



Team 1: The Weather System



McMaster Engineering Competition, 2016

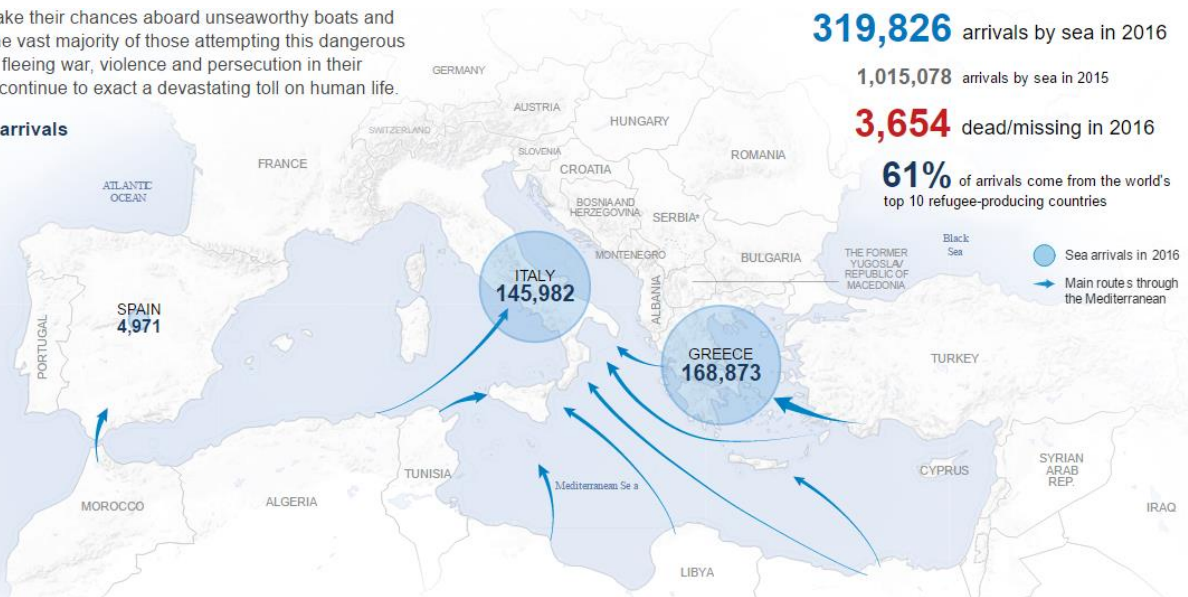
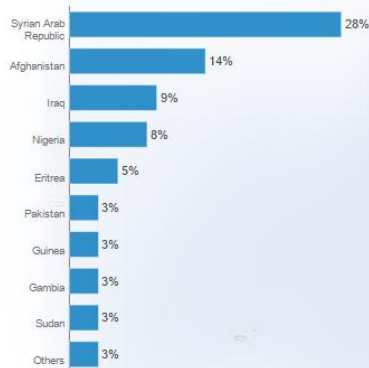
Context

- ▶ In 2016, 319,829 refugees traveled to foreign countries by sea.
- ▶ However, 3654 refugees **died** or went **missing** while at sea.

Increasing numbers of refugees and migrants take their chances aboard unseaworthy boats and dinghies in a desperate bid to reach Europe. The vast majority of those attempting this dangerous crossing are in need of international protection, fleeing war, violence and persecution in their country of origin. Every year these movements continue to exact a devastating toll on human life.

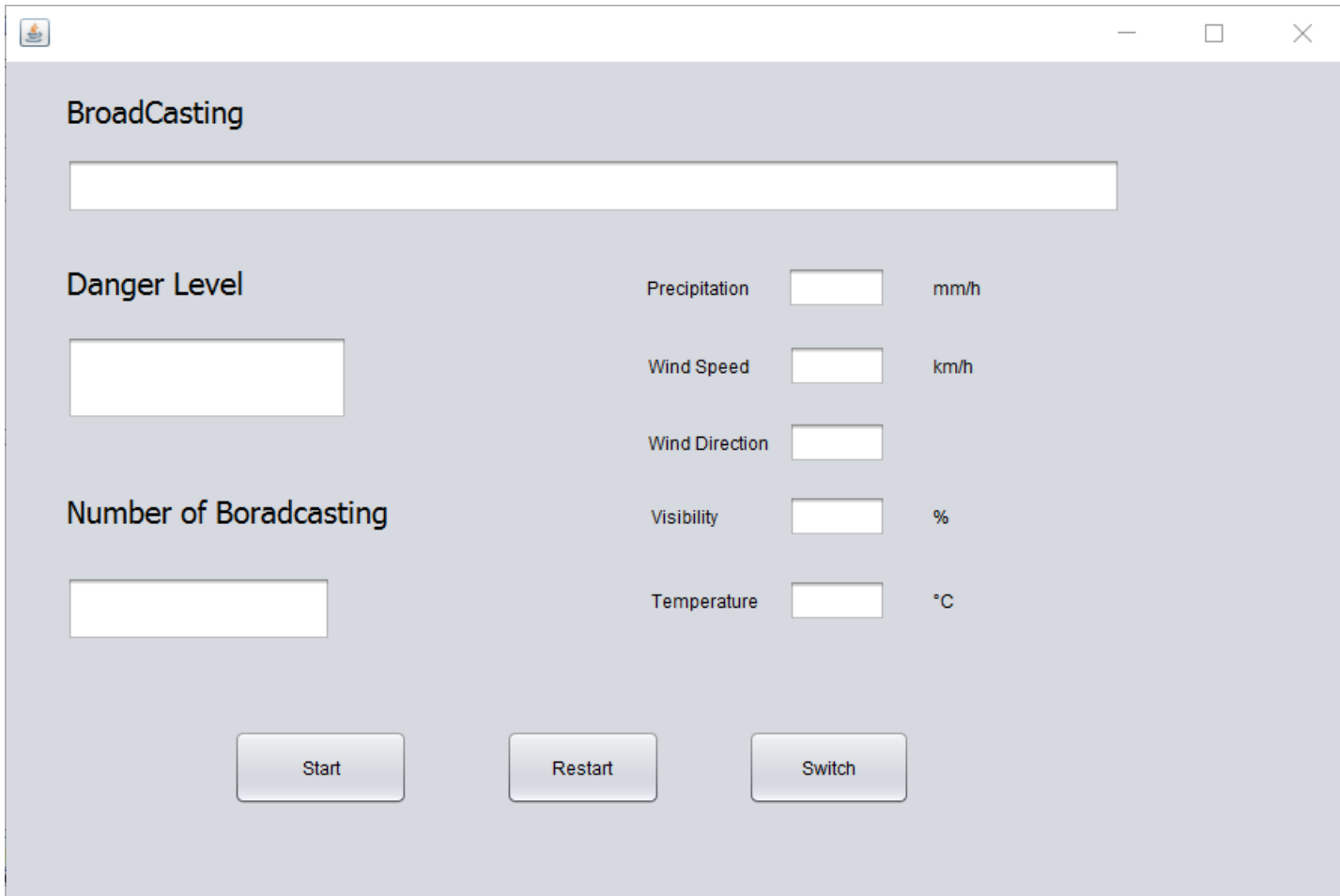
Top-10 nationalities of Mediterranean sea arrivals

Top-10 nationalities represent **79%** of the sea arrivals based on arrivals since 1 Jan 2016



- ▶ There HAS to be a safer way for refugees to navigate the dangers of the open ocean.

Introducing The Weather System



The screenshot shows a software window titled "BroadCasting" with a standard Windows-style title bar (minimize, maximize, close buttons). The window has a light gray background and contains several input fields and buttons.

BroadCasting

Below the title, there is a long, empty white rectangular input field.

Danger Level

Below the "Danger Level" label is a white rectangular input field.

Number of Boradcasting

Below the "Number of Boradcasting" label is a white rectangular input field.

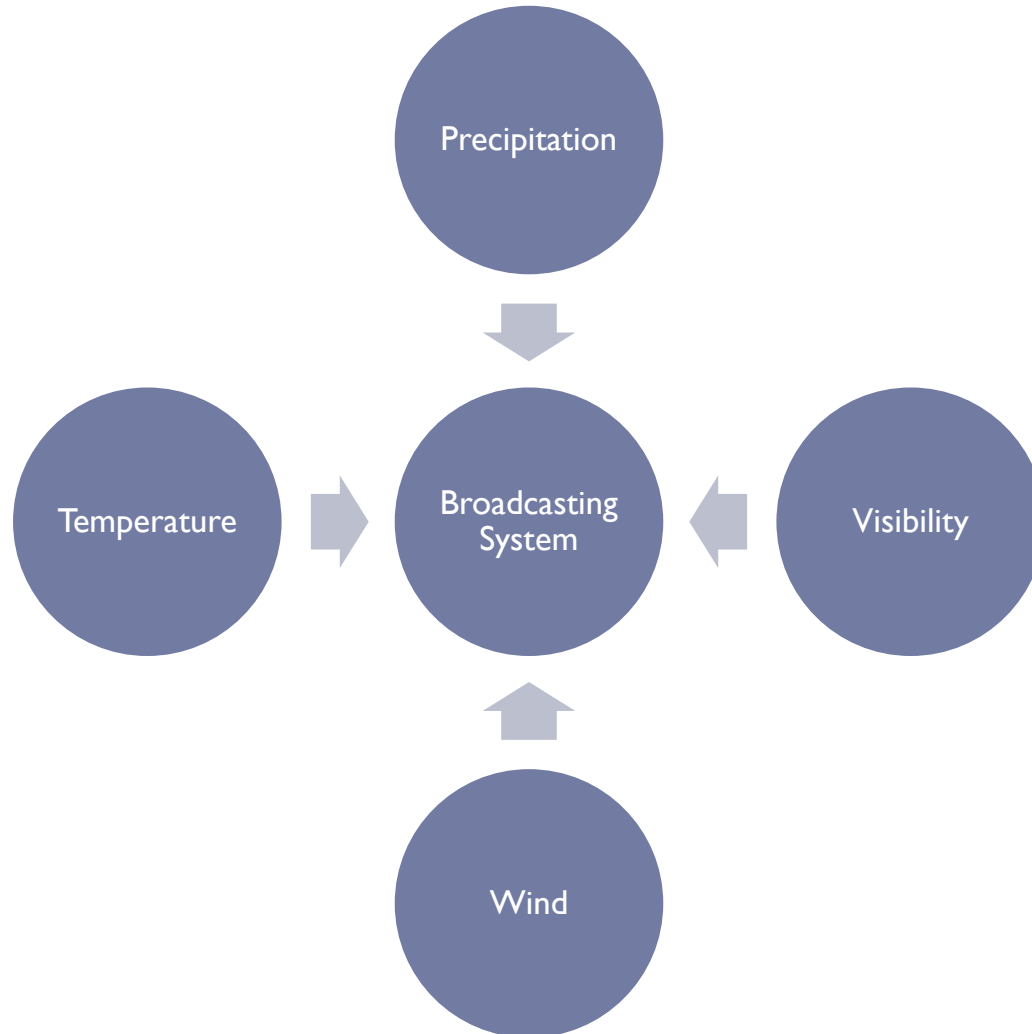
On the right side of the window, there are five rows of weather-related inputs:

- Precipitation**: A white input field followed by the unit "mm/h".
- Wind Speed**: A white input field followed by the unit "km/h".
- Wind Direction**: A white input field.
- Visibility**: A white input field followed by the unit "%".
- Temperature**: A white input field followed by the unit "°C".

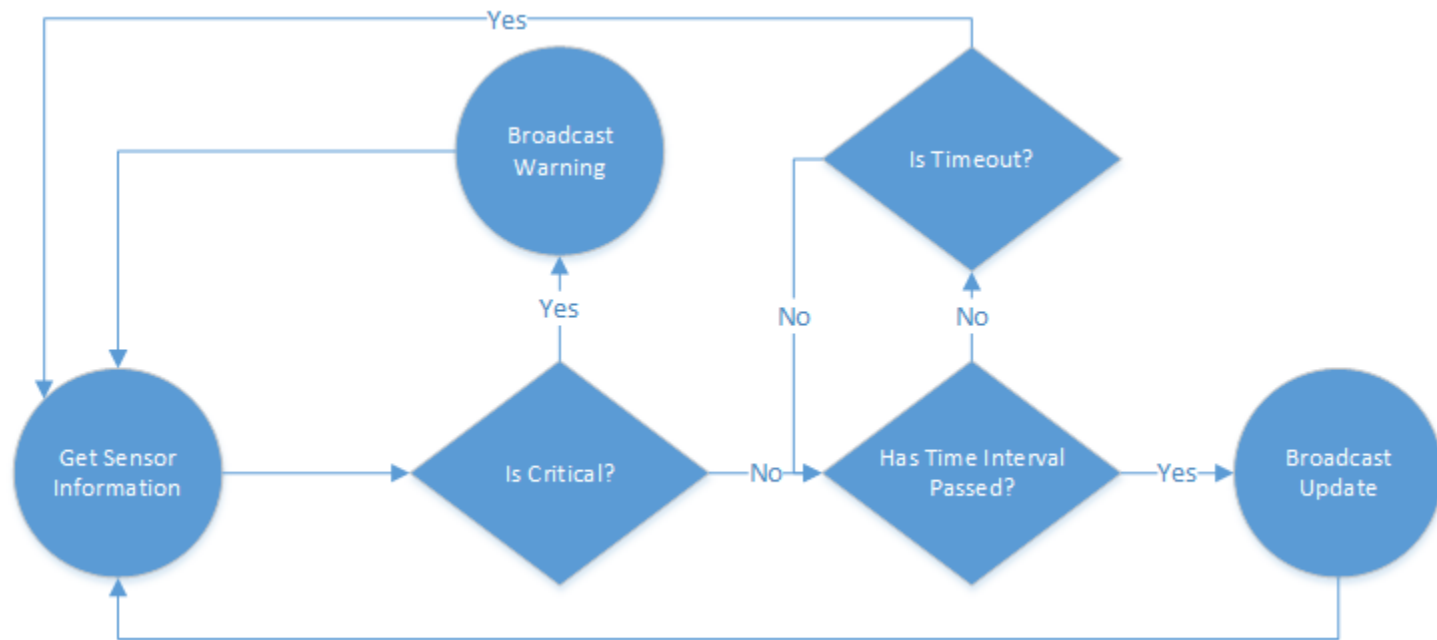
At the bottom of the window, there are three buttons arranged horizontally:

- Start**: A light gray button with rounded corners.
- Restart**: A light gray button with rounded corners.
- Switch**: A light gray button with rounded corners.

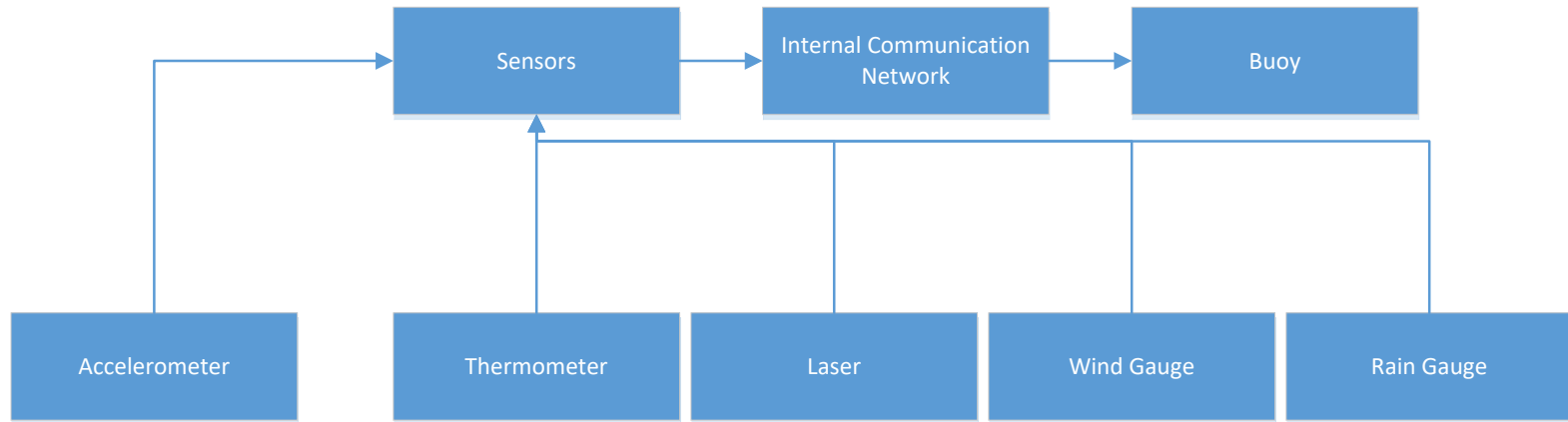
What Does It Do?



What Does It Do (Part 2)?



How Was It Done?



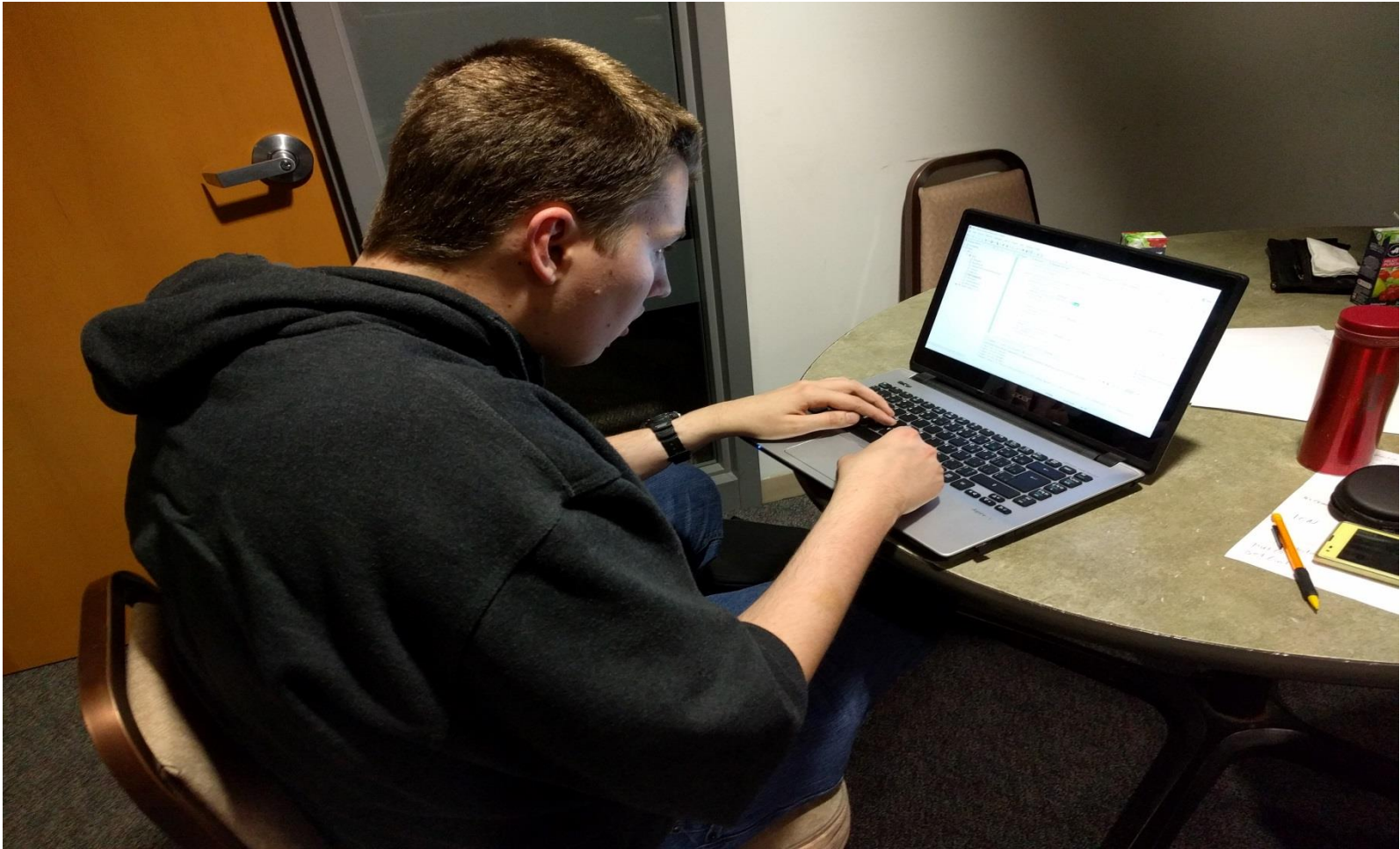
- ▶ **Sensors:** Receive information from external environment
- ▶ **Internal Communication Network:** Mediates communication between internal components
- ▶ **Buoy:** Determines criticality and broadcasts messages

Testing the System

- ▶ Combination of black box and white box testing.
- ▶ JUnit tests ensured full code coverage.
- ▶ Thorough integration testing at boundary conditions.



Let's See a Demo!



References

- ▶ <http://data.unhcr.org/mediterranean/regional.php>



Thank You For Your Time!

