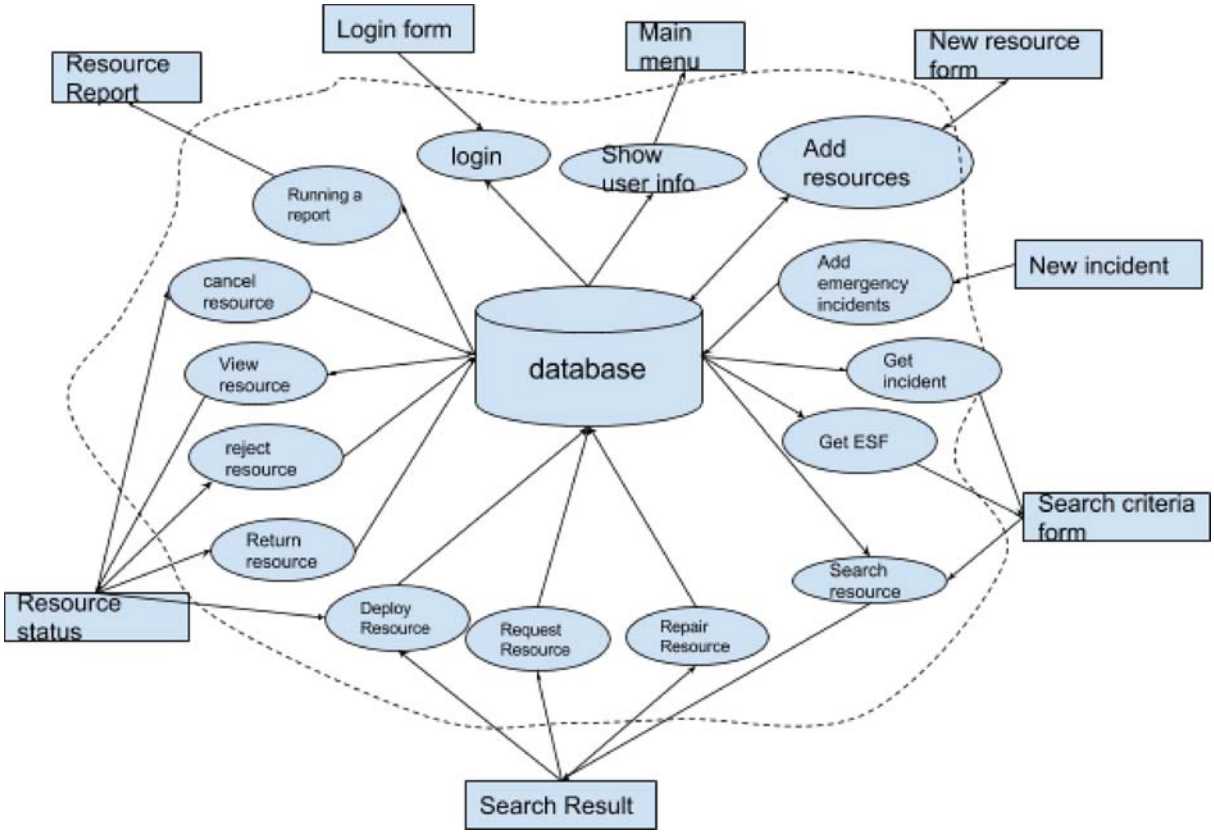
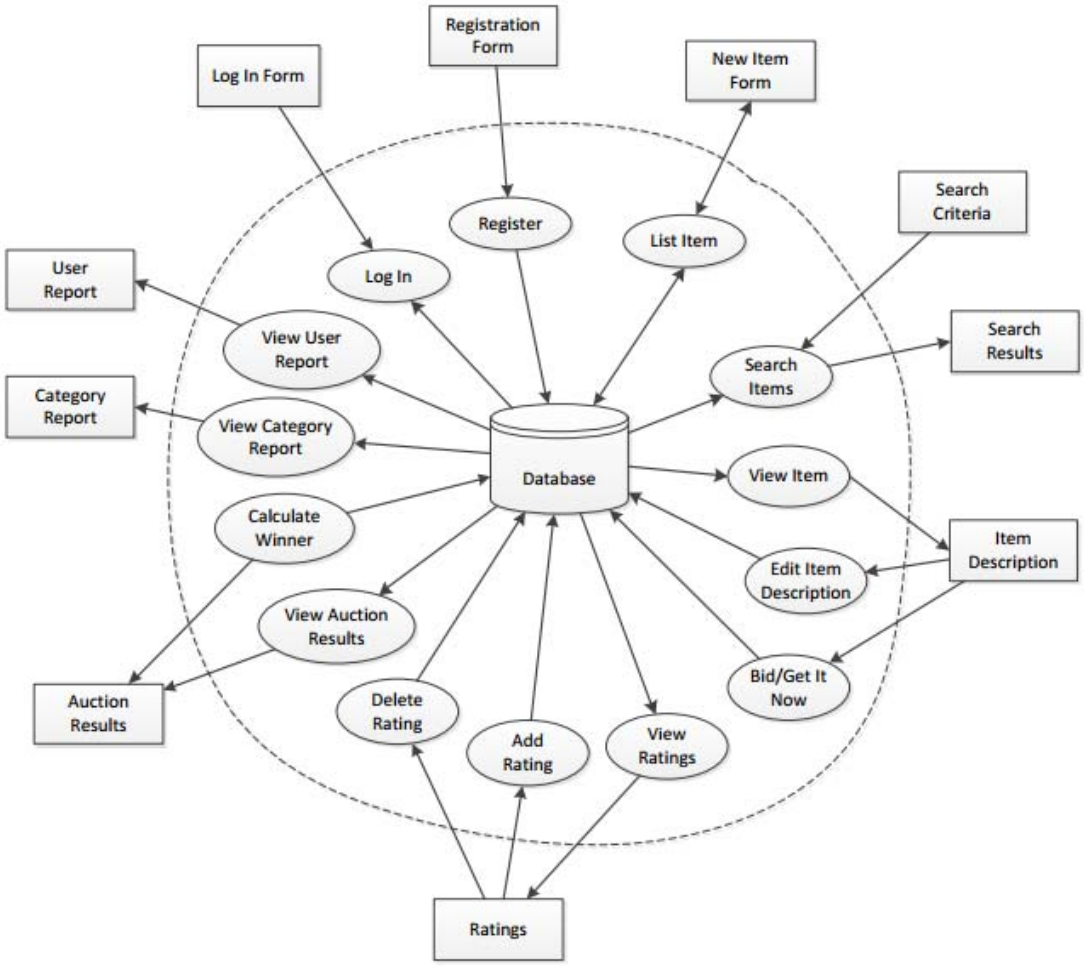
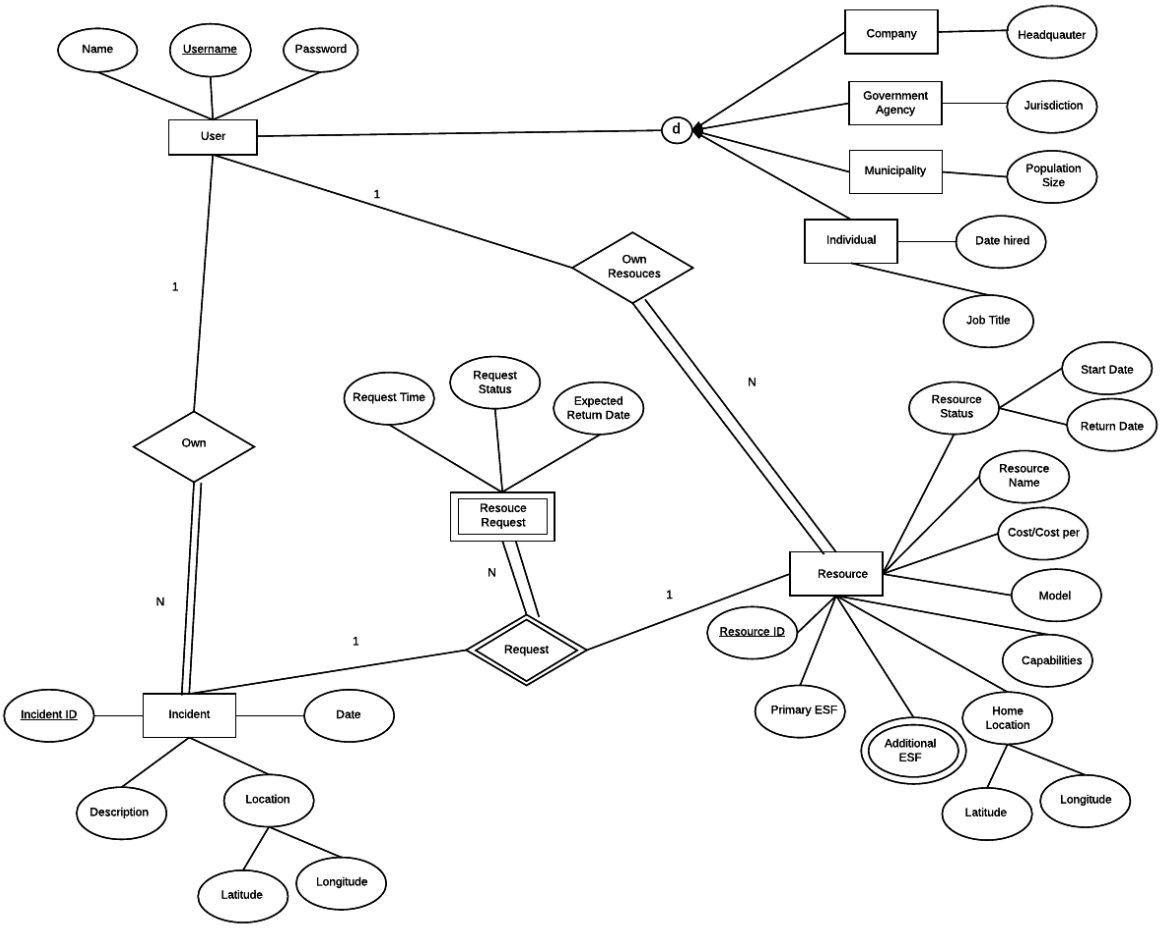
Project Phase 1

IFD (10%)




Registration Form
Log In Form
New Item Form
Search Criteria
Register
List Item
User Report
Log In
Search Results
View User Report
Search Items
Category Report
View Category Report
Database
View Item
Calculate Winner
Item Description
Edit Item Description
View Auction Results
Bid/Get It Now
Auction Results
Delete Rating
Add Rating
View Ratings
Ratings

EER Diagram (40%)



Data formatting (5%) (attributes, domains)

User:

- Username: max 36 chars. Example: cityofatlanta

- Password: max 20 chars. Example: qet223_wrt
- Name: max 36 chars. Example: City of Atlanta

Individual User:
- Job title: max 36 chars. Example: Human Resource Manager
- Hire Date: Date 'YYYY-MM-DD'

Municipality User:
- Population size: Long.

Government Agency User:
- Jurisdiction: max 20 chars. Example "Federal", "State" or "Local"

Company User:
- Headquarter location: max 36 chars. Example: "Downtown Atlanta"

Resource:
- Resource ID: Integer
- Owner: max 36 chars. Example: City of Atlanta
- Resource Name: max 36 chars. Example: 2015 Hummer
- Primary ESF: max 70 chars
- Additional ESF: multi-value with 70 chars, each
- Model: max 36 chars. Example: 2015 Hummer
- Capabilities: multi-value with max 36 chars, each
- Home Location:latitude/longitude coordinate in signed decimal degrees.
- Cost: Integer and not negative
- Resource Status: {"Available", "In use", "In Repair"}
- Return Date: Date 'YYYY-MM-DD'
- Start Date :Date 'YYYY-MM-DD'

Incident:
- Incident ID: Integer
- Owner: max 36 chars. Example: City of Atlanta
- Date of incident: Date 'YYYY-MM-DD'
- Description: max 70 chars
- Location: latitude/longitude coordinate in signed decimal degrees.

ESF:
- ESF Number: Integer (1-15)
- Description: max 70 chars

Request:
- Request Status: {"Cancel", "Accept", "Reject", "Returned"}
- Expected Return Date: Date 'YYYY-MM-DD'
- Request Time: Timestamp 'YYYY-MM-DD HH:MM:SS'

Constraints (5%)

- ESFs should be able to changed- Not be hard coded into the application
- The primary ESF should not also appear as an additional ESF
- The Model field is optional
- The Capability field is optional. Capabilities are not selected from a predefined list
- The owner of the incident is automatically set to the current user
- All incidents are private to the current user and cannot be shared
- In searching for resources, only those resources that match the search criteria (ANDed) should be listed.
- The search results should be sorted first by the distance appearing first (if an incident was selected) and then alphabetically by the resource name.
- Resource status: New resources entered into the system are available by default; A given resource cannot be used to respond to multiple incidences at the same time—i.e., a resource must return to the available status before it can be in use again.
- Request cannot be request without first selecting an incident.
- A resource may only be deployed to respond to one incident at a time
- Resources currently being repaired can not be requested
- If the repair duration has already begun, the repair can not be cancelled and hence the resource can not be deployed/requested
- If the duration is yet to begin, the owner can accept requests for it but will have to explicitly cancel the repair request
- Resources must be returned to the available status before they can be deployed again.
- The system should prevent the same resource from being requested again for the same incident. However, the returned resource may be requested to respond to other incidents.

- In no circumstances should the system allow a resource that is currently in use/repair be deployed to respond to another incident
- Even though a user cannot formally request her own resources (i.e., they are immediately deployed), it is permissible behind the scenes to perform a “hidden request” followed by an immediate deployment.
- Resource Report : This report should only consider the primary ESF for each resource and ignore the additional ESFs field; Only resources owned by the current user should be counted for the Total Resources column; All ESFs should be shown, even if the user owns no resources for that ESF.
- ‘Expected Return Date’ is NULL until a request is established

Task Decomposition(10%) w/abstract code (30%)

Task Decomposition - Main Menu

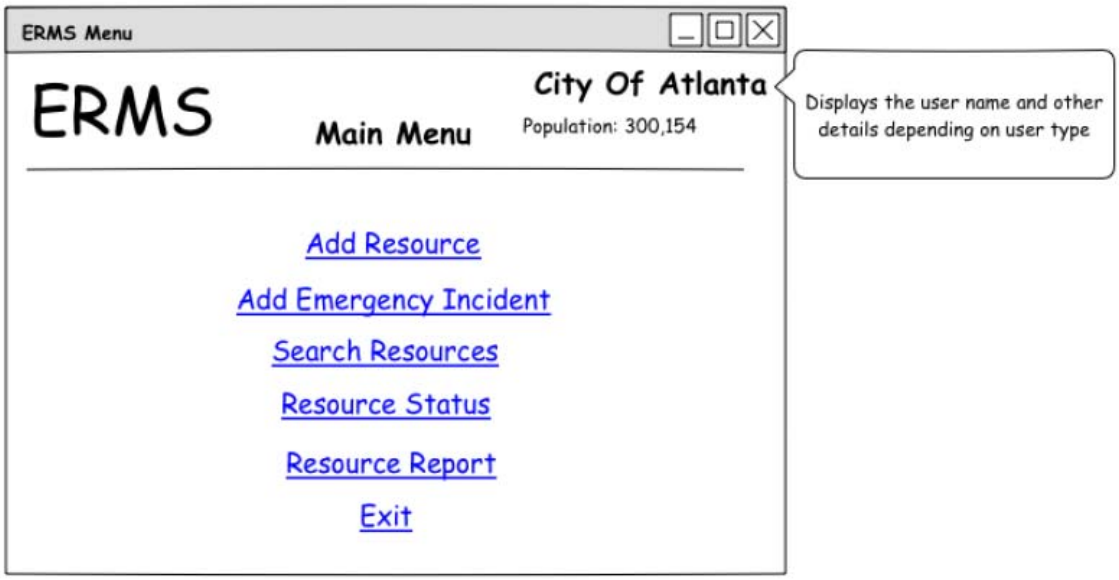


Figure 2 Main Menu

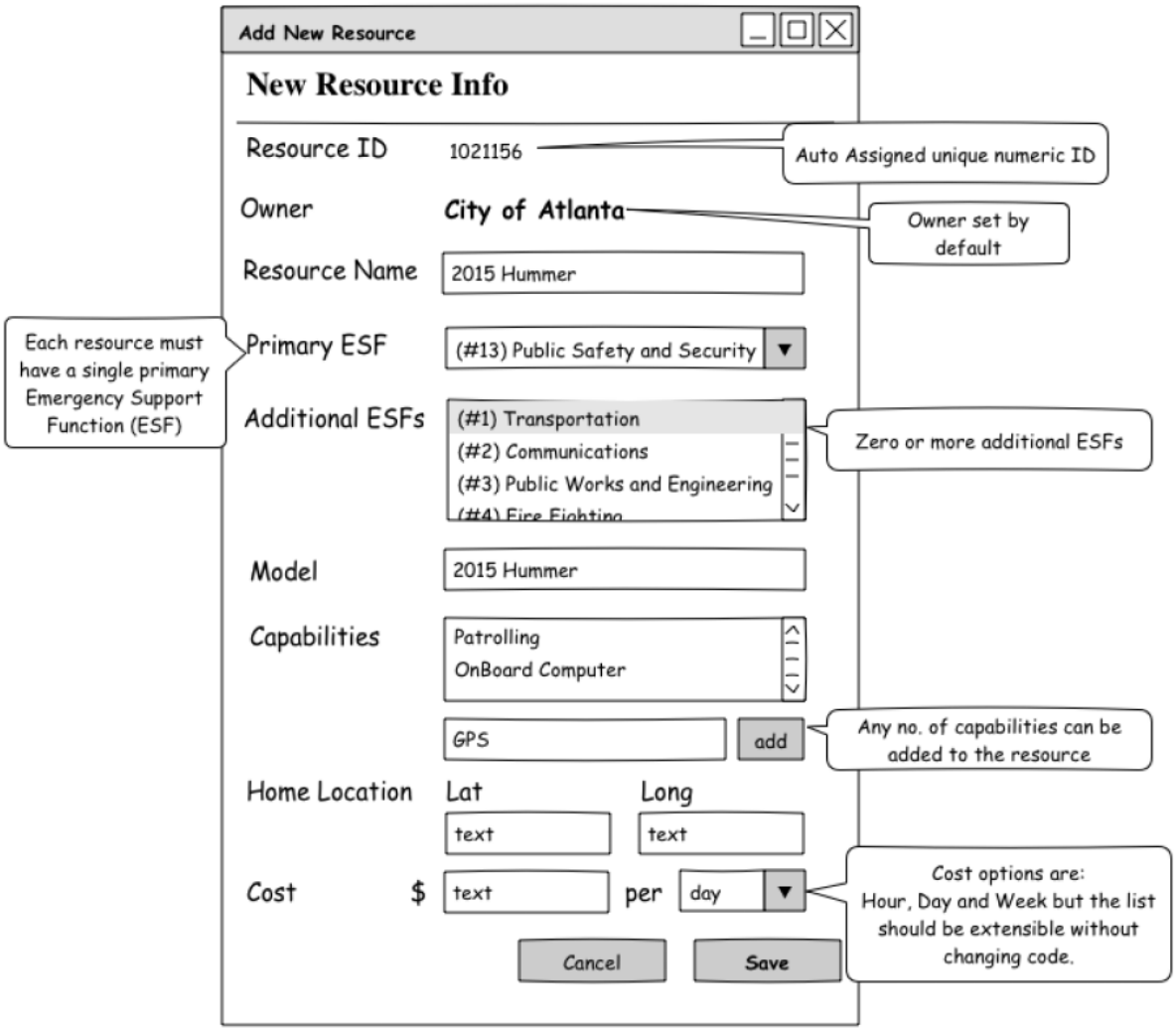
- One lookup: User name and other details depending on user type.
- Lookup is read-only.
- Lookup is enabled by a user's login
- No decomposition is needed

Abstract Code - Main Menu

- Find the current User using the Username;
- Display the Name of the user

If the User is a municipality, display the population size;
If the User is a government agency, display the jurisdiction
If the User is a company, display the location of the headquater

Task Decomposition- Add New Resource



- Resource ID is auto assigned and the Owner is set by default
- Lookups for ESF lists and Cost option list
- Adding of Resource Name, Primary/Additional ESF, Model, Capabilities, Home Location and Cost
- Read and Insert
- The addition is enabled by a user's login and click on "Add Resource"
- The Resource Info is added at the same time and therefore has the same frequency
- Consistency is critical
- Lookup done first to enable selection from the list
- Mother task is needed
- Can be decomposed into subtasks:
    - View ESF lists and Cost option list
    - Add/select information to each field
    - System generate Resource ID and set owner automatically when clicking save

Abstract Code - Add New Resource

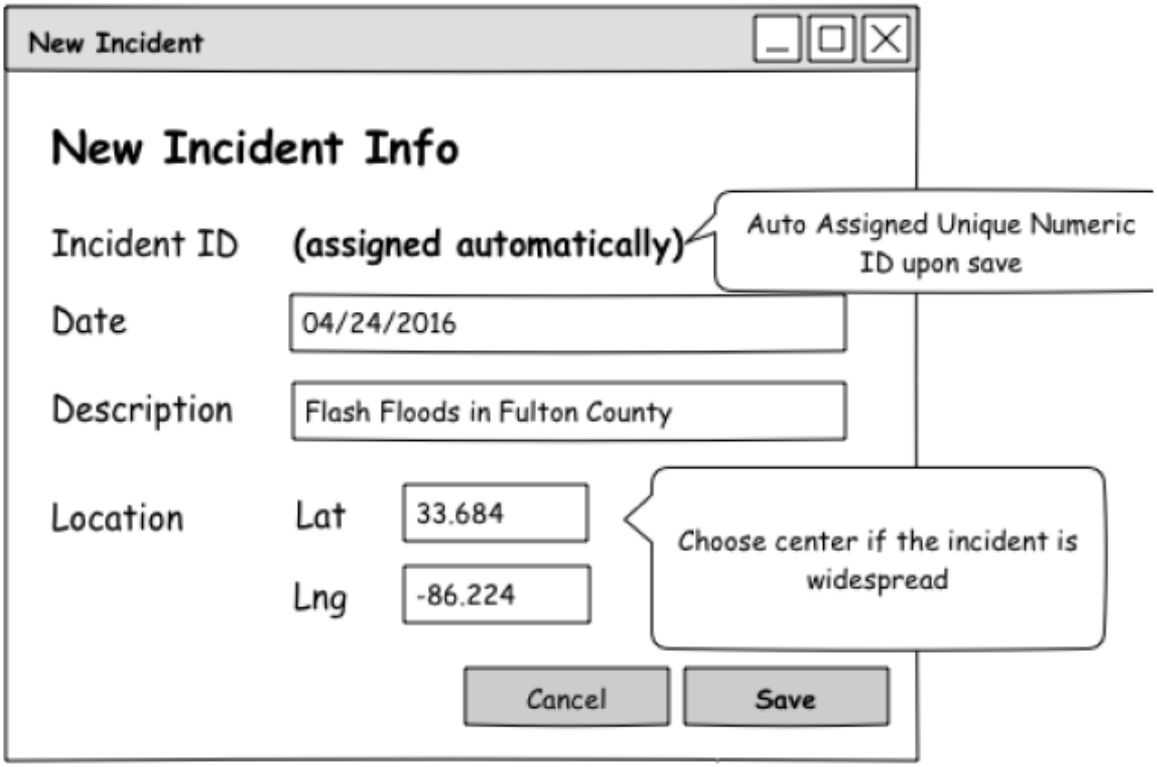
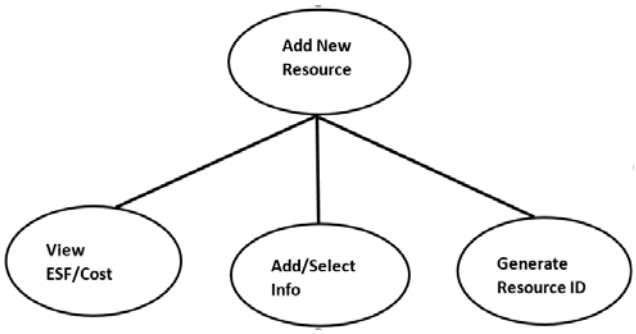


Figure 4 - New Incident

- View Lists- Preload ESF and Cost option dropdowns
- If click **Save**, Do the following
    - Validate all fields (Additional ESFs, Model and Capabilities field is optional, other fields must be filled according to the format constraints)
    - Store the resource to the database
    - System assign Resource ID and set Owner to the logged-in user
- If cancel, Go to the **Main Menu**



Task Decomposition- New Incident

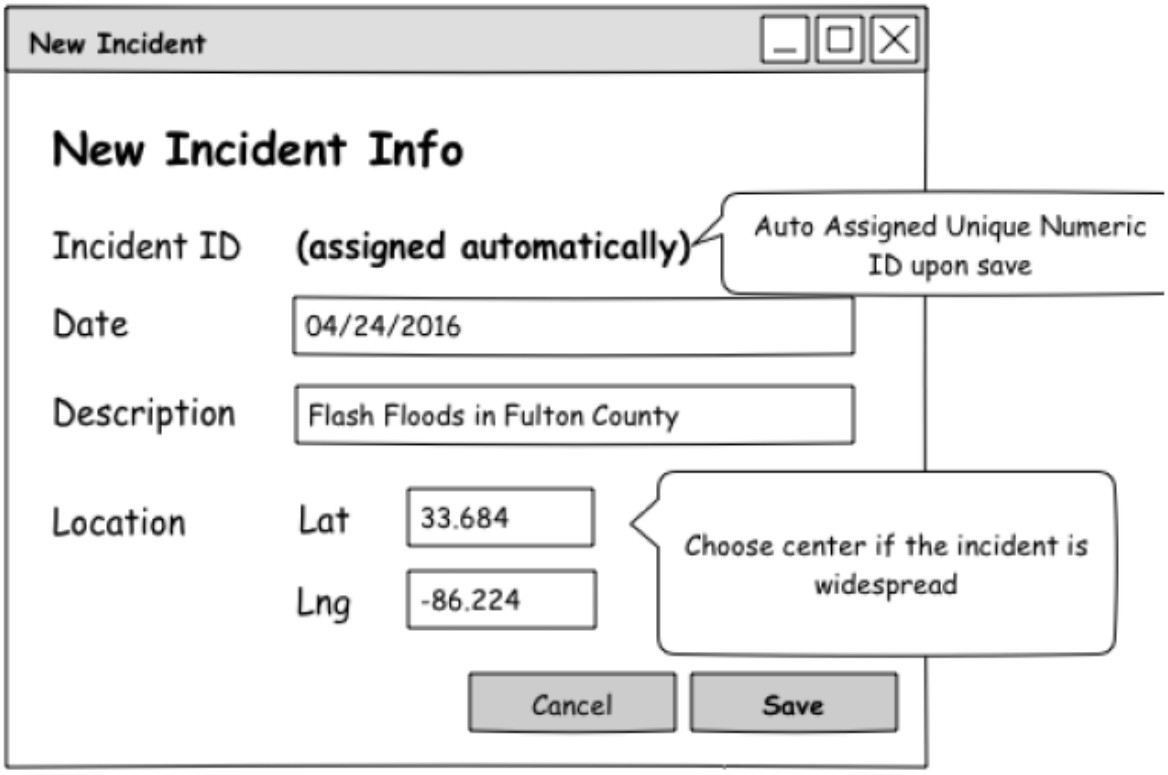
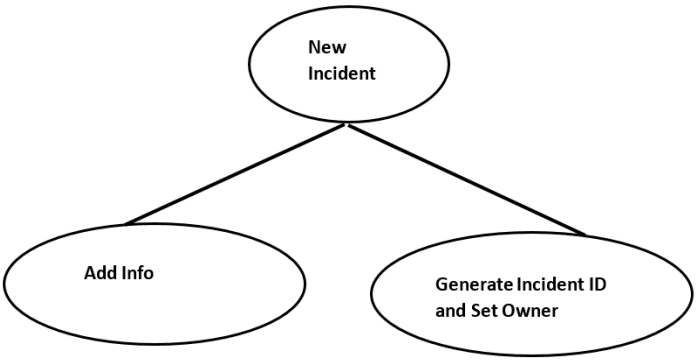


Figure 4 - New Incident

- Incident ID is auto assigned and The **owner** of incident is automatically set to the current user
- Adding of Date, Description and Location
- Insert
- The addition is enabled by a user's login and click on "Add Emergency Incident"
- The Incident Info is added at the same time and therefore has the same frequency
- Consistency is critical
- Mother task is needed
- Can be decomposed into subtasks:
    - Add information to each field
    - System generate Incident ID and set owner when clicking save

Abstract Code - New Incident

- If click **Save**, Do the following
    - Validate all fields
    - Store the resource to the database
    - System assign Incident ID and set Owner to the logged-in user
- If cancel, Go to the **Main Menu**



Task Decomposition- Search Resources

- ***getIncident (select…)***
- ***getESF (select….)***
- ***Search resource (select … inner join…)***

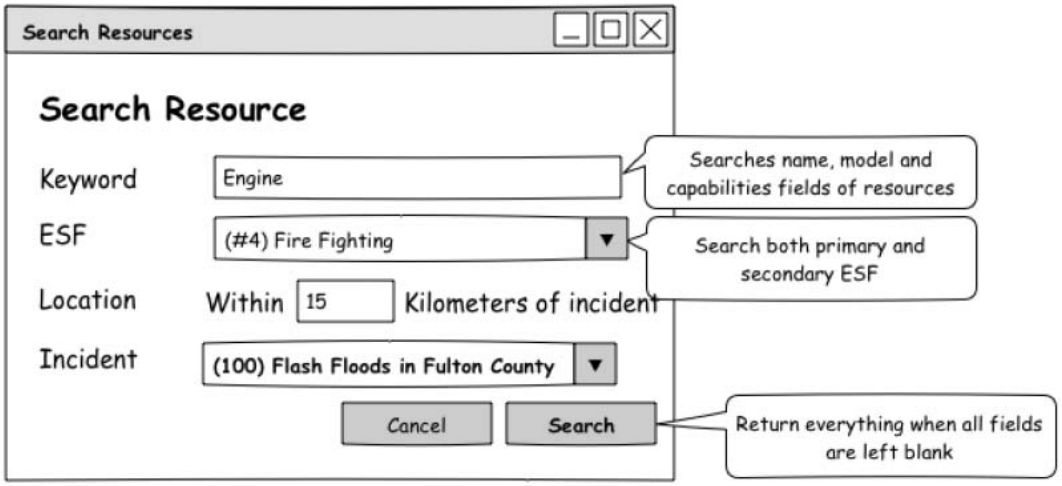


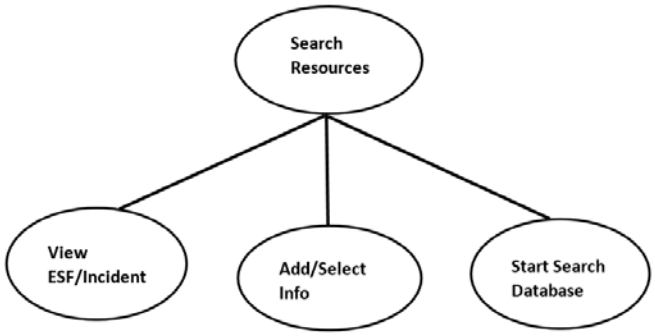
Figure 5 - Search for Resources

- Lookups for ESF lists and Incident list
- Adding of Keyword and distance
- Read
- The addition is enabled by a user's login and click on "Search Resources"
- The search criterias are added at the same time and therefore has the same frequency
- Consistency is critical
- Lookup done first to enable selection from the list
- Mother task is needed
- Can be decomposed into subtasks:
    - View ESF lists and Incident list
    - Add/select information to each field
    - System start read/search the database once **Search** is clicked

Abstract Code - Search Resources

- View Lists- Preload ESF and Incident dropdowns

- If click **Search**, Do the following
    - If keyword is not empty, search for resources whose resource name, model and capabilities that includes the keyword
    - If ESF is not empty, search for resources whose primary and additional ESFs that match the ESF
    - If distance is not empty, search for resources whose Haversine distance is less than the value
    - If an incident was selected, two additional columns appear: the distance and action buttons.
    - If all the above fields are blank, return all resources currently in the system
    - Search the database and return resources that meet the criterias
- If cancel, Go to the **Main Menu**



Task Decomposition- Results

- ***Deploy resource (update resource status)***
- ***Repair resource (update /…?)***
- ***Request resource (***

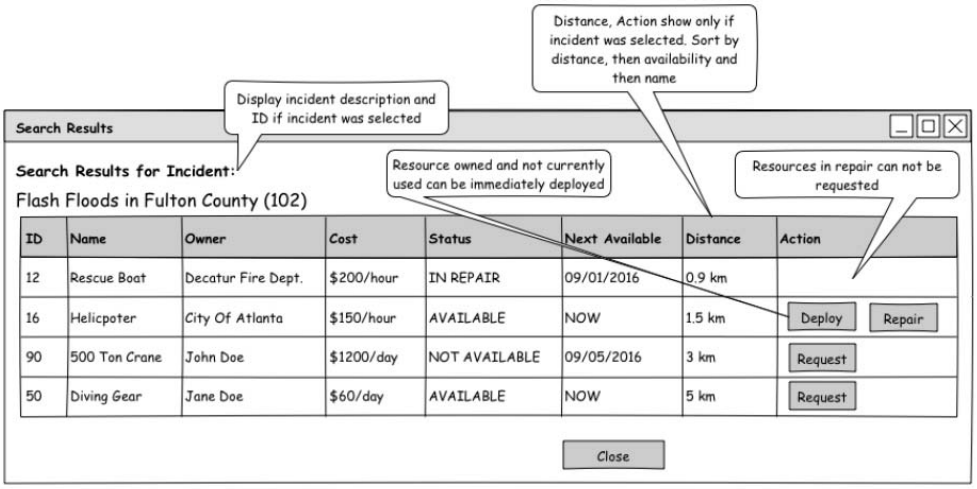


Figure 6 - Search Results

- Display: Incident info (description and ID), if incident was selected
- Lookup: Resource Info (those meet the search criteria);
- Four derived attributes: Distance; Action
- Results sorted by distance, then availability and then name
- Read and Insert

- Results are enabled by click 'Search Resources'
- All column have the same frequency
- Consistency is critical
- Lookup done first and then derive and then Sort, so it need to be done in a certain order.
- Several different schema constructs are needed
- All subtask need to be done, Mother task is needed
- Must be decomposed into subtasks:
    - Display Incident info
    - Lookup Resource info
    - Derive Distance and Action
    - Sort results by the order mentioned above
    - Take action

Abstract Code - Results

- Display the Incident info (description and ID) if incident was selected in search resources.
- Display the searching results of Resource Info: Resource ID, Resource Name, Resource Owner, Cost, Status and Next Available.
    - ➔ "Status" column
        - If a resource is not currently being used to respond to an incident, then Status is *Available*; New resources entered into the system are available by default.
        - If a resource has been deployed to respond to an incident, then the Status is *In Use*
        - If a resource has been scheduled for *Repair*, the Status is *In Repair*.
    - ➔ "Next Available" column
        - Calculated from the expected return date of deployed, scheduled or repaired resource
- If an incident was selected in the search screen, the two derived additional columns appear
    - ➔ Derive "Distance" column
        - Calculated from haversine formula of two coordinates (incident to resource)
    - ➔ Derive "Action" column based on following rules

    {

        - For the resources that is not owned by the current user, if the resource status is "in repair", then no action can be performed; Otherwise, the "Request" action can be performed.
        - For the resources that is owned by the current user, if the resource status is "Available", then action "Deploy" and "Repair" can be performed.
        - For the resources that is owned by the current user, If the user didn't select an incident on the search criteria form or the resource in repair, then only Repair could be in Action column

    }
- View Lists-
- While no buttons are pushed, do nothing.
- When a button is clicked, then do following:

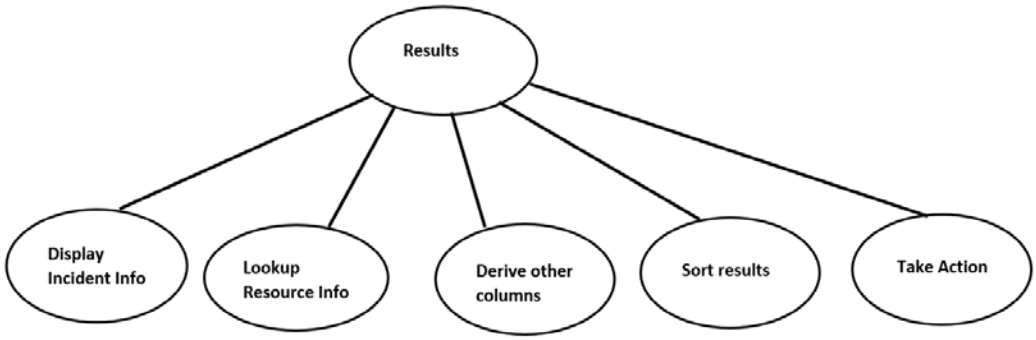
{

- If DEPLOY a resource, the status of the resource will become "in use". The resource will be added to the "resource in use" list of the user.

- If REPAIR a resource, the status of the resource will become “in repair”. The resource will be added to the “Repair Scheduled/In-progress” list.
- If REQUEST a resource, the user need to add an expected return date, the source owner should receive a request infomation. A “request” should be added to both the current user (“source requested by me” and the resource owner “ resource requests received by me”. The resource will be added to the “resource requested by me” list of the user

}

- If Close, Go to the **Search Results**



Task Decomposition- Resource Status

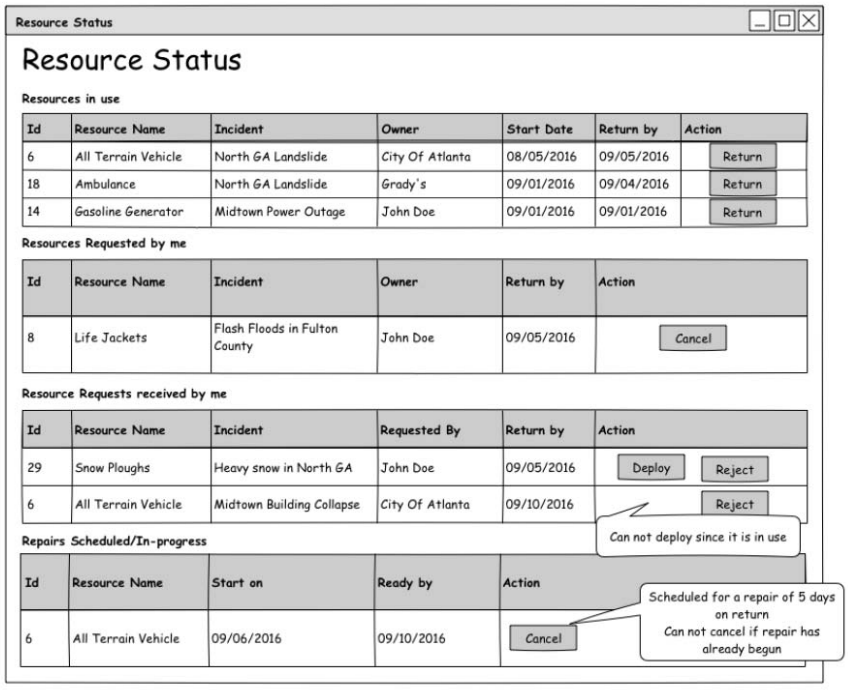
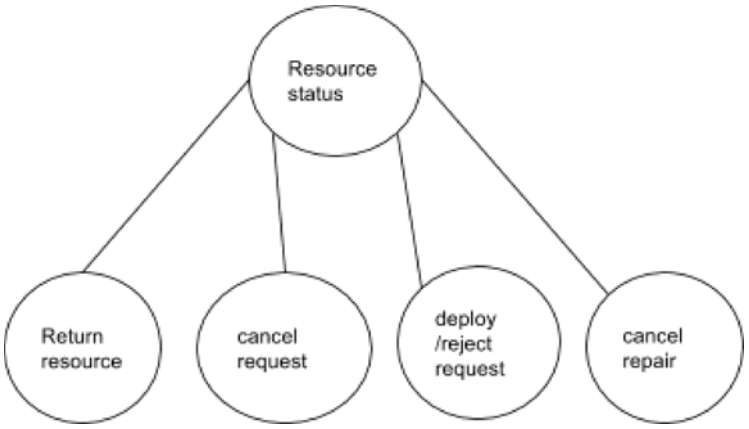


Figure 7 - Resource Status

- Four Lookups: Resource in use, Resource requested by me, Resource received by me, Repairs scheduled/in-progress;
- Read
- The task is enabled by a user’s login and click on “Resource Status”

- Consistency is critical since when the user return one source and then this source should be available when other users search and look at its status
- Several different schema constructs are needed
- Mother task is needed
- Must be decomposed into subtasks:
    - View and RETURN resource in use
    - View and CANCEL resource requested by me
    - View and DEPLOY/REJECT resource requests received by me
    - View and CANCEL repairs schedule/in- progress



Abstract Code - Resource Status

- View Resource Lists of the user that are in use or have been requested
- While no buttons are pushed, do nothing.
- When a button is pushed, then do following:
  {
- If RETURN a resource that under the list “Resource in use”, the status of the resource will become available and thus it can be deployed again.
- If CANCEL a resource request under the list “Resources Requested received by me”, the request will disappear from the other user’s list of received requested
- If DEPLOY a resource under the list “Resource Requests received by me”, the status of the resource will become in use; If REJECT the request, the request will be removed
- If CANCEL a repair under the list “Repair Scheduled/In-progress”, the resource status will become available.
  }

- If Close, Go to the **Main Menu**

Task Decomposition - Resource Report

- One lookup: summary of the resources owned by the user that grouped by the primary ESF.

- Lookup is read-only.
- Lookup is enabled by a user's login and click on "Resource Report"
- No decomposition is needed

Abstract Code - Resource Report

- Find the primary ESF of all resources of the user, summarize the resource amount for each primary ESF;
-Find the primary ESF of all resources that the status is "in use" of the user, summarize the resource amount for each ESF
- Display the final result/number for each primary ESF by using a summary table

- if Close, Go to the **Main Menu**