

Intelligent Transportation System (ITS) using Cloud Computing

Course : Cluster, Grid, and Cloud Computing

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Introduction

- Cloud computing is known as services delivery such as shared resources, platforms, software and data, in the interest of end-users. They are located in distributed datacenters over a network such as the Internet.
- One of Information and Communication Technologies (ICT) benefits for the society are Intelligent Transport Systems (ITS), which make transport more efficient, faster, easier and reliable.
- These days Cloud computing is used for the Intelligent Transportation Systems (ITS) to improve transport outcomes such as road safety, travel reliability and informed travel choices ^[4].



Traffic Safety Management System^[1]

Background:

Around the world

- 1.2 million traffic death
- 50 million injuries

In China

- 500,000 accidents
- 100,000 toll closed



Proposed Solution:

Traffic safety information management platform based on cloud computing, data warehousing, and data mining

Use road safety information DB

- to generalize, judge, and predict various safety information (traffic accident black-spots, vehicle types liable to serious accidents and weather) based on already occurred accidents
- To gather, tackle , and share detailed traffic conditions without delay (road condition, potential risks, accidents, disasters and weather)

Case
study
2

Cloud based Disaster Management System for Vehicular Network^[2]

Background:

Emergency response system for natural disaster

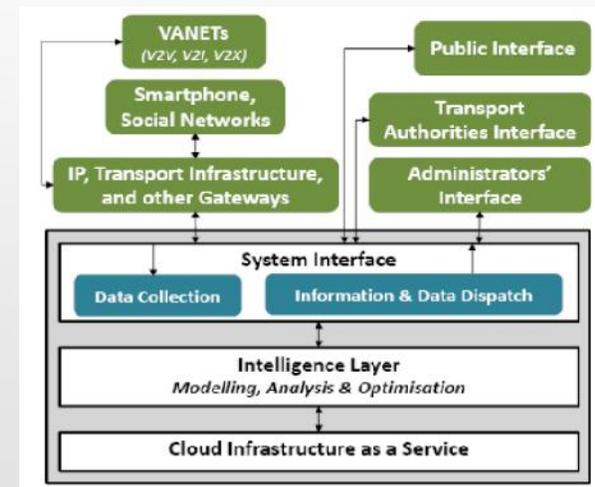
In Japan, loss of earthquake & tsunami in Sept 2001 exceeded 300 billion USD



Proposed Solution:

Intelligent Disaster Management System using ITS (VANET) and cloud computing

Gather info from multiple sources & locations, and able to let vehicles make effective decision



Cloud Technologies for Quality Taxi Services (Taiwan Taxi)^[3]

Background:

- Started in Oct 2005
- Serves 180,000 passengers a day
- Over 6000 Taxis in service



Solution:

- Safe and comfortable riding experience” with GPS (global positioning service) dispatch service, 3G (GPS + GPRS + GIS) taxi service, and 24-hour satellite monitoring service.
- Using the completely integrated **HP CloudSystem** to implement a private cloud platform
- The virtualization technology used by cloud computing systems enables the integration of a large number of systems onto a small number of physical computers, allowing management with a single interface.



Conclusion

- Cloud computing can process vast amount of traffic data such as traffic scenes, regulations, information of different types that can be useful to extract the knowledge and add intelligence to the transportation system
- Cloud computing thus can be used for the Intelligent Transportation Systems (ITS) to improve transport outcomes such as road safety, travel reliability and informed travel choices.



References

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- [4] P. Trivedi, K. Desmukh, M. Shrivastava, "Cloud Computing for Intelligent Transportation System," *International Journal of Soft Computing and Engineering (IJSCE)*, 2012