LEVERAGING THE CLOUD FOR ENHANCED COMMUNICATION OF FLOOD RISK – THE COVID19 LEGACY

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Introduction

In the early months of 2020, COVID19 and the associated global lockdowns caused tremendous disruption to our everyday and working lives. In rapid order, we were forced to adapt to virtual "everything", and remote working became the only way to get our jobs done.

Working remotely with our flooding datasets quickly became a challenge as the sheer volume of information interrupted our ability to use and access it effectively. Essentially, we needed to share our datasets with ourselves.

Where Does The Cloud Fit In?

The Cloud is not new to the flooding industry, already being used for viewing processed datasets and products (such as GIS flood extents, GIS grids and reports), as well as the storage of information in online databases. However, the ability to *use* the data (ie to process, interrogate, analyse and understand) was fairly primitive, and compromised by the methods available to access the information.

Most approaches to utilising data involved taking copies of the data itself. Aside from the loss of provenance and potential confusion with multiple copies of datasets "in the wild", this approach also requires the end user to know how to use the datasets they have copied/downloaded.

By drawing on The Cloud's centralised nature, hosted software platforms have provided the industry with a viable means of interactively working with flooding information remotely, and established a framework for the provision and receipt of remote professional services. In most cases, these new ways of working have improved not only the usability of flooding information, but also the understanding of its implications.

A Shift In Cloud Computing

A shift from the traditional use of the Cloud as merely a data repository, these new platforms involve hosting of rich web applications that allow the user to fully interact with and process their datasets, much as they would on their corporate LAN. However, the scalability and architecture of the Cloud enable these platforms to outperform their desktop/LAN counterparts. It has also expanded and streamlined the sharing of flooding information with various stakeholders, both internal and external to the organisation.

Case Study: Narrabri Shire Council – Automated Flood Certificates

Narrabri Shire Council transitioned their on-premise automated flood certificates system to the cloud in mid-2020. The primary driver of this transition was to provide a simpler means of accessing the system remotely. The Cloud has improved the speed and usability of Councils system.

As Councils planning team manages flooding for Council, without the benefit of a formal floodplain management officer, the Cloud has provided Council with the ability to engage flooding

consultants to administer the base flooding datasets, remotely, as well as provide professional advice and analysis. This has streamlined the way Council takes receipt of new (adopted) flood study information, with base flooding datasets uploaded directly into Councils system. This provides Council with essentially seamless "receipt" of new datasets and ensures that the centrally managed datasets are always current, correct and reliable.

Case Study: Somerset Regional Council – Real-Time Flood Forecasting

In late 2020, Somerset Regional Council implemented an online flood forecasting system covering the major flash-flood affected townships across the LGA. The system dynamically communicates with BoM servers to obtain near term (QPF) and longer term (ADFD) rainfall forecasts and soil moisture conditions. Councils rain gauge data is uploaded to the Cloud every 5 minutes. These rainfall datasets form the key inputs to the system and allow Council to rapidly carry out "what if" analysis, both in the Local Disaster Coordination Centre (LDCC) and remotely.

Councils key facility, roads, and property layers are also synced daily and are used for flood intelligence reporting during events. The centralised platform allows Council to share flood intelligence and dynamic mapping directly with external stakeholders such as the Police.

The Cloud has also allowed Council to procure remote data management services, providing seamless dataset and system updates, without the need for Council to manage the process (other than the provision of datasets). This has provided Council with considerable time and quality benefits by eliminating double handling of datasets.

Case Study: Cessnock City Council – Data Sharing and Remote Professional Services

In the midst of COVID lockdown, Council undertook a rapid overland flow study to identify key flood risk areas outside the coverage of their formal flood studies. This study covered the entire LGA on a 5m grid, resulting in a considerable volume of data. To facilitate data review and communication, a cloud data platform was used to provide access to draft surfaces by Council. Council staff could simply logon and start viewing/interrogating the datasets upon receipt of the URL, both from the office and at home.

By interacting directly with the datasets, Council was able to thoroughly review the draft surfaces and ultimately determined that a reduction in the minimum catchment area defining a flowpath was warranted. The surfaces were re-run and delivered to Council the following day. The entire review process took only 2 days, including re-running of the overland flow surfaces, something that simply would not have been achievable without an interactive Cloud platform.

The project serves as a valuable example on the ability of interactive cloud platforms to enable the provision of remote professional services. The Consultant and Client were able to communicate effectively and collaboratively via the platform, ultimately enhancing the understanding of the LGA flood risk for both Council and the Consultant.

Concluding Remarks

An interactive Cloud platform greatly leverages the centralised nature and scalability of the Cloud into a powerful solution environment providing efficient next-generation capability such as:

- Provision/receipt of remote professional services
- Centralised data management, access and quality control
- Instant data sharing – both internally and externally – and elimination of dataset copying
- Fully interactive data viewing, interrogation, processing and analysis