

CO-DESIGNING 'THE CLOUD'



AN INTERAGENCY PLATFORM FOR JOINT INCIDENT RESPONSE

BATTLING TRAFFIC BUILDUP WITH CLEAR, ACTIONABLE INFORMATION

THE PROBLEM

Greater Seattle is one of fastest growing regions in the U.S. With nearly 4 million people who call the region home and an economy worth \$350 billion a year, we have a lot riding on our transportation system.

Traffic Incident Management - Congestion Management

A major roadway incident in the Greater Seattle Area can trigger hours of congestion, rippling throughout the entire region—tying up traffic and costing millions of dollars in lost time and productivity. But we are not alone. Traffic incidents cost the nation nearly \$10 billion each year.

Building A Virtual Coordination Center

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The VCC will provide real-time data and create the shared communication space that is essential for rapid incident re-sponse, action planning, and coordinated messaging amongst agencies as well as the general public.



PHASE II WORK

Responding to traffic incidents in the responsibility of multiple agencies and jurisdictions. As we learned in Phase I of this project, current communications and coordination between responsible agencies is complicated and cumbersome, relying on a set of informal and formal phone trees.

In Phase II, transportation and emergency response agencies jointly participated in an "Agile Design" process to highlight interdependencies and develop a wireframe foundation for this revolutionary cloud-based Virtual Coordination Center (VCC).

PROTOTYPE

In Phase II, transportation and emergency response agencies jointly participated in an "Agile Design" process to highlight interdependencies and develop a wireframe foundation for this revolutionary cloud-based Virtual Coordination Center (VCC).

Leveraging cloud expertise from Amazon Web Services and design support from Pariveda, the prototype is a 10-screen demo that shows how priority information will be displayed for each of the VCC groups:

- 1) Incident Response
- 2) Congestion Analysis
- 3) Population Movement

DEEP DIVE

Together, the participating members chose to develop a Consolidated Computer Aided Dispatch (CAD) system as the first working component of the VCC. The consolidated CAD will serve as the primary, trusted information source for an inter-agency communication and be supported by a multi-agency dictionary of acronyms and terms.

Pulling in data from 4 separate agency CAD systems, this component will feed the technical requirements for information sharing. Building the consolidated CAD will also surface conflicting IT and governance policies that SAJOG can collectively resolve.

BROAD SUPPORT

A coalition of public and private-sector partners have come together to support the VCC. During Phase II, UW assisted in preparing a WSDOT proposal to the Federal Highway Administration, requesting \$5,118,000 toward this project. In partnership with Challenge Seattle, the team secured \$2,465,000 in matching private sector commitments and \$4,835,000 in matching public sector cash and in-kind support for this 4-year effort.

The screenshot displays the Virtual Coordination Center (VCC) interface. At the top, there are navigation tabs: Situation Map, CAD Logs, CM Plans, PopMo, Communications, Collaboration Spaces, and Extensions. A user profile for Taylor Martell is visible in the top right. Below the tabs is a 'Network Map' showing a street grid with various colored overlays and icons. A 'Visible Layers' panel on the right allows users to toggle features like Incident Alerts, Congestion Alerts, Current Traffic, CM Plans, Travel Times, Traffic Cameras, Message Signs, Signals, Ramp Meters, and Assets. Below this, an 'Agencies to Include' section shows checkboxes for WSDOT, SDOT, KCMT, WSP, SPD, and SFD. A 'Map Item Summary' window is open, displaying a 'WSDOT Camera - 1-5 Pike St, SB' with a live video feed of traffic on I-5. Below the video, there are sections for 'Incident Alerts' (listing A213 - Incident) and 'Congestion Alerts' (listing A211 - Travel Time Delay, A212 - Abnormal Traffic Flow, A213 - Travel Time Delay, and A214 - Travel Time Delay). The bottom left of the map shows 'Network Conditions as of: 1/31/2019 3:29 PM'.

THE CENTER FOR COLLABORATIVE SYSTEMS FOR SAFETY, SECURITY AND REGIONAL RESILIENCE

MOVING FORWARD

A fully functional Virtual Coordination Center would allow police, fire, and traffic managers to share real-time data about what is happening on the roadways and work together in new ways to quickly clear incidents and more effectively move people and goods throughout the transportation system.

IMAGINE



Buses and rail cars strategically deployed to meet real-time demand



Traffic lights and ramp meters that divert traffic more efficiently along pre-planned alternate routes



Clear, coordinated communication with executive leadership and the traveling public

By investing in a Virtual Coordination Center, we enable these smart solutions and more.

THE FUTURE

Facilitated by the University of Washington, Phase III of this project will build the VCC and detail a comprehensive concept of operations (ConOps) for the coordinated management of a regional mobility services system. This ConOps will expand and evolve with each additional cloud-based capability that is added to the VCC, following a cyclical process of iterative design.



Every minute counts when we are working to assess how serious an incident is, and we hope this new platform saves us time. The faster we can sync up with first responders and traffic control centers, the faster we will be able to shift our buses and communicate with riders. Our goal is to help move people better.

**- JEFF WAMSLEY, SUPERINTENDENT
KING COUNTY METRO TRANSIT CONTROL CENTER**

By working together and harnessing the power of technology, we are bringing this vision to life – enhancing the future of mobility and ensuring the vitality of our region for generations to come.

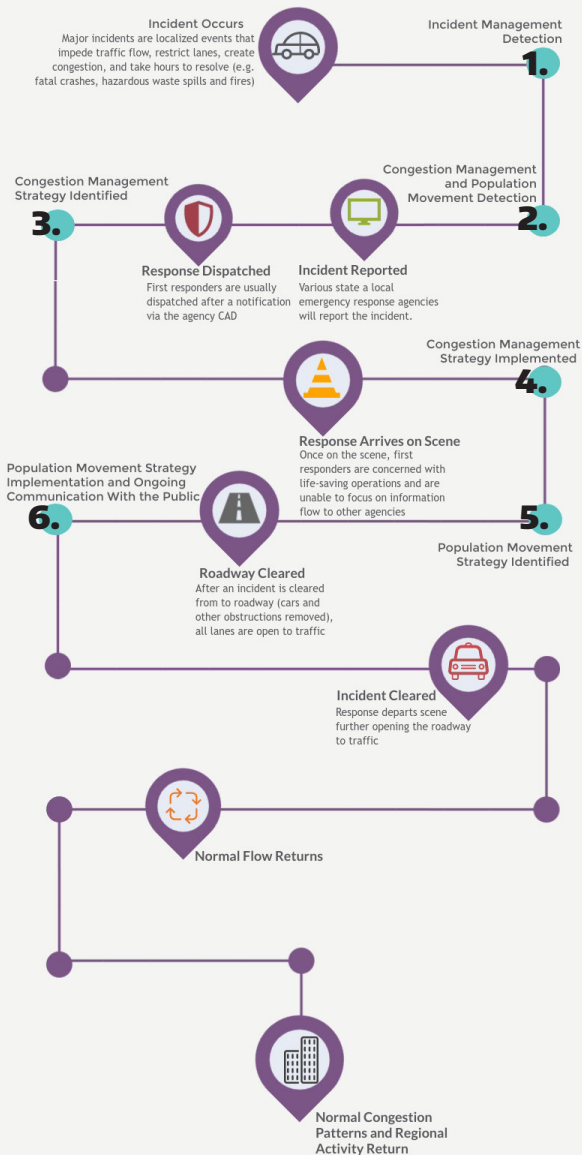


THE SOLUTION IN ACTION



THE TIMELINE OF AN INCIDENT

As the system currently stands, there is significant lag time in inter agency communication around a major incident.



1. Incident Management Detection

CURRENT: Emergency responders are notified of an incident through a myriad of ways, but the most common is through the agency Computer-Aided Dispatch (CAD) system. Agencies with no access to CAD information—including transportation agencies—are alerted of through phone calls, social media tagging or staff monitoring traffic cameras. Unfortunately, this information is not updated in real time and means these crucial players are left out early on.

VCC: All agencies are updated in real time to the incident and how agencies are responding.

2. Congestion Management and Population Movement Detection

Agencies with no access to CAD information, but who still play a vital role in the timeline of an incident, are often alerted of through phone calls, social media tagging or staff monitoring traffic cameras. Unfortunately, this information is not updated in real time and means these crucial players are left out early on.

3. Congestion Management Strategy Identified

CURRENT: The Congestion Management team is concerned with addressing traffic resulting from incidents that affect the roadways. From signage, to recommended alternate routes, congestion management's job is not fully complete until normal traffic flow returns. Currently, multiple agencies may be taking actions without visibility of the others and without a coordinated plan.

VCC: All agencies can see traffic impacts and the real-time steps that are being taken to mitigate congestion. The VCC will also enable agencies to work in concert on a coordinated response plan that leverages the asset and capabilities of each agency.

4. Congestion Management Strategy Implemented

Based on evolving information, proceed with a coordinated plan.

5. Population Movement Strategy Identified

CURRENT: Once a strategy is identified, the Population Movement team is tasked with alerting the public to the evolving situation through social media, news outlets, and text message alerts. Currently, agencies do not share talking points and occasionally share conflicting data and recommended actions out to the public.

VCC: A clear, coordinated message out to the public with real-time updates and actionable information.

6. Population Movement Strategy Implemented

System provides real-time updates, situational awareness and ongoing communication with the public until roadway clears.

SPONSORS

