What are the problems?

On April 9 beginning around 1 am local time, three counties in Oregon as well as the entirety of Washington State discovered that their emergency 911 call dispatch systems were no longer working. Oregon’s outage was cleared up in about three hours, but it took nearly seven hours before 911 services were restored across Washington State. Approximately 4,500 emergency calls to 911 call centers went unanswered during the Washington State outage

What caused these problems?

One possible explanation suggests that the outage was caused by human error. A computer card was removed from CenturyLink’s (a telecom provider from Louisiana that is contracted by Washington State and the three affected counties in Oregon to provide 911 communication services) controller, so the unit stopped responding and needed to be reset.

Another possible cause, according to the FFC, was a preventable software coding error. Intrado owns and operates a routing service, taking in 911 calls and directing them to the most appropriate public safety answering point, or PSAP, in industry parlance. Ordinarily, Intrado's automated system assigns a unique identifying code to each incoming call before passing it on—a method of keeping track of phone calls as they move through the system. But on April 9, the software responsible for assigning the codes maxed out at a pre-set limit; the counter literally stopped counting at 40 million calls. As a result, the routing system stopped accepting new calls, leading to a bottleneck and a series of cascading failures elsewhere in the 911 infrastructure

How can other cities and municipalities avoid such problems?

If the problem is caused by human error, then it is a business management problem. Terms including job training and human resource management can be involved to prevent the problem from happening.

If the problem is a simple coding error that the system failed to create new calling ID, then this is a much more preventable problem compare to human error. The possible reason for maxed out at a pre-set limit is that the digit of the used variable type of “ID” is not sufficient. The solution is to change the variable type to another one with more digits. Also, the maintaining team should always keep eyes on the database. One additional solution to ensure the stability of the system is to add the function of automatically sending warning massage to the maintenance team after the created number of ID have reached 90% of the maximum number limit.