COLD CHAIN EQUIPMENT
VISUALIZER
A map-based, interactive visualization of public-health data

PROBLEM
- Most vaccines need to be kept at a constant temperature of 2-8 °C until used
- An unbroken cold-chain of cold-rooms, refrigerators, and cold-boxes is needed to transport and store vaccines
- Current information about cold-chain infrastructure is stored in unwieldy databases
- Government health ministries and NGOs need to be able to easily model current and possible future configurations of their cold-chain resources for action and funding

How can public-health officials use a map-based visualization to easily model a current and potential future vaccine cold-chain equipment configurations?

ARCHITECTURE

Architecture details
- The database is a digital representation of the current physical world
- Managers are able to locally make changes that can be presented as a plan to funding agencies or a superior
- Multiple local copies can be shared or compared, allowing multiple users to assess and address the situation

FEATURES

Database
- Maintained by a centrally responsible agency
- Read-only. Should only be changed when a new region inventory has been completed

Layers & Clinics
- Information shown is context sensitive
- Clinic appearance changes based upon capacity
- Heat maps allow users to quickly assess which areas would be best served with new or reallocated resources

Map
- Separation of facilities into groups based upon district or sub-district
- As little data is displayed at one time as possible to keep the interface clean

Resource Allocation
- Manual allocation should allow a user to have full control of system resources
- Automatic or assistive allocation would allow a user access to algorithms and metrics to best distribute resources to underserved areas

RELATED WORK

Cold-Chain
PATH Cold Chain Equipment Manager
Vaccine Modeling Initiative
UNICEF Cold Chain Logistics taskforce

Mapping & Visualization
Ushahidi – A disaster response tool used to map requests for help
Livehoods – A neighborhood mapping tool using Foursquare check-ins
Hipmunk – A popular travel planning website

WEB APPLICATION

PROTOTYPING

Evolution
- Early paper mockups
- Early hi-fi mockup (Visual Studio) as a desktop application
- Recent hi-fi mockup (Axure - see figure to right) as a web application

Iterative design based on stakeholder input
- Regular status checks with PATH partners and instructors
- Usability testing
  - Round one: basic paper prototype
  - Round two: interactive Axure prototype