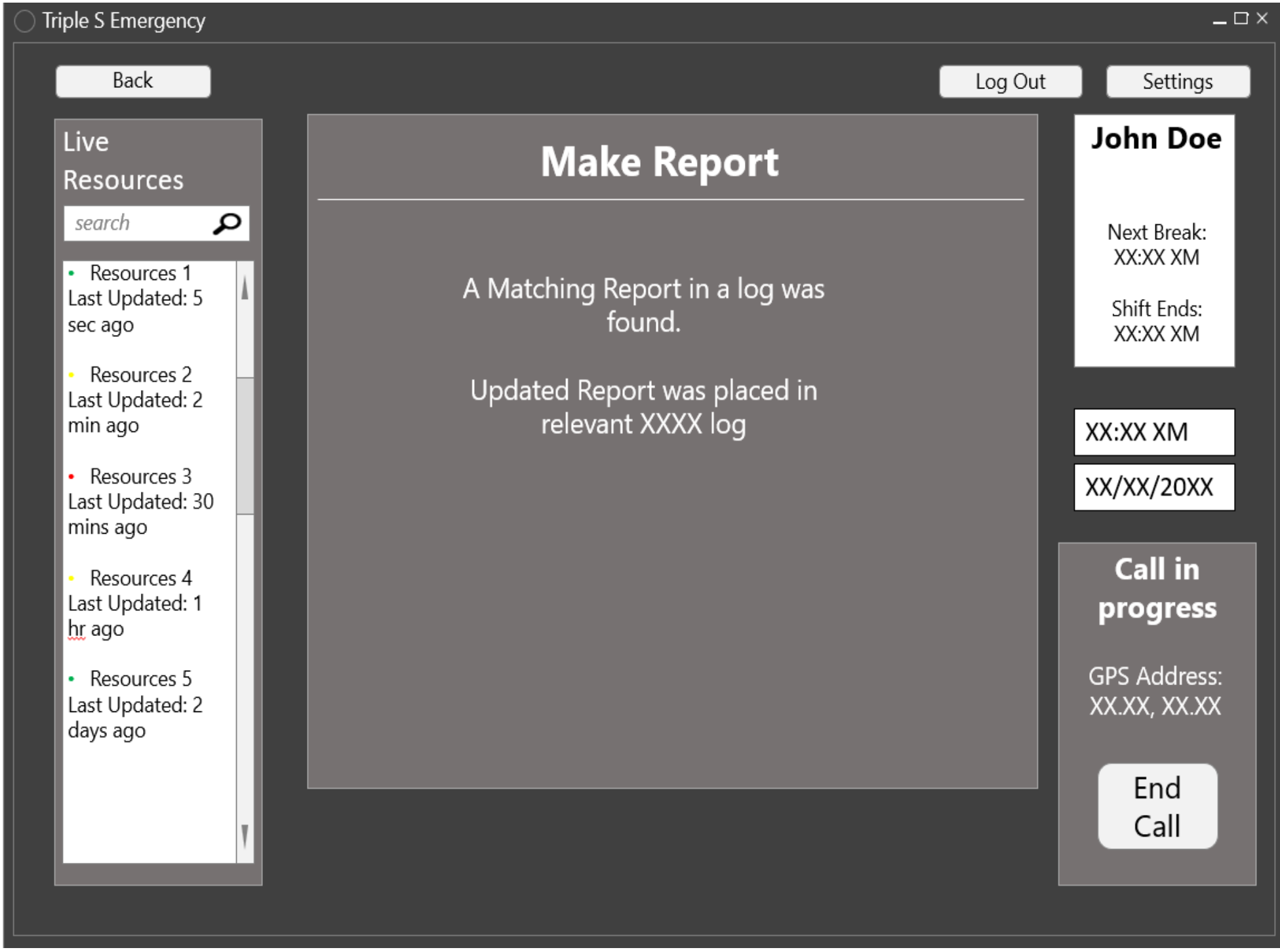


Interface: Make Report



Interface: Make Report

If check report is false:

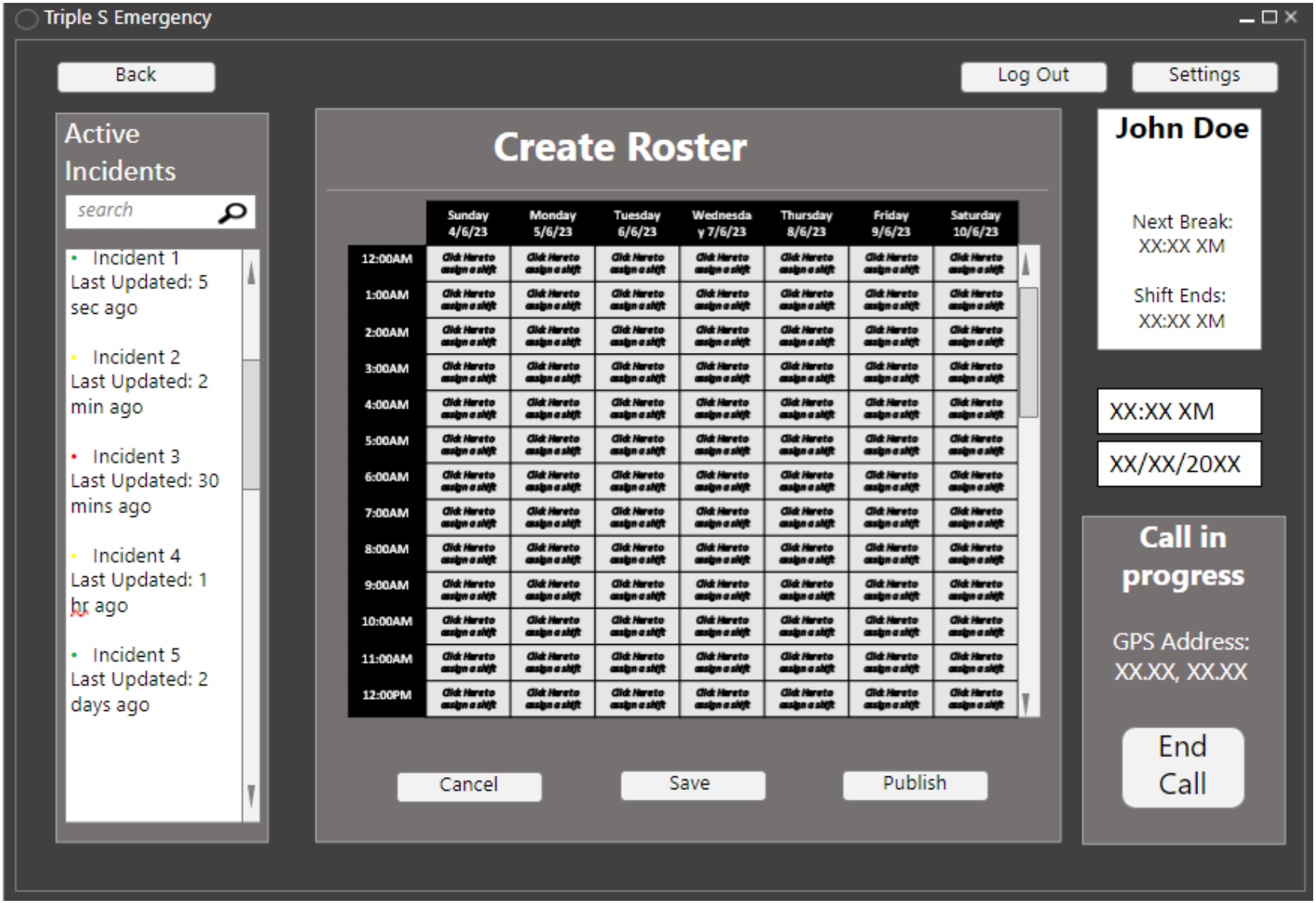


Interface: Make Report

If check report is true:

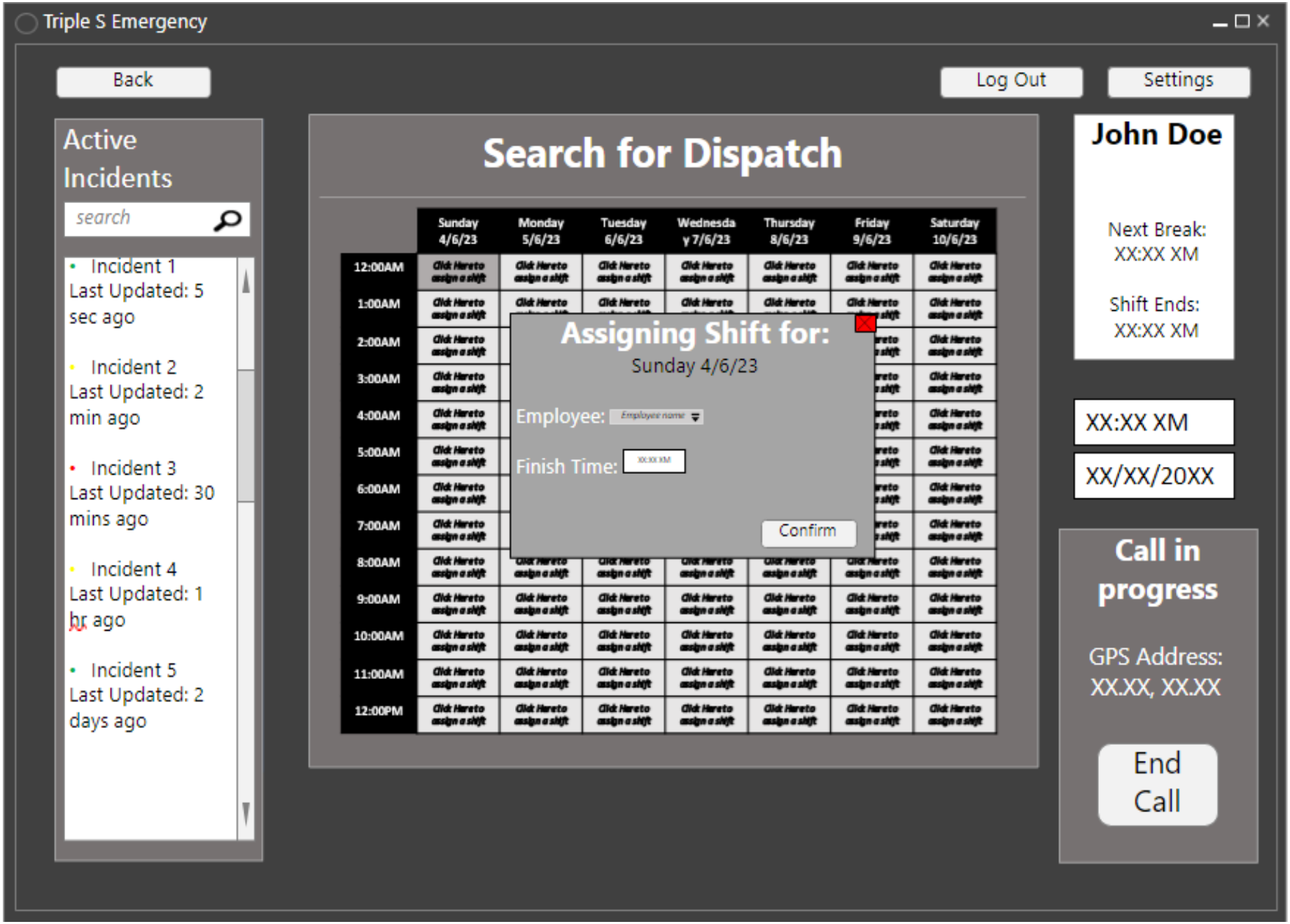
Interface: Create Roster

Initial screen after login:



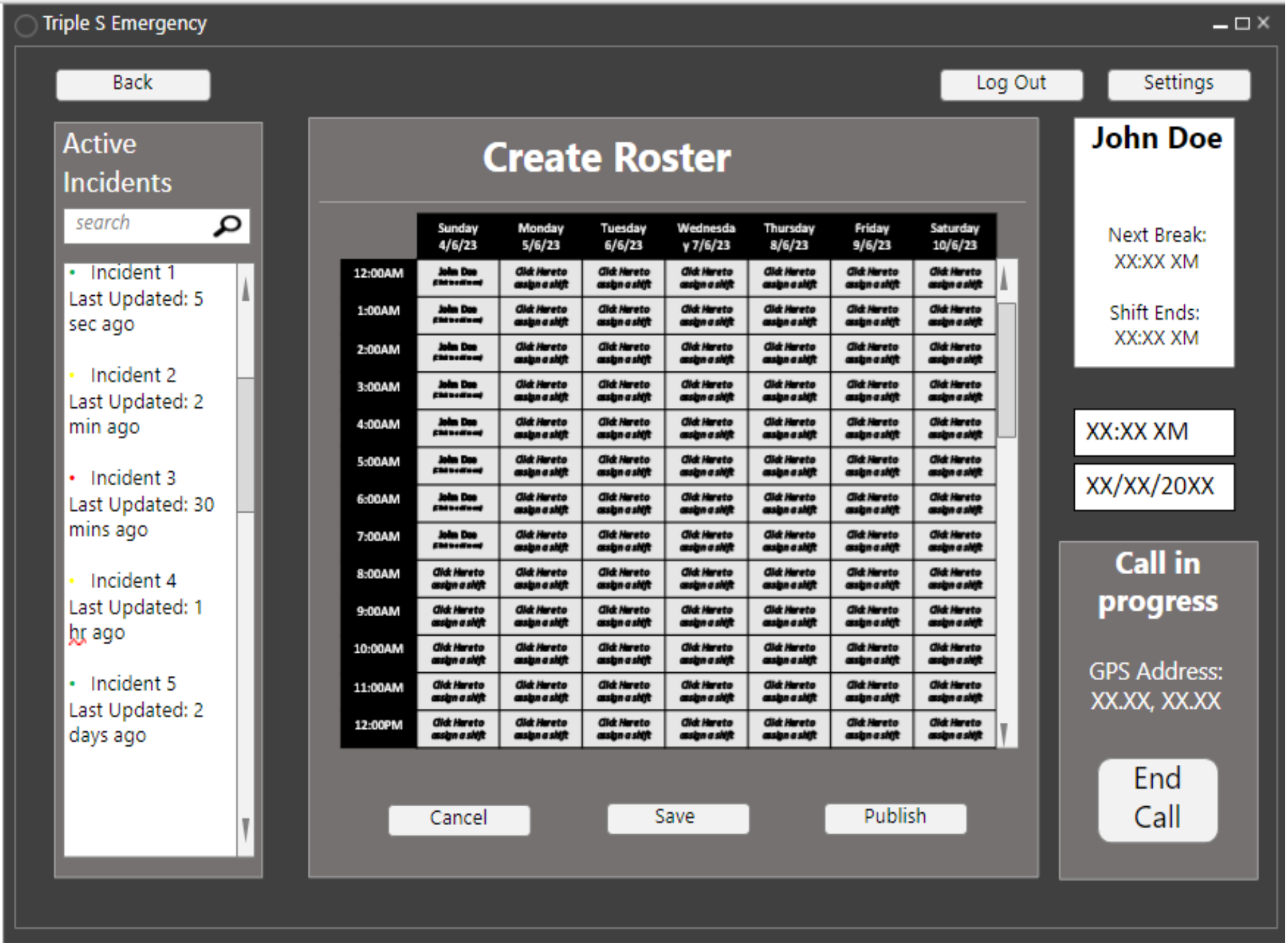
Interface: Create Roster

When a shift is selected:



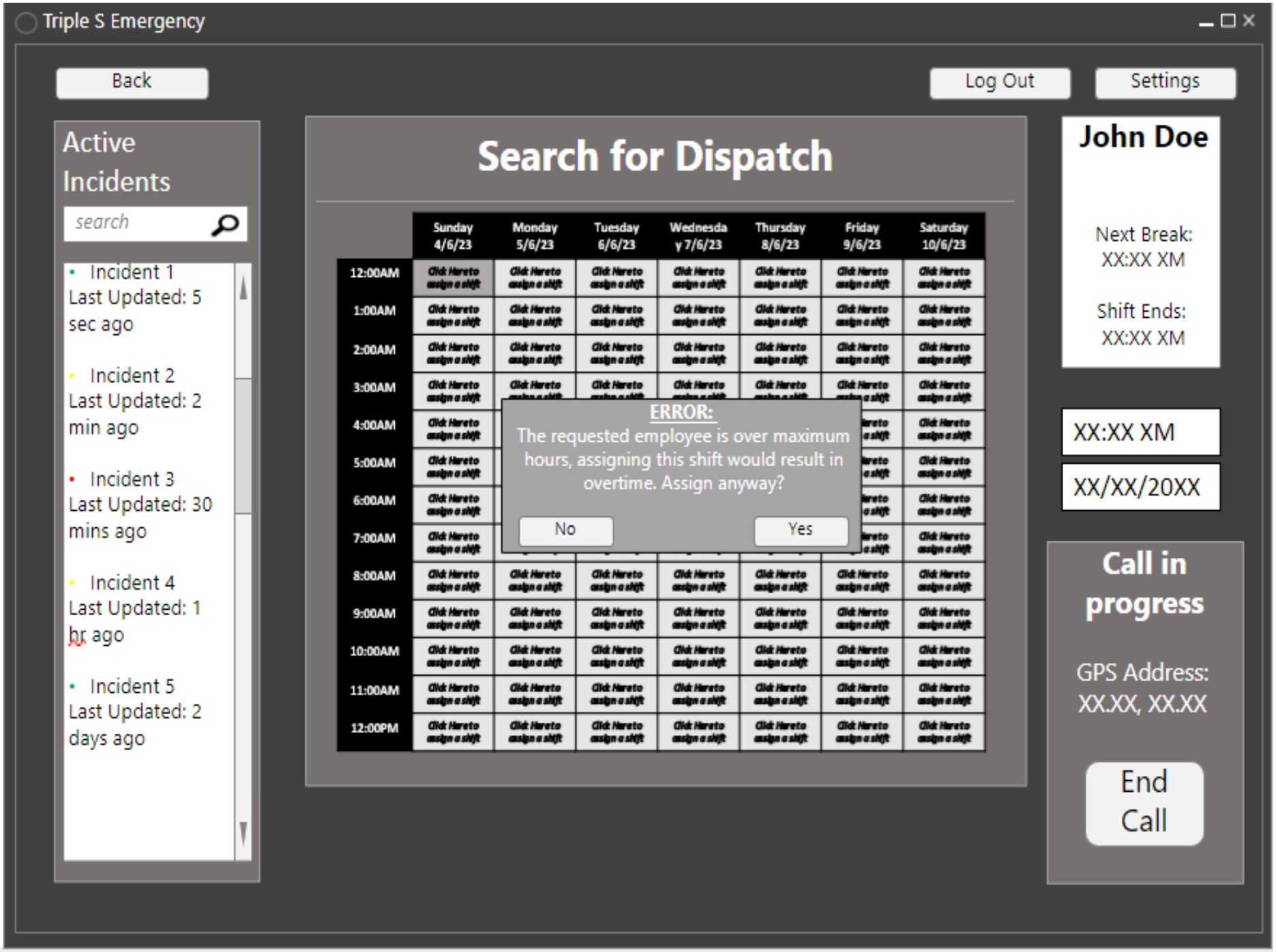
Interface: Create Roster

If there is no clash in shift the employee is added to the roster:



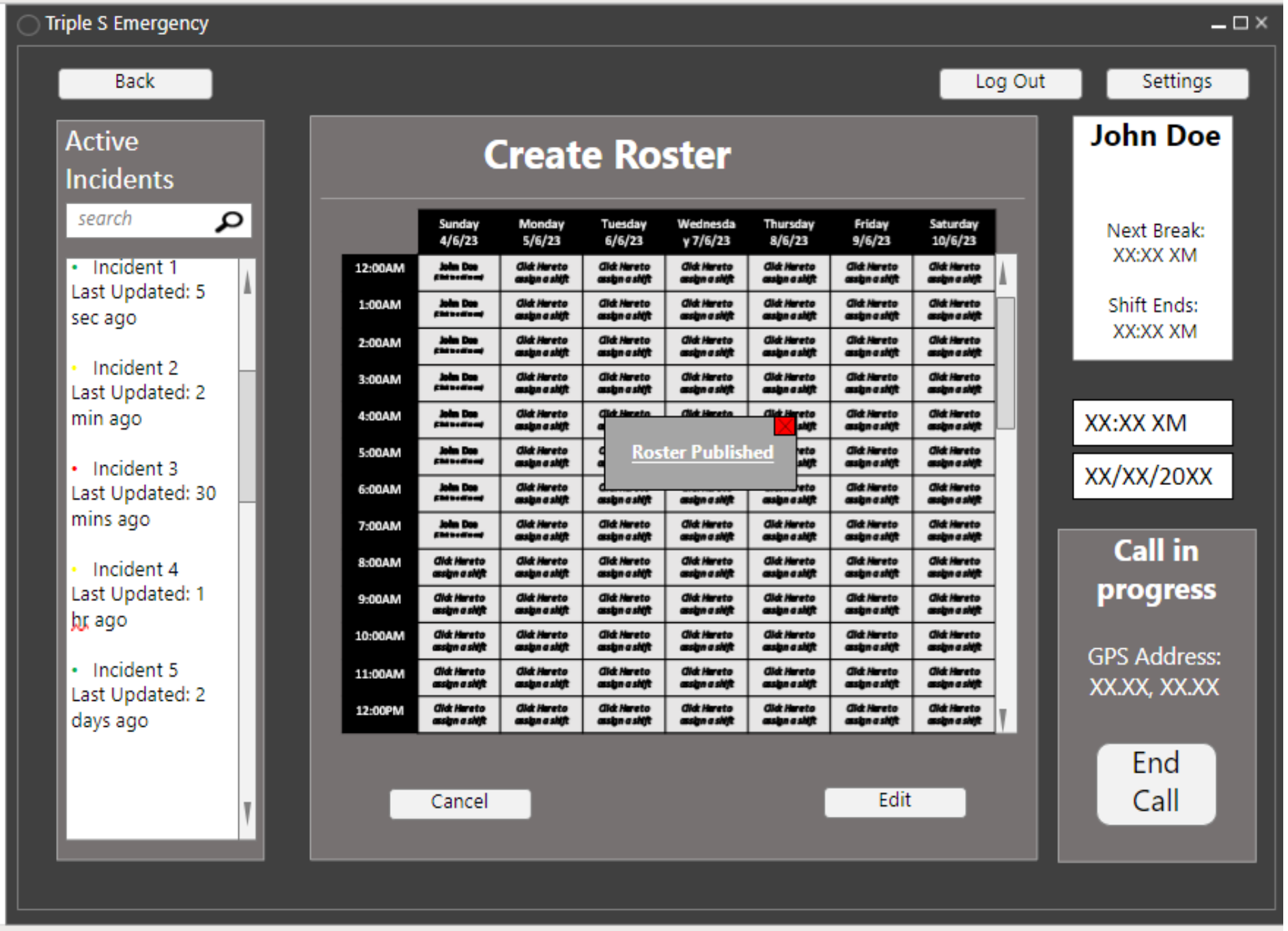
Interface: Create Roster

If there is a clash in shift this message appears:

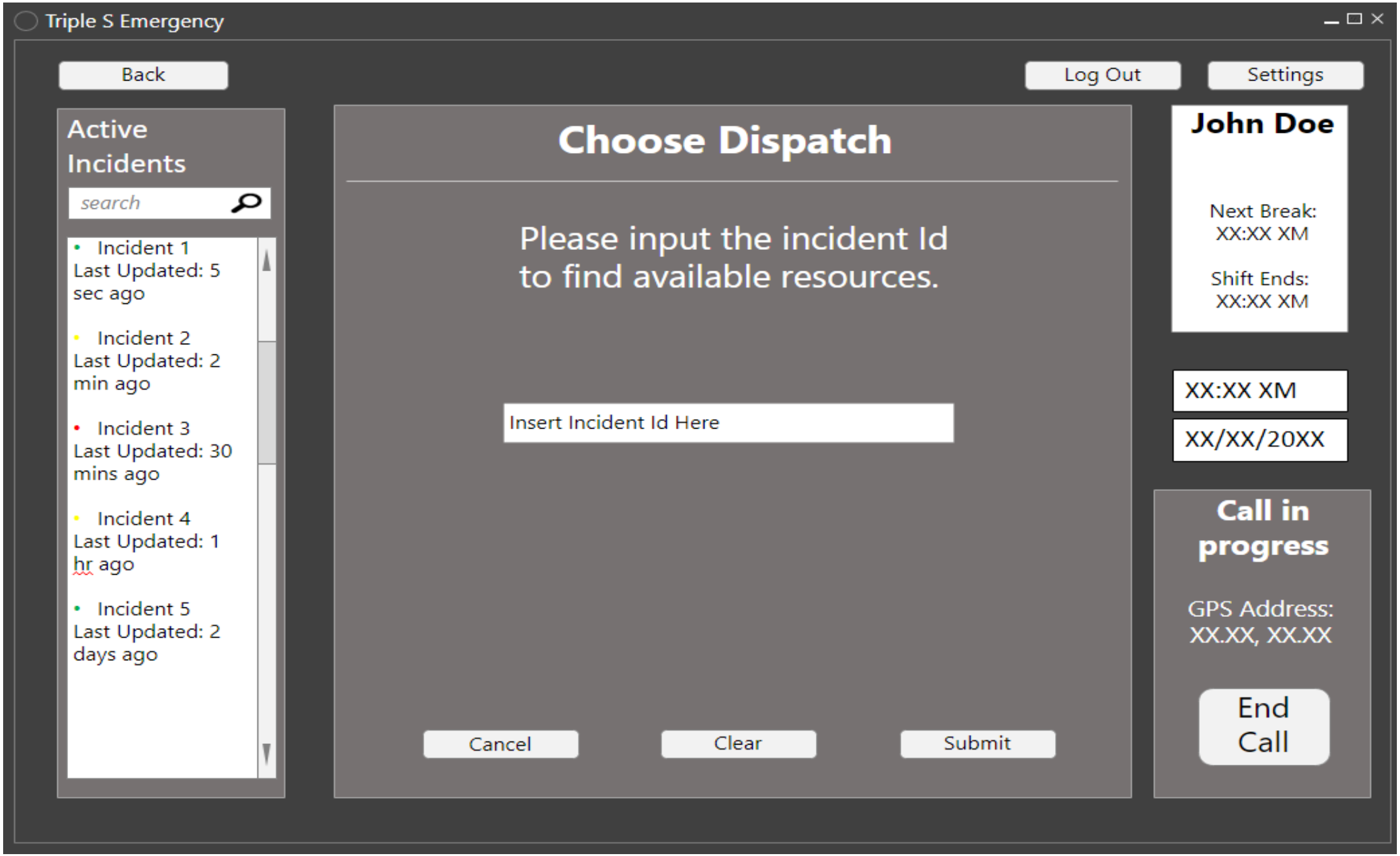


Interface: Create Roster

When the manager selects to publish roster:



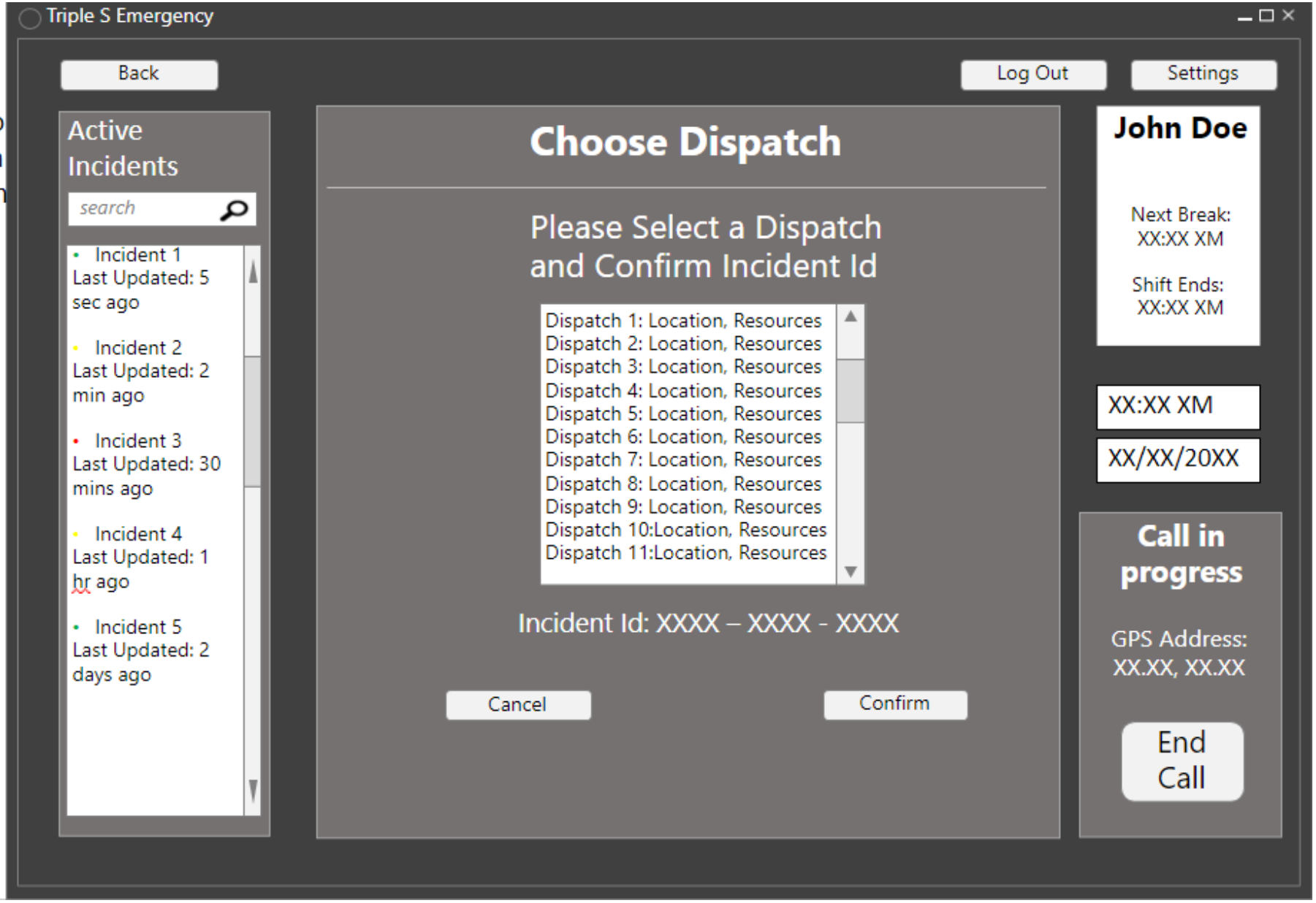
Interface: Choose Dispatch



Interface: Choose Dispatch

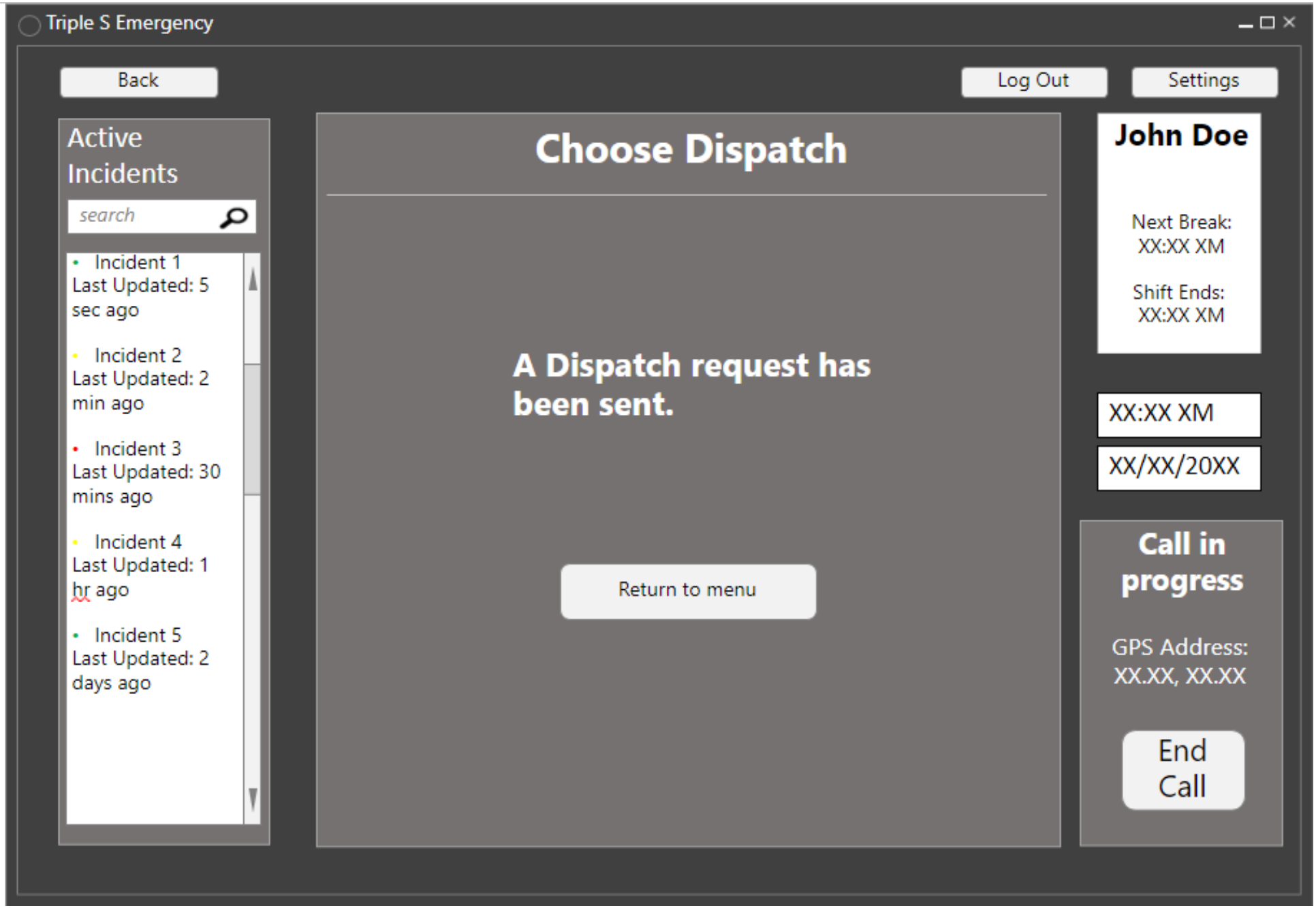
Interface: Choose Dispatch

Pressing cancel will send the Operator to the confirm cancellation screen.



Interface: Choose Dispatch

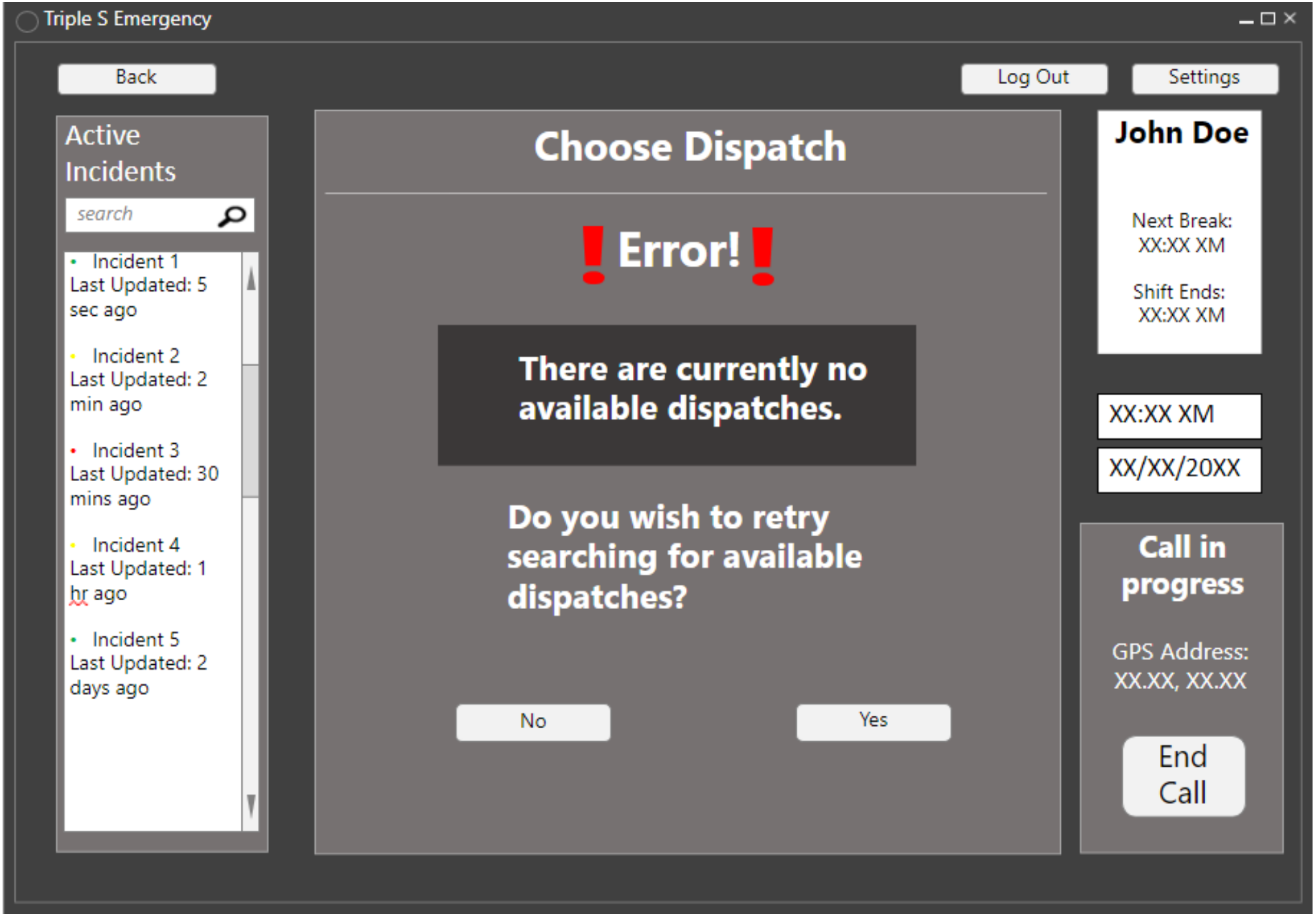
End of use case



Interface: Choose Dispatch

If there are no available dispatches:

If Yes is selected it will retry looking for dispatches

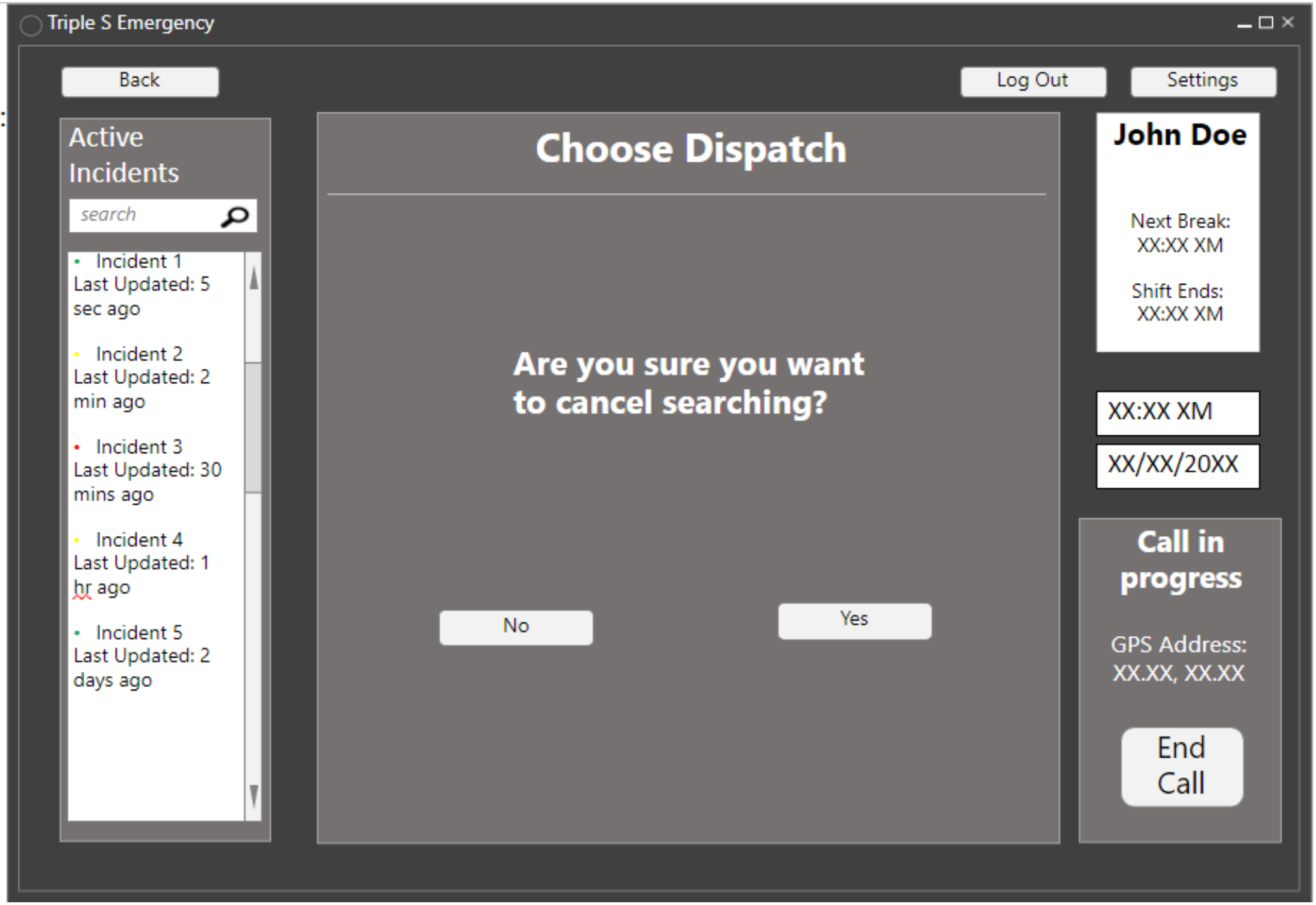


Interface: Choose Dispatch

If No/Cancel is selected:

If Yes is selected Choose Dispatch exits back to menu.

If No is selected, returns to previous screen.



Deployment

In order to implement this new system, there are several factors that must be taken into consideration, including data migration, user training, maintenance, and the deployment method to be used.

As Triple S was formerly several smaller, more specialised emergency stations, it will be required to migrate a large amount of data into the new system. This can present a problem, as the old data will be required to be compatible with the new system, otherwise serious issues will occur. In order to manage this problem, it is recommended that first a database schema be created that will temporarily house information from the various databases. To transfer the data into this database, the sources of data will need to be investigated to create adapters that can migrate the data while converting it into the format that is used by the new system. Once this is complete, the now compatible data will be migrated to the new system. Throughout this process, it is key that migration is tested thoroughly to ensure that all data is migrated correctly and accurately. Although this process may be costly, it is important that all data is migrated as accurate as possible.

On the topic of user training, as this is an incredibly important system to operate, users will be required to properly understand the functionality of the system and be capable of operating the various functions of the system. To achieve this, hands-on training and group tutorials will be conducted with operators to ensure they are familiar with and can operate the new system ahead of time. In addition to this, video demonstrations will be provided for operators to gain a better understanding of the system while in use. For management, these training services will be available as well, including features of the system only available and operable by them. Furthermore, cybersecurity training will also be conducted with operators and managers to prevent information leaks and other problematic occurrences that could cause problems for Triple S or it’s stakeholders. These measures will ensure all who are required to operate the system will be prepared when the system is implemented fully.

Once the system has been implemented, the next area of focus is maintenance. Corrective maintenance will be the best option for conducting maintenance on the system post-delivery, as it primarily deals with errors in analysis, design, implementation, documentation and many other types of faults. In addition to corrective maintenance, perfective maintenance can be used when implementing new functionality and improving speed and overall maintainability. As there is a significant amount of documentation regarding this system, these forms of maintenance, which utilise documentation to most effectively and efficiently correct issues, as well as implement new features and refine the existing system.

When implementing a new system, it is critical to determine the appropriate deployment method to be used. As triple S is an emergency control centre, it must be operational 24-7, requiring great care to be taken when phasing into the new system. To address this key concern, it is recommended that the new system be implemented using the parallel deployment method. This method involves the simultaneous operation of

both the old and new systems, until the new system is fully implemented and functional. In comparison with the direct deployment strategy, parallel is significantly safer, as there is no replacement system in the event of a system failure. In comparison with the phased and pilot deployment methods, parallel would be the most appropriate in this scenario as the new system is complex and centralised, preventing the ability to implement smaller segments of the overall system. The primary advantage of the parallel method is that in the event of an unexpected issue or error occurring within the new system, the old system is still available for use until the error is corrected. This feature of the deployment method satisfies one of the key objectives of the system, which is to prioritize uptime and reliability. While this deployment strategy is effective at addressing this requirement, it has some disadvantages, namely the potential for data inconsistencies between the old and new systems, and the high cost of operating both systems simultaneously. To address the data inconsistency issue, the previously mentioned method for converting the previous systems’ data to a format appropriate for the new system will be used until the new system is fully operational and the old system can be terminated. To address the issue of high costs, while it is unfortunate that this method incurs the highest cost of the 4, it is necessary to ensure reliability, especially when lives are on the line, which will regularly be the case for this system.

The parallel deployment method has been utilized by many organizations and businesses in the past. One such organization that has utilized the parallel deployment method is Facebook, with it’s Facebook for Android Beta Program. This program allows Android users early access to new features coming in the new version of the app. As both the old and early access versions of the app are being run simultaneously, this indicates that Facebook is utilizing a form of parallel deployment. This benefits them by being able to observe the new version of the software while being used, while also having the old system available as a backup for users in the event that the new system experiences an error or otherwise become unavailable.

Team Management

SENG2130 Systems Analysis and Design

Minutes of meeting

Team____Blue Hedgehog_ Place__Zoom___
Date/Time__16/04/23 - 6:00 PM to 6:20 PM__

In attendance
Kaleb
Zane
Deniel

Apologies
N/A

Absent
Jake
Ethan

Agenda

- Date, time and place for next meeting
- Tasks to be done by next meeting
- Discussion of task items for Assignment 2

Action sheet

Task	Responsible	Due	Notes
Review content on Sequence Diagrams	Everyone	April 25, 2023	
Discuss design/theme for User Interface template	Everyone	May 9, 2023	• So far, the team has decided on blue as the primary color for the interface design • No other specific design choices finalized yet
First post-break meeting	Everyone	April 25, 2023	• Date and time not final, most likely to be on Zoom as the 25th is a public holiday
Update Gantt Chart	Deniel	April 25, 2023	• Update the Gantt Chart for Part B of the project

SENG2130 Systems Analysis and Design

Minutes of meeting

Team:_____Blue Hedgehog___ Place:__Auchmuty Library_____
Date/Time:___02/05/2023 18:00 - __

In attendance
Jake
Kaleb
Zane
Deniel

Apologies
Ethan

Absent

Agenda

- Matters arising from previous meetings
- Date, time and place for next meeting
- Matters for consideration at next meeting
- Distribution of Part B Tasks
- Review of Assessment Part A Feedback

Action sheet

Task	Responsible	Due	Notes
UI Template	*TBA	TBC	-Person in charge of UI template to be decided in next meeting
User Interfaces	Everyone		
Code Modification	*TBA		
Package Evaluation	*TBA		
Deployment	Zane		
Introduction	Ethan		
Conclusion	Zane		
Class Diagram	Deniel, Jake		
Use Case Description	Everyone		
Sequence Diagram	Everyone		
Business Rules	Everyone		

SENG2130 Systems Analysis and Design

Minutes of meeting

Team__Blue Hedgehog__ Place_Zoom_
Date/Time__7 May 2023 6:00 PM – 6:10 PM__

In attendance
Jake
Zane
Ethan
Deniel

Apologies
N/A

Absent
Kaleb

Agenda

- Weekly check-up on task progress and feedback
- Discussion of agenda for next meeting

Action sheet

Task	Responsible	Due	Notes
Review Sequence Diagrams during Meeting	Everyone	9 May	
Review Business Rules during Meeting	Everyone	9 May	
Review Use Case Descriptions during Meeting	Everyone	9 May	

SENG2130 Systems Analysis and Design

Minutes of meeting

Team_Blue Hedgehog Place_Library_____ Date/Time 9/05/23, 6:10pm – 6:45pm

---

In attendance
Jake, Zane, Deniel, Ethan

Apologies
Kaleb

Absent
N/A

Agenda

- Look over sequence diagrams
- Review feedback on previous assignment
- Assign future tasks

Notes

- Jakes sequence diagram is good so far but is not finished yet.
- Ethans sequence diagram needs to include log in, take out staff member and replace with publish entity database, merge confirmation screen with UI
- Everyone needs to incorporate live resources and activation bar
- Each member much make a subset of the class diagram
- Will ask Kaleb to do Java section
- Majority of assignment work has been assigned

Action sheet

Task	Responsible	Due	Notes
Finalise business rules, use case descriptions, and sequence diagrams	Everyone	14/05/23	Prioritise sequence diagram

SENG2130 Systems Analysis and Design

Minutes of meeting

Team_Blue Hedgehog Place_Library_____ Date/Time 16/05/23, 6:10pm – 6:55pm

---

In attendance
Everyone

Apologies
N/A

Absent
N/A

Agenda

- Finalise sequence diagrams
- Finalise previous assignment suggestions
- Confirm work distribution

Notes

- Jake sequence diagram missing messages from boundary to control, move the messages from boundary to entity to control to entity. Missing messages for confirm changes.
- Ethan fix log in, publish roster needs to go after confirm, anything that goes to actor should go to boundary.

Action sheet

Task	Responsible	Due	Notes
Revisions introduction	Ethan	23/5/23	
Business rules. deployment	Zane	23/5/23	Deployment is only a target and might not get finished in time.
Finish class diagram draft	Deniel	23/5/23	

SENG2130 Systems Analysis and Design

Minutes of meeting

Team Blue Hedgehog Place Library Date/Time 23/5, 6:15PM – 6:50PM

In attendance
All

Apologies
N/A

Absent
N/A

Agenda

- Discuss ui template
  - Colours look a little off, brainstorming new colour scheme
  - Fitting template to the right size
- Class diagram
  - Discussing draft class diagram
- Sequence diagram
  - Checking for changes from last meeting
  - Ethan – merge boundary classes, boundary interaction issues, add return messages
- Java file package
  - Brief discussion on progress
- 3 day extension apply on sunday during next meeting
- Next meeting(s): sunday, tuesday?

Action sheet

Task	Responsible	Due	Notes
Fix sequence diagram issues	Ethan	Next meeting	Comments in sequence diagram file
Business rule mapping + deployment	Zane	Next meeting	Plan to have WHS rules done, deployment either done or decent amount
Class diagram	Deniel	Next meeting	

SENG2130 Systems Analysis and Design

Minutes of meeting

TeamBlue Hedgehog_ Place_Library and online call_Date/Time__30/5/23, 1:00PM – 3:00PM_

In attendance
All

Apologies
N/A

Absent
N/A

Agenda

- Everyone worked on their sections of the assignment

Action sheet

Task	Responsible	Due	Notes
Fix sequence diagram issues, Business rules, introduction, and UI	Ethan	Friday	
Upload complete contributions	Everyone	Friday	
Compile report and submit	Jake	Sunday	

Analytics

SH StudentGroup-Blue Hedgehog > General ···

Channel settings | Analytics

Last 90 Days | Mar 5, 2023 - Jun 2, 2023

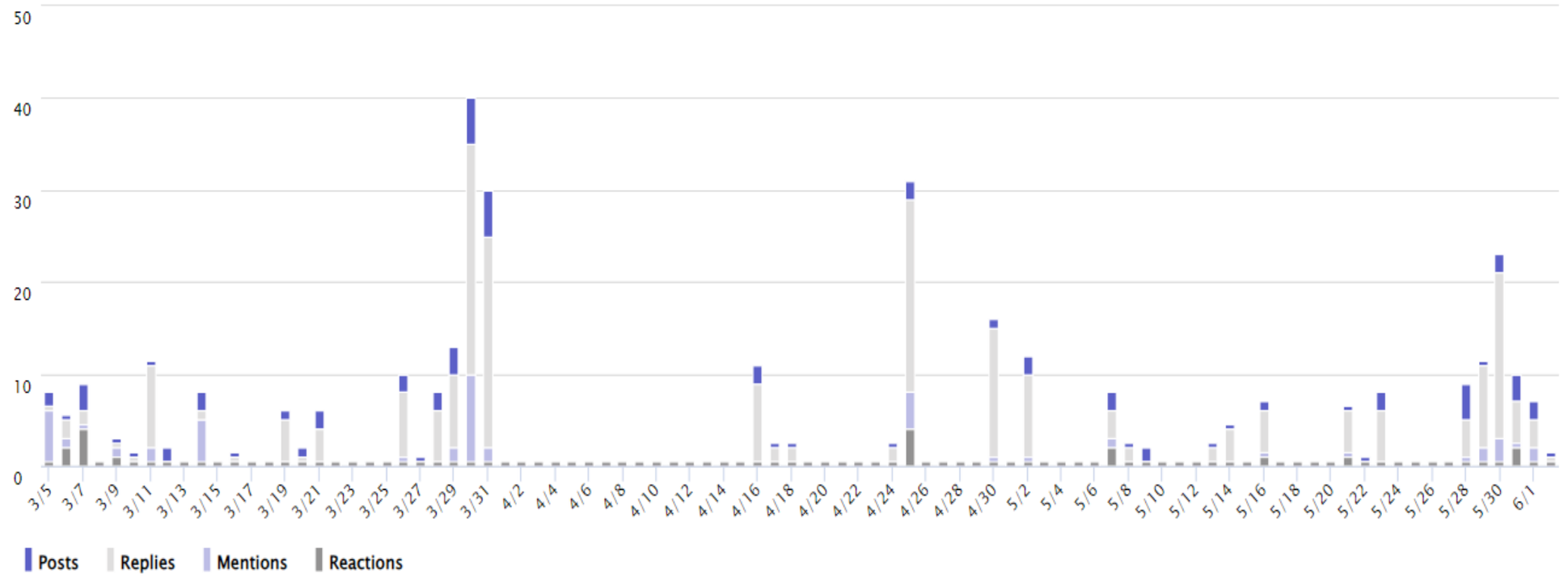
Summary

Users	Apps
5	14

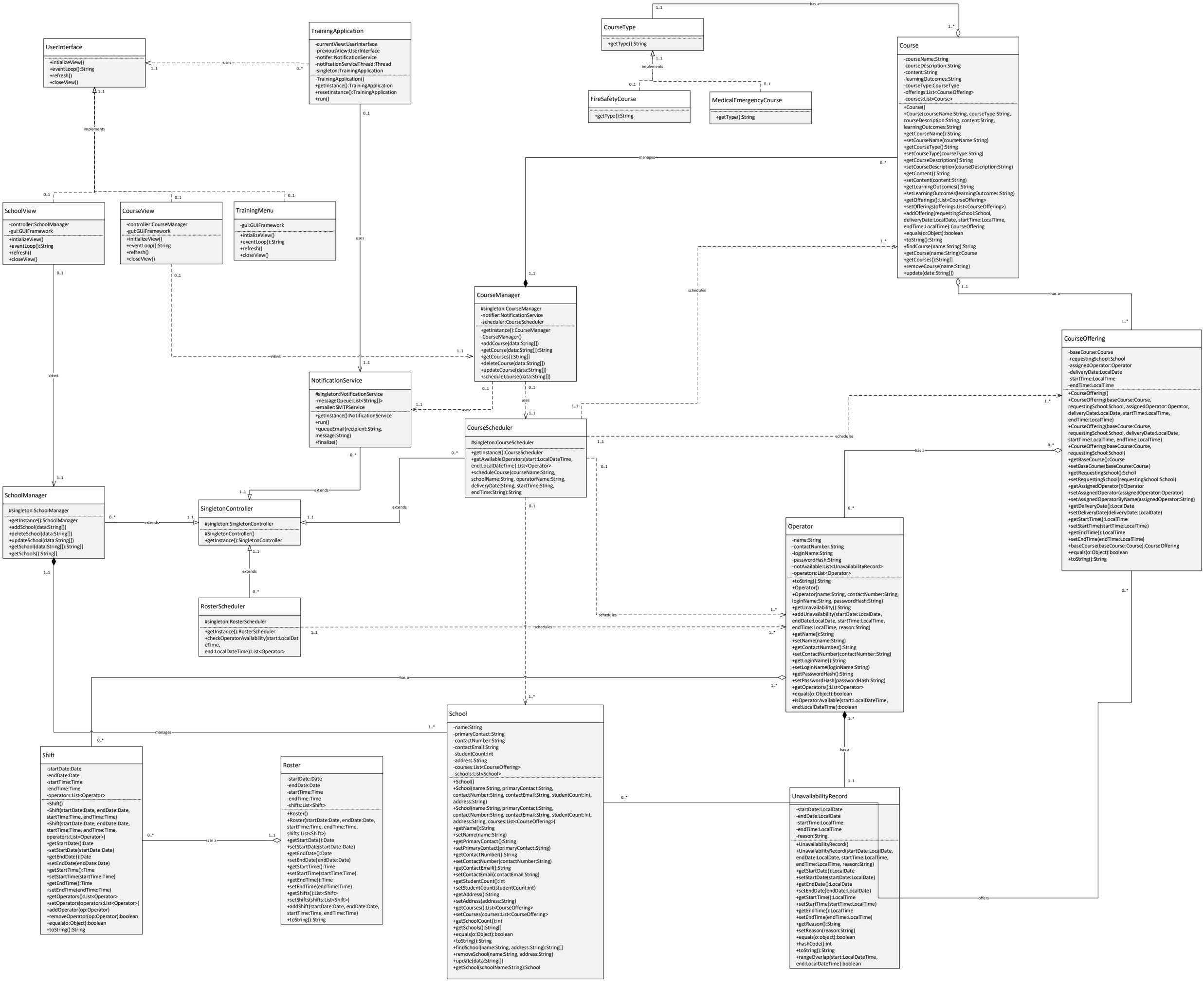
Engagement

Posts	Replies	Mentions	Reactions
58	221	45	17

Engagement



Java Class Diagram



Conclusion

To combat the long-running issues of slow responses and poor communication that have plagued the city of Nuvalis' emergency services infrastructure, Triple S has been established to coordinate and manage the operations of all emergency services under the same organisation to achieve this; a new system has been designed and laid out within this report. This system has been designed with the capabilities to conduct every aspect of the facility, with a heavy emphasis on attention to detail and precision, while also taking care to minimise obscurity where possible.

The system is intended to handle most of Triple S's necessary operations and functions, including creating and managing staff rosters, receiving, storing, analysing and distributing emergency report information and dispatching appropriate emergency services workers to valid incidents. As safety is a critical aspect of this organisation, and any failure may harm a person or group of people, it is paramount that errors are always avoided. As such, the system is designed to accommodate for and remain operational during any potential irregularities encountered during operation. In particular, during the commonly precarious stage of transitioning between old and new systems, the deployment method of parallel deployment assists in mitigating the potential danger of an unforeseen issue during installation.

This report has outlined a comprehensive collection of lists, diagrams and tables concerning the developed system to minimise obscurity and effectively convey the system's functionality and uses. Additionally, a set of user interface designs based on the use cases and sequence diagrams contained within the report and a proposed deployment strategy are also included. Firstly, a collection of business rules that outline the relevant work, health and safety, ethics, security, and privacy legislation and standards that apply to Triple S and serve to provide the users of this system with clear instructions on how to operate smoothly and without issue are listed, with appropriate system and organisational mapping accompanying them. Next, a class diagram, including explanations, descriptions and diagrams documenting various crucial functions of the system was designed. Additionally, sequence diagrams relating to these use cases were also developed and accompanied by a brief description of their intended function. Prototype user interface designs relating to these use cases were also developed to illustrate the intended visual design of the system. Finally, a deployment strategy was proposed, addressing various issues such as data migration and postdelivery maintenance.

This report has achieved the goals outlined, including the extensive, detailed and precise requirements. By prioritising detail and clarity, the system has been outlined to avoid assumptions and allow for consistent and correct use by staff. As indicated previously, business rules and their associated system and organisational mapping outline clear instructions to users of the system on how to use the system without issue. The class diagram demonstrates the various connections between use cases, and the sequence diagrams and their associated descriptions aim to fulfil a similar goal: to supply further detail as associated use cases indicate the natural flow of a particular function and potential alternative flows. The user interface designs are intended to demonstrate the end-user side of the system, referring to what operators and management will see on their ends of the system, and are designed to be easy to comprehend while including all required functionality. Finally, the deployment strategy of parallel deployment was proposed, as it is the safest option when dealing with mission-critical systems such as that of Triple S, despite the disadvantages the deployment method includes. This report has detailed a firm overview of the intended roles and functions of all system areas, including the positions staff of Triple S hold within the overall system and how to interact with it correctly.

References

Facebook for Android Beta Program, (2023), https://www.facebook.com/help/445190715578023.

Fire and Rescue NSE Act 1989

Health Services Act 1997.

Telecommunications (Consumer Protection and Services Standards) Act 1999

Telecommunications (Emergency Call Service) Determination 2019

Work Health and Safety Act 2011