National Pothole Reporting System

General plan

Overview

It is a common experience that highway defects remain unattended for too long developing from minor irritations into danger zones. The highway authorities are very poor at dealing with reports from the public and so the public give-up which means the problems get worse. One of the disincentives is that people are told, often erroneously, "Don't call us - You want another office" because of the way highway authorities delegate their maintenance duties. Another disincentive is that, apart from simple disorganisation, trying to get something done when the maintainer has their own agenda is practically impossible.

Decent, safe roads are a necessity not a luxury. Proper systems for maintaining them are cheaper and more effective when (a) problems are reported early (b) problems are dealt with efficiently. This system proposes to deal with (a) by making it easy to report potholes and other maintenance problems and deal with (b) by having the processing of reports done in public so that the way a highway authority deals with problems is exposed to public scrutiny.

Harnessing the Internet

The technology of web pages and email is a very efficient method of communicating and referencing information. For example someone could type in the name of a village and automatically be directed to the correct maintainer. As problems are reported and things happen, a sequence of notes is attached which can be viewed using any web browser.

Illustration

Here are two hypothetical public web browser screens

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Defects in the Terling locality (Essex CC)

New Rd.                 Surface defects         Awaiting policy
                                                decision  10/Aug
Foot Br. at Ford        Rotten railings         Work in progress
Peg La.                 Loose surface           Sched. 25/Jul [Late!]
Jct. at School          Signpost                Fixed 15/Jul
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Terling - Ford - Rotten railings

1/Aug : Reported - Safety issue - Mrs Smith
        Somebody could fall in the river
2/Aug : Inspected - Essex CC
        Bridge to be closed as emergency measure until repaired
2/Aug : Comment - Don't do that - Mrs Smith
        You can't just close the bridge! it is essential.  Make it safe.
2/Aug : Comment - No date for reopening!!! - Mr Jones(Parish Clerk)
3/Aug : Reply - We don't work like that - Essex CC
        The notices and fencing will be erected today
4/Aug : Comment - Typical council! - Farmer Tom Brown
        I have made the bridge safe using 1 bit of 3x2 and 4 6"nails.
        Your fencing and notices are in my yard awaiting collection!
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Closing a vital footbridge until repairs could be arranged when a plank and nails would have made it safe at a fraction of the cost of erecting barriers actually happened in Essex in 2003. In the hypothetical illustration the parish clerk found out about the report because he had asked to be notified of problems in the locality, and the farmer is bold enough to take direct action because he knows that the villagers will be able to see the full story for themselves and bureaucratic outrage by the council about removing closure notices will be met with the full force of public contempt.

The lessons from this illustration are

- The report was made in the first place
- Local people knew more about the full picture than the engineers
- Action looks better in public than inaction
- The Council's poor practice has been exposed to public view which might bring about an improvement in future.

The technology is available, we know how to use it and better still we know how to make it deliver something useful in the real world. Not only can we save paperwork, and keep on top of delays, but also it empowers people who up until now have only been listened to very grudgingly. The only software required by the public or maintainers is a standard web browser and email client.

How it works

A concerned citizen goes to www.natpot.org.uk and selects a locality, their village, town or district. If they have been before this will have been remembered since last time.

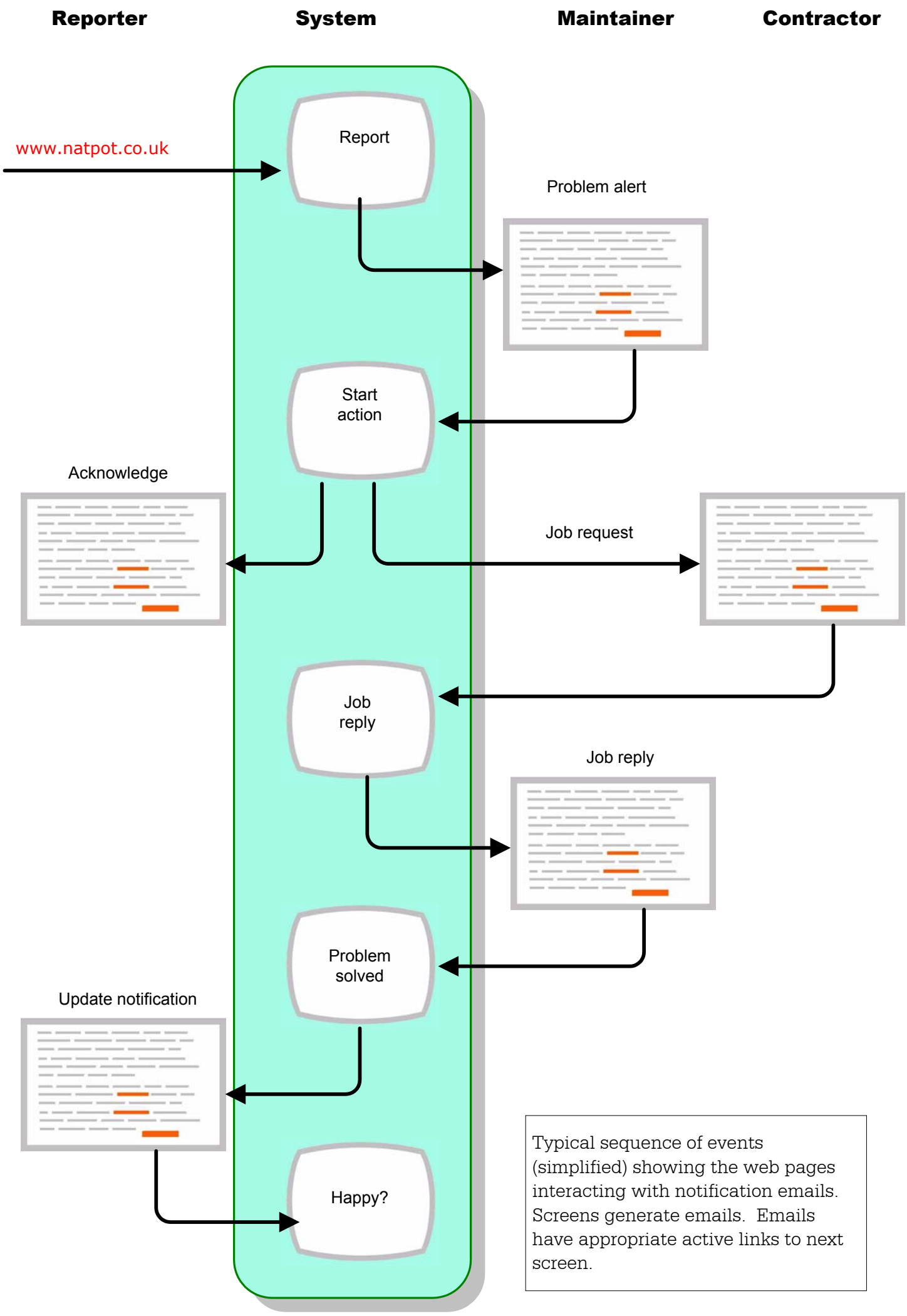
They will see a list of recent problems with more precise location and status. At this point they may feel everything is under control, or wish to add to a report, for example to point out that last month's patch is already failing, or start a new report. The screens will be in more detail than the illustrations above but that will be the basic principle. If they chose to make a new report they will be lead through a form on the screen which tries to ensure: (a)Accurate location (b)simple description of defect, and (c)basic risk assessment. When the web page is completed the details are added to the database and passed by email to the appropriate highway authority. Note: The database knows the reporter's email address but does not pass this on to the highway authority. This means that responses must be directed back via the system.

When the highway authority or appropriate delegated maintainer for the locality get the email, as well as containing a description of the problem(s) it will contain embedded links to the appropriate National Pothole web page to progress the matter in whichever way is appropriate. For example reply "Not our area - forwarded to..." or '(1) ask somebody to investigate in next week and also (2) send "Thanks. Inspection this week-Let you know then" reply. A job management system is built-in to the National Pothole system for the private use of maintainers and their contractors or staff. From the maintainer's point of view the private job details are combined with the public record on a single screen.

Similarly contractors and staff can reply to job request emails by simply clicking on the embedded links to get to the appropriate web page and reply either to the maintainer and/or the public record.

When changes happen to the public record the system sends a notification email to the reporter and any other contributors. Once again these contain active links direct to web pages which can be used to follow-up, score satisfaction, make a complaint etc. We also provide the facility for people to be notified when a new problem is reported in their locality.

As well as dealing with individual cases the system will provide a range of statistics on the web pages so that people can compare say the times different highway authorities take to deal with various categories of problem.



Typical sequence of events (simplified) showing the web pages interacting with notification emails. Screens generate emails. Emails have appropriate active links to next screen.

Benefits

The system has been designed with two major objects.

1 Getting people to report and see that things get done

2 Making it easy for maintainers to communicate with a few keystrokes

These are nutshell simplifications but the involvement of the public should make the job of the maintainers easier not harder. Making a public record allows people to judge for themselves if their council is doing a good job or not. Simple tools for the necessary passing around of the job and following-up inaction make the job of maintainers simpler and quicker.

- Defects are reported before they cause an accident.
- Early reporting of problems means (a) they are easier to incorporate into planned maintenance and (b) the stitch-in-time-saves-nine principle applies.

These mean cheaper repairs

- Reports from the public can't be forgotten about or ignored
- Brush-off replies will be open to wider scrutiny and adverse comment
- The public can see the actions and explanations of the maintainers and judge for themselves if they think the level of service is adequate.
- Broken promises are on the public record

These mean bad practice is exposed leading, one hopes, to better public service.

- Legitimate explanations are more widely publicised

This means the public may understand more why we don't have perfect roads and that councils don't have magic wands.

- Correspondence is by email and web page
- Complex combined actions often only require a few key strokes
- No special software required
- No need to maintain local database or system

These mean that communications are (a) faster and more reliable (b) much cheaper

Not only should the public be entitled to participate in maintaining the quality of their environment but they should be encouraged to do so as it means problems can get nipped in the bud.

National

It is easy to show that a single computer (server) is capable of dealing with the workload generated by an estimated 125,000 reports a year. Having a single server which is accessed via any web browser means we don't have to provide any special IT in council offices and etc. The cost is tiny and its operation can be focussed on providing a dedicated high reliability service.

As well as the obvious efficiency of one server instead of many, a national scheme with no opt-out means there is no effort wasted reinventing the wheel. It also means that statistics such as how long do repairs take and how many need revisiting within six months and how satisfied were the people who raised the issues in the first place are directly comparable.

Putting it into practice

Getting the public involved

Obviously the public need to be told about the system and encouraged to use it. This will require publicity. We suggest national and local publicity is appropriate: National because it is a national system and local because essentially potholes and similar are matters of local concern. The appropriate bodies to carry out this publicity are the DfT and highway authorities.

There are two main sorts of publicity:

- Start-up general awareness
- Reference information pointing to the web site

In addition there is the occasional bit of publicity showing improvements and statistics or naming and shaming.

We anticipate that one of the most important channels of publicity will be when highway authorities mention the facility in their citizen's magazines.

HAs and maintainers

There is no question of HAs having the choice of opting-out. - They might chose to ignore the launch but they can't stop reports being sent to them! They'll have to handle them one way or another and if they are unprepared then they just come bottom of the league and prompt a few questions such as "Why won't you adopt modern and efficient systems?".

However it is reasonable to encourage HAs to prepare a little in advance so that they in turn can prepare their maintainers and they in turn can prepare their contractors. The tasks which could usefully be prepared in advance are:

- Assigning responsibility for implementation within the HA
- Setting up maintainers. - Taking a few minutes
- Getting maintainers to understand what is expected of them
- Allocating localities to maintainers. Something like 500 localities per HA will need to be ticked-off on the screen
- Maintainers to experiment with the system using trial data.
- Maintainers to set-up most of their contractor contacts and explain what is expected from them.

Testing

The system should be tested using a single HA as a pilot. This should weed out bugs and smooth-off sharp corners. Also it will help us see what things cause difficulties and need underlining.

Then we propose to have a three week period when dummy reports are automatically fed into the system to give people an opportunity to practice. This will be a once-only nationwide exercise. We want real reports to start immediately after this dummy period to prevent people forgetting. Therefore the official launch and publicity needs careful planning.

Server

The hardware and software required will not be very expensive or complicated. If the server uses dedicated equipment (as opposed to commercial hosting) we anticipate less than £7000 for a resilient cluster and necessary communications.

We are not too worried about the system going down but we must try to guard against data loss as there may be safety-critical messages being stored and passed by the system. Hence the live replication of the database.

The demand on the Internet connection would be around 20Kbit/sec during peak periods.

Setting up a dedicated server would mean that we have complete control of the computing platform for the system and can focus on our own agenda of quality-of-service issues. On the other hand there are many web-hosting facilities which could look after the day to day practical matters.

Further development

Initially the system would be proved and launched in English only. A Welsh version will be planned for during construction but not implemented. Implementation would require additional funding.

We expect to be asked to develop statistical reports to provide management and performance monitoring information. It is too early to say what these will be. An extension of this is to provide access to auditors and fraud surveillance.

The basic nature of the system is quite clearly focussed on road maintenance. But there are grey areas such as footpaths and general poor-quality matters. We will expect to get some of these anyway, a small number not being worth doing anything special about. However it may be useful to have a one-stop-shop for road quality which would incorporate additional features such as advanced notice of works, closures etc. for example results of speed checks, accident statistics. These are just speculations.