**Classify Notifications**

To classify the notifications, we used a different classifier for the Fire department, Police and Ambulance, because they used a different notation.

We used a Naïve Bayes Classifier Library, to classify the notifications.

We generated our own sample set, from which we removed the locations as they influenced other notifications in that area too much.

**Retrieve News Feed**

To be able to associate P2000 notifications with news articles, these articles need to be retrieved from the web.

We built a specialized web crawler that takes a number of preselected regional news websites as seeds and retrieves all articles within a certain date range. These articles can then be classified and indexed by other modules of the system.

**P2000 → News association analyzer**

Not every retrieved news article is relevant for a P2000 notification. To be able to link certain notifications with news articles, associations need to be created and ranked.

An algorithm based on association rule learning is used to create and analyze associations between P2000 notifications and news articles using their labels and metadata.

**Index Notifications**

This part takes care of gathering all the useful information about the P2000 notifications.

It uses the HTML structure and regular expressions to extract the information in the notification itself and it uses an API and a database of address data to retrieve more relevant information, like postal code for a given street and town and coordinates for a given postal code.

**Cluster Notifications**

This part takes care of clustering the P2000 notifications that concern the same incident. It applies our own partitional clustering algorithm using the date and time and the location of the notification as a measure.

If two notifications are within a 30-minute time frame and go to exactly the same location, they are clustered together.