**Preamble**

* The client is busy and will not provide further details about the project
* The project is open to multiple interpretations. The solution depends on your point of view
* There is no single best solution for the project
* Do not ask if a solution is correct or wrong. There are only good and bad solutions
* The client values creativity and expects you to come up with interesting, feasible ideas
* Your solution should be at the same time innovative and compliant with the “spirit” of the project brief
* The evaluation of your solution will be based on good-or-bad judgement using subjective criteria

**Introduction**

CENTRAL is a servicing dispatch system under development for a council with 10 million inhabitants. The system is responsible for sending council mobile units (CMUs) to incidents, for example: malfunctions in the traffic, water, wastewater, rubbish, and other infrastructures maintained by the council; incidents with public spaces like grounds, parks and beaches; complaints related to council regulations; etc.

 CENTRAL runs 24/7 in a call centre. Whenever someone calls CENTRAL, the call is handled by an operator who is responsible for coordinating the CMUs.

 Information management and coordination of the dispatch process are the core functions of CENTRAL. The operators also play a key role in the process, as they must use their judgement in analysing the calls (many are fake), understanding which CMUs should be assigned, tracking the response as the incidents evolve, and contacting the initial callers when necessary.

**Technology**

The communication between the public and CENTRAL is multichannel: voice calls, messaging, e-mail, and web forms. The communication between CENTRAL and CMUs only uses short messages over mobile phones.

No technical decisions have been made about CENTRAL’s user interface. Though it has been decided that the operators will use one single 27” display and interact using keyboard and mouse.

The development of an app running on CMUs’ mobile phones is NOT part of this project. The project ONLY concerns CENTRAL’s call centre.

**Operators**

The operators have special skills. They not only open incidents and dispatch CMUs, they are also involved in deciding the type of response required, allocating an appropriate CMU, giving guidance to the CMU, and communicating with the callers and CMUs whenever necessary.

**Shifts**

Operators work in shifts. There is a 12am to 8am shift, an 8am to 4pm shift, and a 4pm to 12am shift. There are half-hour breaks every two hours.

When an operator steps in, the standing-down operator needs to hand over the open incidents, making sure that no incident is left hanging. CENTRAL is very important in helping the hand over. In exceptional cases, the handover may be necessary during a shift (e.g., when the operator feels unwell).

**Opening incidents**

CENTRAL receives a constant flow of incidents from by the public, which notify a wide-range of situations, some more time-critical (e.g., traffic light failures) and others less (e.g., broken bus stop sign).

Incidents are assigned randomly to operators.

Through caller interrogation, operators are able to identify fake cases, evaluate the type and severity of an incident, allocate the call to a priority category, and ensure that appropriate CMUs are dispatched.

Operators are trained to determine the severity of an incident and assign it to a priority category. They determine the priority category at the time of the call based on information provided by the caller; but they can change that status at any time.

There are three priority categories for incidents: 1) minor incidents, where a CMU unit is assigned immediately, but the dispatch can be delayed for several days; 2) serious incidents, where a CMU is dispatched as soon as possible; and 3) critical incidents, where a CMU is immediately dispatched, even when already responding to another incident.

The operators follow a protocol with a list of well-structured questions that have to be asked to the caller. These questions must be displayed by CENTRAL to help the operator.

Operators need to log the phone number and name of the caller, the type of incident, and a brief description of the incident. Once these details are captured in the system, the incident is considered “logged” in CENTRAL.

**Repeated calls**

Very often, CENTRAL receives more than one call for the same incident. Operators will determine if any new calls received are related to incidents already logged into CENTRAL and can link new calls to a logged incident. This will ensure that operators do not assign CMUs to incidents that have already being dealt with. When linking calls, operators will inform the callers that response is already under way.

CENTRAL must provide useful information to help operators decide if an incident has already been logged or not. Showing the previous incidents for the same area can help this decision.

**Assigning incidents**

Prioritization is core to the effectiveness of the process. The operator needs to define the priority category of an incident logged in CENTRAL. CENTRAL can list the available CMUs, their capabilities, and current assignments.

The operator assigns a CMU to an incident according to various factors, such as priority category, type of incident, type of CMU, and locations of incident and CMU.

Each CMU has three assignments lists: critical, serious, and regular. Operators can place incidents in any list according to three options: top-of-list, middle-of-list, and end-of-list.

CMUs can have the following capabilities: traffic, public spaces, water/wastewater, rubbish, regulations, council accommodations and homelessness, and citizen’s matters.

Operators are trained to avoid as much as possible sending highly qualified CMUs to simple incidents (and vice versa). There are three different capability levels: light, regular and special. Light CMUs are sent to most common incidents. Regular CMUs are only sent out when incidents require significant expertise and equipment, or no light CMUs are available in a reasonable time.

Some special CMUs, which are assembled on an ad hoc basis, can be assigned to special types of incidents. These units can only be assigned in cases of emergency.

**Dispatch**

CMUs are automatically dispatched by CENTRAL. This can occur in two ways: 1) assignment of a critical incident by an operator, which suspends any other assignment under way with a lower priority; and 2) when CMUs report the completion of a prior dispatch, which results in dispatching the next assignment on the lists of assignments, according to their priorities.

When a CMU is dispatched to a new incident, it sends an “acknowledge” message back to CENTRAL. When dealing with the incident on site, the CMU updates the status with a “actioned” message. When the incident has been resolved, the CMU updates the status with a “solved” message. A CMU may also send a “fail” message, which notifies the operator that the CMU cannot complete the dispatch.

In case of critical incidents, when receiving a “fail” message, the operator is required to immediately re-assign a new CMU.

After a CMU is dispatched, the operator can communicate with the CMU to update the situation. If necessary, the CMU may ask the operator to contact the caller, for instance, to get clarifications about the incident.

After receiving a “solved” message from a CMU, the operator changes the incident status in CENTRAL from “logged” to “closed”. This allows the operator to track incidents from opening to closure.

**Exceptions**

There are often exceptions in assignment and dispatch. For example, if an operator is attempting to assign a CMU to an incident but for some reason that action fails, the operator will have to improvise. In some cases, operators may have to reassign and even re-dispatch CMUs from one incident to another.