NAADSM

Spread Model Application

Design Brief

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Design Goals
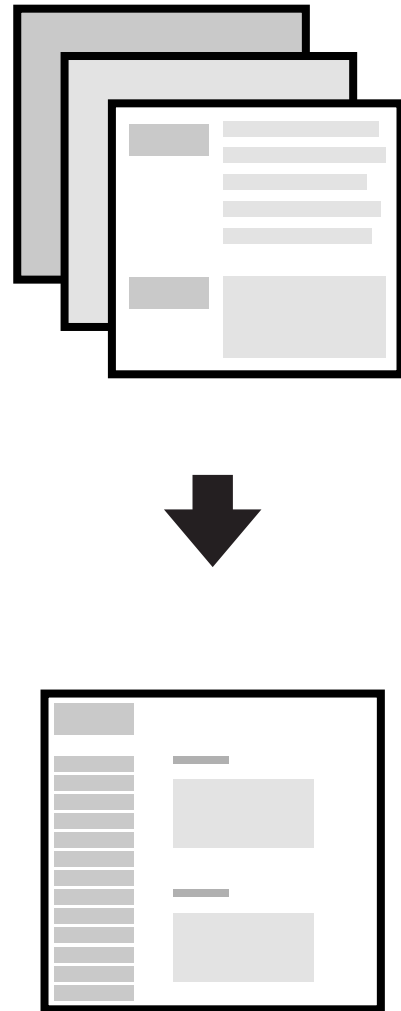
Minimize the amount of states a user has to navigate through for each section. (minimal pop-ups, etc)

Establish a basic user interface consistent with modern application and website navigation themes.

Structure visual elements for intuitive use among new, existing, and out of country users.

Target Audience: Veterinarians and Epidemiologists. (Educated in this field)

Untitled Scenario

New   Save   Open

Scenario Settings
    Output Settings
Population
    Production Types   0
    Farm Locations   0
Disease
    Disease Progression   0
        Progression Assignment
    Disease Spread
    Direct Spread   0
    Indirect Spread   0
    Airborne Spread   0
Controls
    Protocol Assignments   0
    Control Protocol   0
    Zones   0
        Zone Effects   0
Probability Functions   0
Relational Functions   0

>Run Simulation

Edit a Scenario

Description

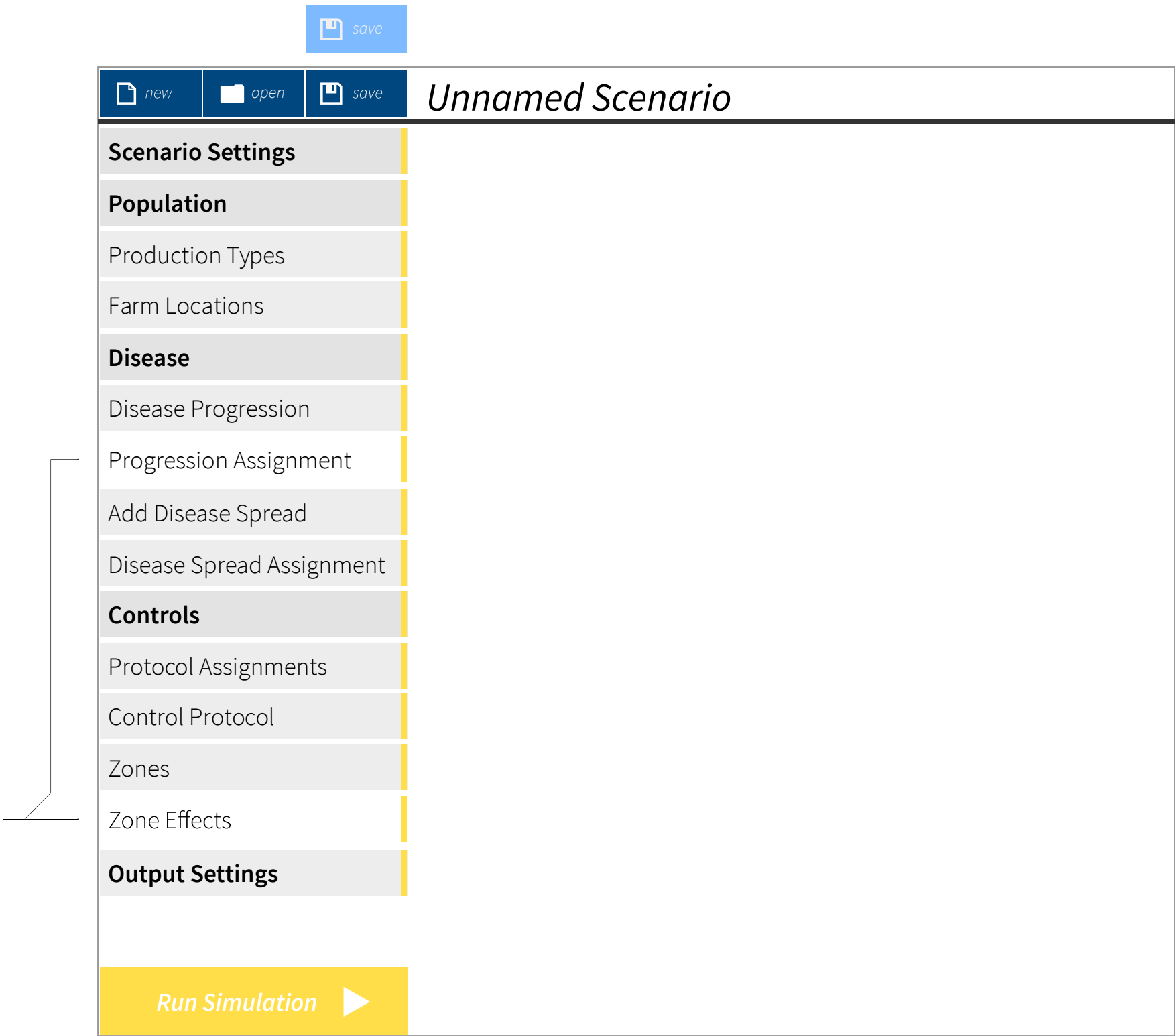The description of the scenario.

Submit   Copy   Delete

Cleaning up the user interface will allow for quick, intuitive navigation throughout the program. Goals would include the following:

- Adding a visual system for progress tracking
- Arranging elements within the application for unobtrusive, yet intuitive placement.
- Introducing simple icons where needed to introduce a familiar visual for new, foreign, and existing users.

User Interface // Elements and Icons

Save button would appear with lighter background, indicating unsaved changes to the scenario

Rearrangement of header elements allows for tabbed browsing in the future, in addition to visually organizing the space.

White elements on the left navigation bar would normally be accordioned in, showing when the user clicks the button above it. (ie, Disease Progression and Zones)

[save]

| new | open | save | *Unnamed Scenario* |

Scenario Settings

Population

Production Types

Farm Locations

Disease

Disease Progression

Progression Assignment

Add Disease Spread

Disease Spread Assignment

Controls

Protocol Assignments

Control Protocol

Zones

Zone Effects

Output Settings

Run Simulation ▶

Experience Design // Progress Tracking

🐄 Untitled Scenario

Scenario Settings
- Output Settings

Population
- Production Types — 0
- Farm Locations — 0

Disease
- Disease Progression — 0
  - Progression Assignment
- Disease Spread
  - Direct Spread — 0
  - Indirect Spread — 0
  - Airborne Spread — 0

Controls
- Protocol Assignments — 0
- Control Protocol — 0
- Zones — 0
  - Zone Effects — 0

Probability Functions — 0

Relational Functions — 0

> Run Simulation

Scenario Settings

Population
Production Types
Farm Locations

Disease
Disease Progression
Progression Assignment
Add Disease Spread
Disease Spread Assignment

Controls
Protocol Assignments
Control Protocol
Zones
Zone Effects

Output Settings

Run Simulation ▶

Scenario Settings

Population
Production Types
Farm Locations

Disease
Disease Progression
Progression Assignment
Add Disease Spread
Disease Spread Assignment

Controls
Protocol Assignments
Control Protocol
Zones
Zone Effects

Output Settings

Run Simulation ▶

Scenario Settings

Population
Production Types
Farm Locations

Disease
Disease Progression
Progression Assignment
Add Disease Spread
Disease Spread Assignment

Controls
Protocol Assignments
Control Protocol
Zones
Zone Effects

Output Settings

Run Simulation ▶

🐄 **Untitled Scenario**

Scenario Settings
Output Settings
Population
Production Types   0
Farm Locations   0
Disease
Disease Progression   0
Progression Assignment
Disease Spread
Direct Spread   0
Indirect Spread   0
Airborne Spread   0
Controls
Protocol Assignments   0
Control Protocol   0
Zones   0
Zone Effects   0
Probability Functions   0
Relational Functions   0

[>Run Simulation]

Scenario Settings
Population
Production Types
Farm Locations
Disease
Disease Progression
Progression Assignment
Add Disease Spread
Disease Spread Assignment
Controls
Protocol Assignments
Control Protocol
Zones
Zone Effects
Output Settings

[Run Simulation ▶]

Controls
Protocol Assignments
Control Protocol
Zones
Zone Effects
Output Settings

[*Run Simulation* ▶]

"all green" lets the user Run Simulation

Having a visual representaiton for accomplishment adds another layer of reason for the task at hand. Simply put "I must make all the task bars green" eases the user into the many steps she will need to take to actually get a simulation running.

Conversely, it must be easy for the user to validate exceptions to avoid frustrations. (Ex: Disable all controls, which should mark the "Controls" section as green.)

User selection is indicated by a darker button color

Output Settings is now the last thing users will interact with before reaching the "all green" status.

Experience Design // Load a Scenario

new	open	save	*(Load a Scenario)*

Scenario Settings

Population

Production Types

Farm Locations

Disease

Disease Progression

Progression Assignment

Add Disease Spread

Disease Spread Assignment

Controls

Protocol Assignments

Control Protocol

Zones

Zone Effects

Output Settings

Run Simulation ▶

Source File URL

[   ] →   or   Upload Scenario ⬆

Available Scenarios:

Scenario 1   ⬇ 📄 ✖

Scenario 2   ⬇ 📄 ✖

Ireland   ⬇ 📄 ✖

Ireland (copy 1)   ⬇ 📄 ✖

User has selected "open" at top left.

Confirming a source file URL or uploading ascenario file will place the hyperlink in the "Available Scenarios" table.

Hyperlink will appear in light blue whenhovered over. Following that, the user has access to three options:
• download file (.csv format, etc)
• duplicate file (adding # after name)
• delete file, prompting a confirm

Scenario 2 *(Load a Population)*

new	open	save

Scenario Settings

Population

Production Types

Farm Locations

Disease

Disease Progression

Progression Assignment

Add Disease Spread

Disease Spread Assignment

Controls

Protocol Assignments

Control Protocol

Zones

Zone Effects

Output Settings

Run Simulation ▶

Source File URL

[   ] → or [Upload XML file ⬆]

Filter By:
Production Type ▾		Blue Horn ▾
Unit Size ▾	<= ▾	2,500
▾		

Order	ID	Production Type	Unit Size	Latitude	Longitude	Status ▾	Days in state	Days left in state

[Export XML ⬇]   [Delete Selected ✖]

Filters start out blank, providing appropriate dropdown menus for each filter type.

Each time a filter is selected, a new blank filter dropdown populates below, allowing the user as many filter options as they want.

Arrows only appear when the top item is clicked to toggle between ascending and descending sort.

Export XML if users want to save their modified file, prompting a pop-up naming and destination dialogue.

Delete Selected allows the user to delete multiple lines via shift+click functionality.

Experience Design // Disease Spread

new	open	save	Scenario 2

Scenario Settings

Population

Production Types

Farm Locations

Disease

Disease Progression

Progression Assignment

Add Disease Spread

Disease Spread Assignment

Controls

Protocol Assignments

Control Protocol

Zones

Zone Effects

Output Settings

Run Simulation ▶

Create and Edit Disease Spreads

Foot and Mouth Disease Spread

Direct Spread	⌃

+ *New Direct Spread*

Dairy Cattle Large

Dairy Cattle Large (Copy 1)

Dairy Cattle Small

Indirect Spread	⌃

+ *New Indirect Spread*

Airborne Spread	⌄

Hyperlink will appear in light blue when hovered over. Following that, the user has access to two options:
- duplicate the file for small changes, (adding # after name)
- delete spread, prompting a confirm

Clicking on "+ New Direct Spread" or any hyperlinked text in the dropdown bars will open the Spread Creator window that currently exists

New   Save   Open

Advanced Panel

How does Disease spread from one Production Type to another?

Source production type	Destination production type	Direct contact spread	Indirect contact spread	Airborne spread
		Bulk contact spread ⇅ Apply	Bulk Indirect spread ⇅ Apply	Bulk Airborne spread ⇅ Apply
Free Range Cows	Free Range Cows	Direct Spread 1 ⇅	Indirect Spread 1 ⇅	Airborne Spread 1 ⇅
Dairy Cows	Dairy Cows	Direct Spread 1 ⇅	Indirect Spread 1 ⇅	Airborne Spread 1 ⇅
Angus Cattle	Angus Cattle	Direct Spread 1 ⇅	Indirect Spread 1 ⇅	Airborne Spread 1 ⇅
Blue Horn	Blue Horn	Direct Spread 1 ⇅	Indirect Spread 1 ⇅	Airborne Spread 1 ⇅
Cows ⇅	Cows ⇅	--------- ⇅ ⊕ Add	--------- ⇅ ⊕ Add	--------- ⇅ ⊕ Add
Cow2 ⇅	Cow2 ⇅	--------- ⇅ ⊕ Add	--------- ⇅ ⊕ Add	--------- ⇅ ⊕ Add

Submit

e/new/

Shift + Click Source Production type to select/deselect types

Click Destination Production type to toggle selection of multiple types

This method controls the amount of information shown, serving as a filter and a transaction point.

Bulk apply will have a dropdown for a new contact rate, but will otherwise assign the contact rate to the selected production types.

Highlighted "spread" should be changed to "rate"

Experience Design // Add Control Protocols

📄 *new*   📁 *open*   💾 *save*

Scenario 2

Scenario Settings

Population

Production Types

Farm Locations

Disease

Disease Progression

Progression Assignment

Add Disease Spread

Disease Spread Assignment

Controls

Protocol Assignments

Control Protocol

Zones

Zone Effects

Output Settings

Run Simulation ▶

Create Control Protocols

Control Protocol	⌃
+ New Control Protocol	
Dairy Vaccination	📋 ❌
Free Range (small) Destruction	📋 ❌
Free Range (large) quarantine	📋 ❌

Hyperlink will appear in light blue when hovered over. Following that, the user has access to two options:
- duplicate the file for small changes, (adding # after name)
- delete control, prompting a confirm

Clicking on "+ New Control Protocol" or any hyperlinked text in the dropdown bars will open the Spread Creator window that currently exists.

See pg. 12 for an alternative method.

Experience Design // Add Control Protocols

| 📄 *new* | 📂 *open* | 💾 *save* | **Scenario 2** |

Scenario Settings

Population

Production Types

Farm Locations

Disease

Disease Progression

Progression Assignment

Add Disease Spread

Disease Spread Assignment

Controls

Protocol Assignments

Control Protocol

Zones

Zone Effects

Output Settings

Run Simulation ▶

Create Control Protocols > *Unnamed Control Protocol*

Name*

[   ]

Name your Protocol so you can recognize it later. Ex:"Quarantine"

| Detection | Tracing | Testing | Destruction | Vaccination | Cost Accounting |

☐ **Use detection**

    Indicates if disease detection will be modeled for units of this production type.

Detection probability for observed time in clinical

[--------- ▾] ➕ Add

Relational function used to define the probability of observing clinical signs in units of this production type.

Detection probability report vs first detection

[--------- ▾] ➕ Add

Relational function used to define the probability of reporting clinical signs in units of this production type.

☐ **Detection is a zone trigger**

    Indicator if detection of infected units of this production type will trigger a zone focus.

[Submit]

With this method, hyperlinks are nested within the main screen. Clicking on "new" or existing control protocols will slide or fade out the list screen and the user will be able to edit or create the protocol without encountering a pop-up.

Hyperlinks can still navigate the user back to the original screen, prompting a warning if the user has unsaved changes.

Clicking on "+ New Control Spread" or any hyperlinked text in the dropdown bars will open the Spread Creator window that currently exists.

Experience Design // Quality of Life Improvements

![Untitled Scenario interface mockup]

Untitled Scenario

New   Save   Open

Scenario Settings
- Output Settings

Population
- Production Types   2
- Farm Locations   0

Disease
- Disease Progression   0
  - Progression Assignment
- Disease Spread
  - Direct Spread   0
  - Indirect Spread   0
  - Airborne Spread   0

Controls
- Protocol Assignments   0
- Control Protocol   0
- Zones   0
  - Zone Effects   0

Probability Functions   0

Relational Functions   0

>Run Simulation

Create a new Control Master Plan

Name*

☑ **Disable all controls**

Disable all Control activities for this simulation run. Normally used temporarily to test uncontrolled disease spread.

The number of days that must pass after the first detection before a destruction program can begin.

Destruction capacity

Add

The relational function used to define the daily destruction capacity.

Destruction priority order*

The primary priority order for destruction.

Destruction reason order*

Basic, Trace fwd direct

The secondary priority order for destruction.

Units detected before triggering vaccination

The number of clinical units which must be detected before the initiation of a vaccination program.

Vaccination capacity

Add

Relational function used to define the daily vaccination capacity.

Vaccination priority order*

Disabling all controls should inhibit the user

Grey out everything underneath and prevent interaction with any elements below.

Collapse controls when disabled above